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# Enhancing service quality in aviation: The critical role of ground handling services

## *Havacılıkta hizmet kalitesinin artırılması: Yer hizmetlerinin kritik rolü*

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# Enhancing Service Quality in Aviation: The Critical Role Of Ground Handling Services

## Highlights

- ❖ Ground Handling Services (GHS) play a critical role in passengers' perceptions of overall service quality.
- ❖ GHS significantly affect 'Responsiveness' dimension negatively.
- ❖ GHS enhance 'Empathy' dimension.
- ❖ Four GHS propositions that require improvement are identified.

## Graphical Abstract

The study measures the gap between passengers' expectations and their perceptions of both airline and ground handling services employing the SERVQUAL model.

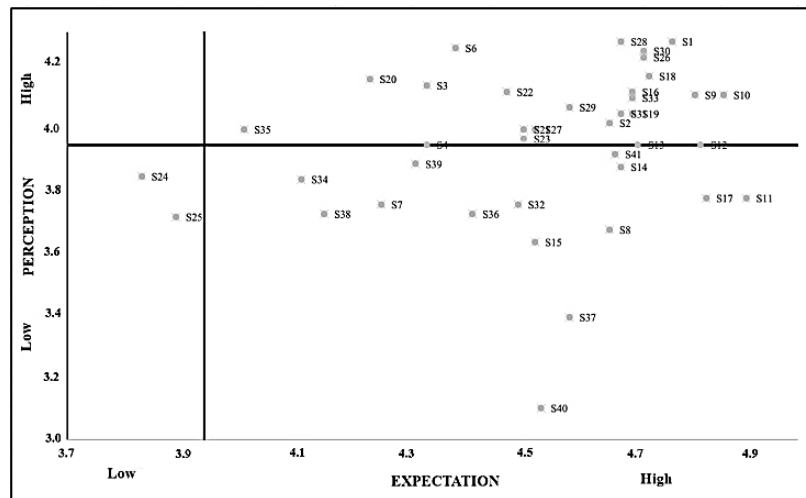


Figure. Quadrant Analysis

## Aim

This study examines the impact of ground handling services on overall service quality in the aviation sector, with a particular focus on Turkish Airlines' domestic flights in Türkiye.

## Design & Methodology

The SERVQUAL method is employed to assess service quality for both airline and ground handling services through a survey consisting of 41 questions. The gap between perception and expectation, determined by the analysis, provides insights into areas needing improvement.

## Originality

Prior studies have primarily focused on employee perceptions rather than passenger experiences. This research distinguishes itself by evaluating the impact of ground handling services based on passenger expectations and perceptions.

## Findings

The study concludes that ground handling services negatively impact airline service quality in the dimensions of 'Responsiveness,' 'Tangibles,' 'Assurance,' and 'Reliability.' Conversely, they positively contribute to the 'Empathy' dimension, enhancing service quality.

## Conclusion

The findings highlight the crucial role of ground handling services in shaping overall service quality in the aviation industry. Recognizing the impact of these services can inform strategic decisions regarding partnerships with ground handling companies and investments in service improvements.

## Declaration of Ethical Standards

The author(s) of this article declare that the materials and methods used in this study do not require ethical committee permission and/or legal-special permission.

# Enhancing Service Quality in Aviation: The Critical Role Of Ground Handling Services

*Araştırma Makalesi / Research Article*

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## ABSTRACT

The increasing demand for air travel has intensified competition, necessitating continuous innovation and development in service quality. However, passengers often attribute service quality directly to airlines, unaware of the role of ground handling service companies. This study investigates the impact of ground handling services on overall service quality in the aviation sector, with a particular emphasis on Turkish Airlines' domestic flights in Türkiye. Using the SERVQUAL model, the study measures the gap between passengers' expectations and their perceptions of both airline and ground handling services. The analysis reveals that ground handling services play a critical role in shaping passengers' overall service perceptions. The findings indicate that while ground handling services negatively affect the 'Responsiveness' dimension, they enhance the 'Empathy' dimension. A quadrant chart was developed to analyze perceived and expected service quality scores. Four ground service aspects identified for improvement include timely and intact luggage delivery, staff engagement in problem-solving, short baggage delivery times at arrival airports, and personalized attention during check-in, boarding, connection assistance, and baggage claim.

**Keywords:** Service Quality, Ground Handling Services, SERVQUAL, Aviation Industry, Passenger Satisfaction

## Havacılıkta Hizmet Kalitesinin Artırılması: Yer Hizmetlerinin Kritik Rolü

ÖZ

Yolcuların artan talebi havayolu taşımacılığı sektöründe rekabeti artırmış ve hizmet kalitesini yeniliğe ve gelişime açık hale getirmiştir. Ancak yolcular genellikle hizmet kalitesini, yer hizmetleri şirketlerinin rolünün farkında olmadan doğrudan havayollarına atfetmektedir. Bu çalışma, özellikle Türk Hava Yolları'nın Türkiye'deki iç hat uçuşlarına odaklanarak, yer hizmetleri sektörünün genel hizmet kalitesi üzerindeki etkisine odaklanmaktadır. Çalışma, SERVQUAL modelini kullanarak yolcuların beklentileri ile havayolu ve yer hizmetlerine ilişkin algıları arasındaki farkı ölçmektedir. Analiz, yer hizmetlerinin yolcuların genel hizmet kalitesi algılarını şekillendirmede kritik bir rol oynadığını ortaya koymaktadır. Bulgular, yer hizmetlerinin 'Tepkisellik' boyutunu olumsuz yönde önemli ölçüde etkilediğini, 'Empati' boyutunu ise artırdığını göstermektedir. Algılanan ve beklenen hizmet kalitesi puanlarını analiz etmek için bir Quadrant grafiği oluşturulmuştur. İyileştirilmesi gereken dört yer hizmetleri arasında; zamanında, sağlam bagaj teslimatı; çeşitli kontrol noktalarında personelin yolcuların sorunlarını çözmeye samimi ilgi göstermesi; varış havaalanında kısa bagaj teslimat süresi; ve check-in, uçağa biniş, bağlantı yardımı ve bagaj teslim alanlarında çalışanlardan kişiselleştirilmiş ilgi yer almaktadır.

**Anahtar Kelimeler:** Servis Kalitesi, Yer Hizmetleri Servisi, SERVQUAL, Havacılık Endüstrisi, Yolcu Memnuniyeti

### 1. INTRODUCTION

In today's rapidly advancing technological landscape, efficient transportation is essential for economic growth, and demand for air travel is increasing at an unprecedented rate. Over time, air transportation has evolved into a competitive market, driving increased consumer expectations for service quality. In this environment, where competition between businesses is fierce, one of the main factors that makes a business superior to another is its loyal customer potential [1]. Therefore, businesses are making great efforts to improve their service quality and to ensure that services meet customer expectations at every stage of interaction [2]. The air transportation sector has experienced rapid growth, fuelled by the increasing interest in aviation

across the transportation industry. Accordingly, with increasing competition, consumers' expectations in terms of quality and service has also increased. Therefore, the focus of the services offered by the airlines should meet the expectations of customers at the highest level, from the moment the passengers' interaction with the airline begins [3].

One of the most crucial factors influencing service quality in the aviation industry is ground handling services. These services, provided by contracted suppliers, cover passenger handling from terminal entry to final destination exit. Ground handling services include check-in, boarding, arrival, lost luggage management, ramp operations, cargo, and aircraft operations. Airline operations can often go very

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differently than planned [4]. Due to cost considerations, airlines typically contract third-party ground handling companies authorized by the relevant civil aviation authority instead of providing in-house ground handling services [5]. Ground handling activities are a large part of the service provided by aviation businesses in this context. However, it is not generally known to passengers that this service does not belong to the aviation company. Türkiye began its civil aviation activities after 1912. Currently, 12 airline companies operate within the country, with a total fleet of 598 aircraft [6]. In 2023, nearly 214 million passengers, including 90.4 million domestic and 123.3 million international travellers, transited through the country's 57 commercial airports [7]. Figure 1 shows the cities with airports in Türkiye.

This study determines the service quality in air transportation offered by Turkish Airlines in domestic flights, Türkiye, taking the ground handling services into account, unlike other similar studies in the extensive literature. The SERVQUAL model is used to assess service quality, identifying gaps between perception and expectation and evaluating the overall impact of ground handling services on passenger perceptions.

The gap between perception and expectation determined by the analysis provides insights into areas that need improvement. Finally, the effect of ground handling services' quality on the overall passenger perception is evaluated.



**Table 1.** Literature Summary

<b>THEME</b> <b>METHOD</b>	<b>Measurement of Service Quality of an airline</b>	<b>Comparison of Service Quality of multiple airlines</b>	<b>Comparison of Service Quality for different passenger groups*</b>	<b>Relationship between Service Quality and travel behavior**</b>	<b>The impact of a selected element*** of airline transportation on Service Quality</b>
<b>Servequal</b>	Anlı (2019), Kahraman (2016) Dursun (2008) Aktan İbik, (2006) Küçük Çırpın & Kurt (2016) Hatipoğlu & Işık (2015) Pakdil & Aydın ( 2007) Tolpa (2012) Shanka (2013), Shah et al, (2020)	Şeleci (2018) Şener (2017) Aydın & Yildirim (2012) Hongwei Jiang & Wild, (2017) Banerjee & Singh (2013) Lim & Lee (2020)	Ataman et al., (2011) Ermeç Sertoğlu & Mutlu (2018) Okumuş & Asil (2007) Sultan & Simpson (1995) Suresh et al. (2017)	Sandada & Matibiri (2016) Korkmaz (2015)	Toprak (2019) Yaşar & Özdemir (2016) Yasar & Ozdemir (2022) Rezaei et al. (2018)
<b>servperf</b>	Altınkurt (2015)	Barnes (2017)			Bahar (2017) Akpur (2017)
<b>SPSS</b>	Kazançoğlu (2011)		Akpur & Zengin (2019)	Doğan (2020)	Karaarslan (2015) Barghı Demir & Satı (2016)
<b>Grönroos</b>	Bozorgi (2007)		Fan et al. (2017)		
<b>Data mining</b>	Demirel (2020)				
<b>Cluster Analysis/ ANOVA</b>					Wang, Pham (2020)
<b>Airqual</b>	Alotaibi (2015) Farooq et al. (2018)			Nadiri et al. (2008) Shen & Yahya (2021)	
<b>Analytical Hierarchy Process (AHP)</b>		Şentürk (2011) Öztürk & Onurlubaş (2019) Singh (2016)			Bakır (2017)
<b>Structural equation modeling (SEM)</b>	Rahman & Rahman (2023) Allen et al. (2020)			Saha & Theingi (2009) Suki (2014)	
<b>VIKOR</b>		Gupta (2018), Liou et al. (2011)			

\*(domestic/foreign, domestic/international, European/American, business purpose, economy/business

\*\* (loyalty, recommendation satisfaction, etc.)

\*\*\* (cabin service, website, check-in, baggage handling, etc.)

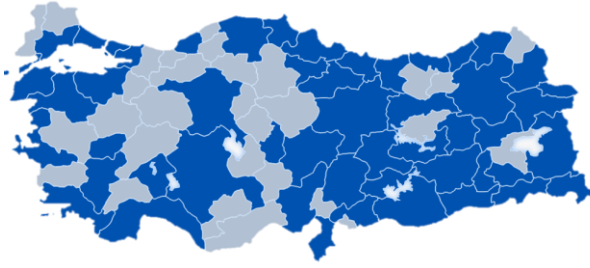


Figure 1. Map of Turkish Airports [8]

## 2. LITERATURE REVIEW

The literature on service quality measurement in airline transportation is quite extensive. **Hata! Başvuru kaynağı bulunamadı.** was compiled by the researchers according to determine the main themes and methods used in previous studies. It is important to note that only notable studies are included. The majority of studies focused on five main themes, utilizing nine different methods. The primary focus while creating the table was on studies conducted using the SERVQUAL method, which will also be utilized in this study.

Only 4 studies were found on the effect of ground handling services on service quality in airline transportation. In the study conducted by Bahar [2], the service quality perception of the employees of two private airline companies regarding the ground handling services was measured. It was also examined whether there was a significant difference between service quality dimensions and the demographic characteristics of airline employees. In the study, a survey prepared with the Servperf model was applied and evaluated. Likewise, in their study by Yaşar & Özdemir [30], a survey prepared with the SERVQUAL model was applied and evaluated to 78 airline employees. The most important difference of this article from these two studies is that service quality is evaluated according to the perception and expectation responses of airline employees, not passengers. Wang & Pham [44] examined the service quality of ground handling services in Vietnamese airlines using ANOVA and cluster analysis method in their study. In the study, a passenger survey was used only for check-in operations, and other services were evaluated with the help of internal performance reports and complaint information. The study by Chen & Chang [59] can be described as closest to this study. In the study, ground handling and in-flight service quality of 624 airline passengers in Taiwan were measured and quadrant analysis was performed. However, the effects of ground handling services on the total service quality was not discussed. In conclusion; no study has been found in the literature in which the effect of ground handling services on service quality in airline transportation is evaluated by passengers.

Despite extensive research on airline service quality, only four studies specifically examine the effect of ground handling services on service quality. Prior studies have primarily focused on employee perceptions rather than

passenger experiences. This research distinguishes itself by evaluating the impact of ground handling services based on passenger expectations and perceptions.

## 3. METHODOLOGY

The SERVQUAL model developed by Parasuraman, Zeithalm and Berry is referred to as the ‘Conceptual Model of Service Quality’ and is the most preferred model in service quality research [60]. The model consists of two basic parts: expected and perceived service quality. While “Expected service quality” expresses what consumers desire or want from the service they receive, “Perceived service quality” is defined as the comparison of the customer's expectations before receiving the service and their experiences after receiving the service. [61]. SERVQUAL [62] questionnaire was used as a data collection tool in this study. While preparing the survey form, similar literature studies prepared according to the SERVQUAL service quality measurement model in airline studies were examined. A SERVQUAL survey consisting of 41 questions suitable for the purpose was created considering the survey questions used in previous studies and the country they were implemented in. The questions were categorized into five main dimensions within the framework of the SERVQUAL model: Tangibles, Reliability, Responsiveness, Assurance and Empathy. Seventeen out of 41 questions are designed to specifically measure the service quality of ground handling services, rather than airlines. However, in order not to influence the passengers, these questions were integrated with other questions and placed under appropriate dimensions according to their subjects.

### 3.1. Population and Sample of the Study

The survey was conducted among passengers traveling domestically with Turkish Airlines. For the sample size, the number of surveys applied in the 48 studies in **Hata! Başvuru kaynağı bulunamadı.** was determined. Survey numbers range from 63 to 1794. The average was found to be 446 surveys. 534 passengers participated in this study and the surveys of 432 passengers were analysed. The surveys were conducted online between 04.02.2022-26.03.2022.

### 3.2. Limitations of the Study

As a study restriction, the person to be surveyed must be over 18 years old and must have travelled with Turkish Airlines at least once. The survey is conducted for the passengers in Türkiye over the google survey, therefore, it can be assumed that the ground handling services evaluation is limited to Türkiye.

## 4. RESULTS

**Hata! Başvuru kaynağı bulunamadı.** and **Hata! Başvuru kaynağı bulunamadı.** present the demographic characteristics and flight information of the participants.

### 4.1. SERVQUAL Analysis

Expectation and perception surveys prepared using the SERVQUAL technique were evaluated and a gap



analysis was conducted (**Hata! Başvuru kaynağı bulunamadı.**). The gap analysis was grouped under SERVQUAL dimensions (tangibles, reliability, responsiveness, assurance, empathy). Gap analysis provides insights into areas for improvement by comparing perception and expectation scores that is considered as the gap to be filled by improving the services. When the gap result is positive, it implies that the service quality perception exceeds the expectations and vice versa.

**Table 2.** Demographic characteristics of the participants

Gender	Frequency	Percentage
Woman	179	41.4
Male	253	58.6
Age	Frequency	Percentage
18-25	72	16.7
26-35	169	39.1
36-45	117	27.1
46-55	55	12.7
56 +	72	16.7
Marital status	Frequency	Percentage
Single	189	43.8
Married	243	56.3
Education	Frequency	Percentage
Primary education	5	1.2
High school	30	6.9
Associate's Degree	32	7.4
Bachelor's Degree	277	64.1
Graduate	88	20.4
Working Sector	Frequency	Percentage
Public	118	27.3
Private sector	314	72.7

**Table 3.** Flight information of the participants

Flight Frequency	Frequency	Percentage
Once a week	8	1.9
Once in a month	76	17.6
Once in a six month	157	36.3
Once a year	97	22.5
Other	94	21.8
Flight Class	Frequency	Percentage
Business	9	2.1
Economy	423	97.9
Reason for Flight	Frequency	Percentage
Work	131	30.3
Holiday	150	34.7
Visit	111	25.7
Other	40	9.3

When gap scores are evaluated on the basis of propositions;

- The only positive result is the suggestion that "the behaviour of the host/hostess and pilots gives confidence to the passengers". In other words, the service provided in this regard exceeds passenger expectations.
- The 5 propositions with the most gaps, that is, the 5 services that do not meet the expectations of passengers the most;

- ✓ Fees for excess baggage are reasonable
- ✓ Having the necessary arrangements for passengers to fly at the most economical fares.
- ✓ Passengers can receive their luggage on time, completely and without damage. (ground service)
- ✓ Having procedures that provide solutions in favour of passengers for delayed/lost/damaged baggage
- ✓ It has been determined that the plane seats are comfortable and have wide seat spacing.

When the gap scores are evaluated on the basis of dimensions, it is seen that the Reliability dimension is the dimension that least meets passengers' expectations. The smallest gap was found in the responsiveness dimension. In other words, the dimension that meets the expectation the most is the dimension of responsiveness.

The reliability coefficients of the scales, whether they comply with normal distribution, and the relationships between each other were examined. The results are shown in **Hata! Başvuru kaynağı bulunamadı..** Skewness and kurtosis values were taken into account to decide whether the distribution showed a normal distribution. The cut-off points (limits) of kurtosis and skewness values should not be over 3 as an absolute value for Skewness and over 10 as an absolute value for Kurtosis (Kline, 2011). It was understood that the scales in the study showed normal distribution. The Cronbach Alpha values of the scales are between 0.70 and 0.99, indicating that they are reliable (Tavakol and Dennick, 2011). The scales used in our study were found to be reliable.

#### 4.2. The Effect of Ground Handling on Airline Transportation Service Quality

The effect of ground handling services on air transportation service quality was examined on the basis of dimensions and propositions. In the examination on the basis of dimensions; The gap analysis of the expectation and perception questions calculated with the SERVQUAL survey was subjected to dual evaluation as airline services and ground handling services. The results are summarized in **Hata! Başvuru kaynağı bulunamadı..** Ground handling and airline transportation services exhibit similar levels of quality in terms of 'Tangibles', 'Reliability' and 'Assurance' dimensions. However, it is seen that ground service quality reduces the quality of air transportation in all three dimensions, even with small differences.

It is observed that while ground service quality significantly decreases airline service quality in the 'Responsiveness' dimension, and on the contrary, it conversely enhances it in the 'Empathy' dimension.

**Table 4.** Gap Analysis

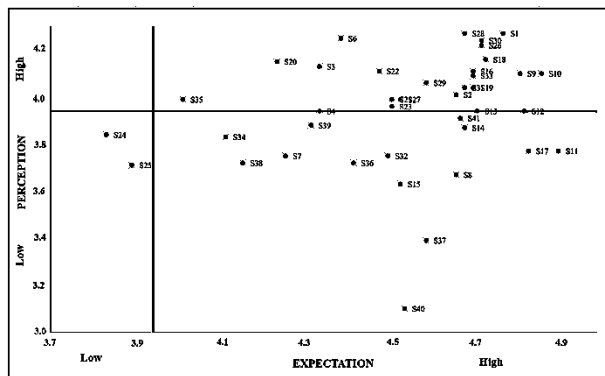
		<i>Expectation (B)</i>	<i>Perception (A)</i>	<i>Gap (Analysis)</i>	<i>Mean</i>
<i>Tangibles</i>	The airline provides service using modern technology in the reservation and ticket sales system.	4.76	4.27	-0.49	-0.49
	The airline's buses, which provide transportation services between the plane and the terminal, are clean, tidy and comfortable. (GHS)	4.65	4.01	-0.64	
	The airline has modern-looking aircrafts.	4.33	4.13	-0.19	
	The airline's food and beverages served on board during the flight are of high quality and variety.	4.33	3.94	-0.39	
	The uniforms of the airline's hosts/stewardesses and pilots are appropriate, clean and neat-looking.	4.52	4.42	-0.09	
	The uniforms of the airline's employees working in check-in, boarding, aircraft direction and baggage claim areas are appropriate, clean and neat-looking. (GHS)	4.38	4.25	-0.12	
	The airline has an entertainment system that offers passengers internet, books, magazines, movies, etc. to pass the time during the flight	4.25	3.75	-0.51	
	The airline's plane seats are comfortable and have wide seat spacing.	4.65	3.67	-0.98	
	The airline has equipment to meet the needs of disabled, the elderly, children, pregnant women, etc. passengers	4.8	4.1	-0.69	
	The airline's aircraft seats, in-flight toilets, etc. being clean and tidy. (GHS)	4.85	4.1	-0.75	
<i>Reliability</i>	The airline delivers the passengers' luggage on time, completely and without damage. (GHS)	4.89	3.77	-1.12	-0.81
	The airline fulfills check-in, boarding, connecting flight forwarding and baggage claim at the promised time. (GHS)	4.81	3.94	-0.88	
	The airline's landing and takeoff is in accordance with the flight schedule.	4.7	3.94	-0.76	
	The airline employees working at check-in, boarding, connecting flight guidance and baggage claim show sincere interest in solving the problems of passengers. (GHS)	4.67	3.87	-0.8	
	The airline's baggage delivery time is short at the arrival airport. (GHS)	4.52	3.63	-0.89	
	Proper and full service is provided at the airline's check-in desk. (GHS)	4.69	4.11	-0.58	
	The airline has procedures that provide solutions in favor of passengers for delayed/lost/damaged baggage.	4.82	3.77	-1.05	
	The airline provides accurate information to its passengers throughout the flight.	4.72	4.16	-0.56	
	The airline's employees working at check-in, boarding, connecting flight guidance and baggage claim areas provide accurate information to the passengers. (GHS)	4.69	4.04	-0.65	
<i>Responsiveness</i>	The airline provides prompt service to passengers by the hosts/hostesses.	4.23	4.15	-0.09	-0.28
	The airline provides fast service to passengers by the employees working in check-in, boarding, connecting flight guidance and baggage claim areas. (GHS)	4.5	3.99	-0.51	
	The airline's hosts/hostesses and pilots are always willing to help the passengers.	4.47	4.11	-0.36	
	The airline's employees working in check-in, boarding, connecting flight direction and baggage claim areas are always willing to help passengers. (GHS)	4.5	3.96	-0.54	
	The airline responds to passengers' requests even if their hosts/hostesses are busy with another job.	3.83	3.84	0.01	
	The airline's employees working at check-in, boarding, connecting flight guidance and baggage claim areas respond to passengers' requests even if they are busy with another job. (GHS)	3.89	3.71	-0.18	
<i>Assurance</i>	The behavior of the airline, host/hostess and pilots gives confidence to the passengers.	4.71	4.22	-0.49	-0.55
	The behavior of the airline's employees at check-in, boarding, connecting flight guidance and baggage claim conveys confidence to passengers. (GHS)	4.52	3.99	-0.53	
	The airline's hosts/hostesses and pilots are always courteous and respectful towards passengers.	4.67	4.27	-0.4	
	The airline's employees working at check-in, boarding, connecting flight guidance and baggage claim areas are always courteous and respectful towards passengers. (GHS)	4.58	4.06	-0.53	
	The airline's hosts/hostesses and pilots must have the training, knowledge and skills to answer passengers' questions.	4.71	4.24	-0.48	
	The airline employees working in check-in, boarding, connecting flight guidance and baggage claim areas has the training, knowledge and skills to answer passengers' questions. (GHS)	4.67	4.04	-0.63	
	The airline has a low probability of delaying/cancelling its flights.	4.49	3.75	-0.74	
	The airline's call service employees are courteous, respectful to passengers and have the knowledge to answer passengers' questions.	4.69	4.09	-0.6	
<i>Empathy</i>	The airline employees working in check-in, boarding, connecting flight guidance and baggage claim areas take personal care of the passengers in the services they provide. (GHS)	4.11	3.83	-0.28	-0.65
	The airline's host/stewardesses take personal care of the passengers in the services they provide throughout the flight.	4.01	3.99	-0.02	
	The airline organizes flight schedule in accordance with the demands and needs of the passengers.	4.41	3.72	-0.69	
	The airline makes the necessary arrangements so that passengers can fly at the most economical fares.	4.58	3.39	-1.19	
	The airline's employees working in check-in, boarding, connecting flight guidance and baggage claim areas understand the special requests and needs of passengers. (GHS)	4.15	3.72	-0.42	
	The airline has loyalty programs that provide advantages to its passengers.	4.31	3.88	-0.44	
	The airline's fees for excess baggage are reasonable.	4.53	3.1	-1.43	
	The services received from the airline's website and phone application are in line with passengers' expectations and are easy to use.	4.66	3.91	-0.75	

*GHS: Ground Handling Services*

**Table 5.** Reliability Coefficients and Normality Distribution Results

	Distortion	Kurtosis	Cronbach's Alpha
<b>Expectation Questions</b>			
Tangibles	-0.773	0.286	0.775
Reliability	-1.205	0.885	0.833
Responsiveness	-0.390	-0.250	0.843
Assurance	-1.129	1.584	0.842
Empathy	-0.658	0.411	0.844
<b>Perception Questions</b>			
Tangibles	-0.152	0.357	0.874
Reliability	-0.327	0.942	0.916
Responsiveness	-0.084	-0.178	0.900
Assurance	-0.165	-0.013	0.909
Empathy	-0.016	-0.163	0.887

The analysis on the basis of propositions was made with the help of Quadrant Analysis. Quadrant analysis is a technique that allows graphically expressing the relationship between variables, is frequently used in marketing research, and helps produce data/information. This analysis is important for strategic planning and decisions [9].



\* Note: Numbers represent the sequence of service attributes in the questionnaire

**Figure 2.** Quadrant Analysis

Perceived service quality and expected service quality scores obtained with the SERVQUAL method were placed in quarters determined according to average values (4.51 for expectation; 3.94 for perception), as shown in Figure 2, and a quadrant chart was created. As a result of the analysis, 14 propositions were identified that had high expectations but low perception (3

propositions were not included because they were borderline). 10 of these propositions are airline services and 4 are ground handling services. 4 ground service propositions with high expectations and low perception are listed below.

- The airline delivers the passengers' luggage on time, completely and without damage.
- The airline's employees working at check-in, boarding, connecting flight guidance and baggage claim show sincere interest in solving the passenger's problem.
- The airline's short baggage delivery time at the arrival airport.
- The airline's employees working in check-in, boarding, connecting flight guidance and baggage claim areas take personal care of the passengers in the services they provide to the passengers.

## 5. CONCLUSION AND RECOMMENDATIONS

Air transportation is among the most important key factors that develop the world economy as it improves international exchanges and international economic activities [10]. Airline passengers are becoming more and more demanding in their understanding of quality and service, which not only increases competition but also makes businesses open to continuous innovation and development in quality and service. Since air transportation is considered as a whole, passengers may not be aware that ground handling services are carried out by contracted ground service companies rather than the airline company. In 2013, the European Parliament requested the improvement of ground handling quality levels to protect the operations of airports and airlines [11]. The findings highlight the crucial role of ground handling services in shaping overall service quality in the aviation industry. Therefore, air transportation companies should recognize the impact of these services on passenger satisfaction and loyalty. This understanding can inform strategic decisions regarding partnerships with ground handling companies and investment in service improvements.

The following recommendations are proposed for air transportation companies to enhance their service quality:

- Include ground handling services in the process of service quality evaluation.

**Table 6.** Evaluation of Gap Scores in Terms of Service Providers

	Service Provider	Gap Score	Comment
<b>Tangibles</b>	Airline	-0.48	Service quality is close to each other
	Ground handling services	-0.50	
<b>Reliability</b>	Airline	-0.79	Service quality is close to each other
	Ground handling services	-0.82	
<b>Responsiveness</b>	Airline	-0.15	Ground handling services reduce service quality
	Ground handling services	-0.41	
<b>Assurance</b>	Airline	-0.54	Service quality is close to each other
	Ground handling services	-0.56	
<b>Empathy</b>	Airline	-0.75	Ground handling services increase service quality
	Ground handling services	-0.35	



- Invest in training and development of both the airline staff and the ground handling services personnel.
- Embrace technological innovation to modernize ground handling processes, improve operational efficiency, and enhance the passenger experience. Integration of advanced technologies such as automated baggage handling systems, biometric identification, and artificial intelligence can revolutionize ground handling operations and elevate service quality.
- Review contractual agreements with ground handling service providers to ensure alignment with service quality standards and passenger expectations.
- Implement a systematic passenger satisfaction feedback mechanism to gather insights of the passengers both for airline and ground handling services.

In this study, the effect of ground handling services of Turkish Airlines serving domestic flights in Türkiye on the general service quality was examined. It was concluded that the ground handling services have a negative impact on airline service quality in the dimensions of ‘Responsiveness’, ‘Tangibles’, ‘Assurance’ and ‘Reliability’. In the ‘Empathy’ dimension, the quality of ground handling services positively supports the quality of airline services, that is, it enhances the service quality. Cultural norms and expectations regarding service interactions may vary between ground handling staff and airline personnel. Ground handling staff may belong to cultures or backgrounds that prioritize interpersonal warmth and hospitality, leading to higher perceived levels of empathy by passengers.

Turkish Airlines should prioritize improving the services provided by the ground handling companies it contracts with by;

- Reviewing the operation of the ramp handling in order to shorten the baggage delivery time and prevent damage to the luggage,
- Supporting and training lost and found department employees on passenger relations,
- It is important for the staff working in the check-in department to provide feedback on the need to support.

While this study provides valuable insights into the impact of ground handling services on airline service quality, future research can explore:

- Conduct comparative analyses across different airlines, airports, and regions to identify variations in ground handling service quality and its impact on overall airline performance.
- Explore cultural and regulatory factors shaping ground handling service quality across different countries and regions.
- Investigate how demographic characteristics and travel preferences influence passenger satisfaction with ground handling services, enabling personalized service delivery.

- Investigate the adoption and effectiveness of emerging technologies in ground handling operations, such as robotics, IoT, and block chain, in optimizing service quality and operational efficiency.
- Track changes in service quality perceptions over time and evaluate the effectiveness of interventions by airlines and ground handling companies.

By addressing these research gaps, future studies can contribute to a deeper understanding of the complex dynamics between ground handling services and airline service quality, driving continuous improvement and innovation in the air transportation industry.

## DECLARATION OF ETHICAL STANDARDS

The author(s) of this article declare that the materials and methods used in this study do not require ethical committee permission and/or legal-special permission.

## AUTHORS' CONTRIBUTIONS

**Seda HATİPOĞLU:** Contributed to conceptualisation, methodology, writing, reviewing and editing.

**Hazal ERGÜL:** Contributed to result analysis, writing, reviewing and editing.

**Yaşar KEPTİ:** Contributed to data collection, analysis, writing, reviewing and editing.

## CONFLICT OF INTEREST

The authors have declared no conflict of interest

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