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The Effect of Perceived Service Quality on Customer-Based Reputation: A Study on Full-Service Airlines in Egypt

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Abstract
the aviation sector in Egypt is currently facing numerous challenges stemming from the rise in global air traffic and travel. In response, the Egyptian government is actively working to draw in more tourists to boost revenue. Additionally, EgyptAir aims to increase its passenger numbers as part of its growth and development strategy, which necessitates improvements in service efficiency and employee skills to enhance competitive advantage. This study was conducted to investigate how the perceived quality of the services offered by EgyptAir affects the company's reputation from the passengers' perspective.

Research Methodology: *This study adopts a positivist approach and employs a quantitative method, collecting responses from 584 passengers of EgyptAir. Out of these, 369 completed a questionnaire that assessed the variables relevant to this study, specifically perceived service quality and corporate reputation. The data analysis focused on structural equation modelling (SEM) to explore the relationships between the variables; furthermore, SPSS was utilised to evaluate the hypotheses.*

Findings: *The statistical analysis confirmed that all ServQual dimensions have a positive impact on the customer-based airline reputation, except for the empathy dimension, which did not yield converging results in the model. Perceived Assurance in airlines was the most prominent dimension, followed by responsiveness, tangibility and reliability in that order.*

Practical Implications: *Based on the research findings, it is recommended that EgyptAir managers improve the weakest services mentioned and adopt modernisation technology in all service stages. Moreover, it is essential to invest in the training of service personnel by providing modern training programs, which in turn will improve the customer experience, enhance the airline's reputation in the market, and increase revenue.*

Keywords: *Airline service quality, ServQual, reputation, customer-based reputation, EgyptAir.*

1. Introduction

1.1 Global Aviation Industry

Aviation is a sensitive industry. While it drives economic growth, it is easily influenced by global movements or crises. Since 2020, aviation has been facing constant crises, starting with the COVID-19

pandemic, and, lastly, the geopolitical tensions in the Middle East. According to the International Air Transport Association (IATA) report issued in June 2025, the forecast for 2025 financial performance for the aviation industry showed improved profits compared to 2024 and high levels of resilience in the face of global economic and political shifts, where net profit reached US$36.0 billion, an improvement from the US$32.4 billion net profit reported in 2024, but slightly lower than the US$36.6 billion previously forecast in December, and net profit margin reached 3.7%, an improvement from 3.4% in 2024 and the previously forecast 3.6%. . (IATA, 2025, June 2). Willie Walsh, IATA's Director General, commented on these figures, saying: "Figures saw values slightly lower than our previous forecast according to considerable uncertainty in global markets, but it was still a better year for airlines than in 2024, across many metrics, Furthermore, it is anticipated that airlines will carry more passengers and cargo in 2025 compared to 2024, even if trade tensions and declining consumer confidence impacted previous demand forecasts. (Walsh, 2025, June 2)

1.2 Airline Business Models

Airlines offer a range of bundled services based on their business models. This involves a collaborative effort among a wide variety of service companies and institutions. Each entity has its role in the overall process. Airlines have many business models; the airline selects the most suitable model that aligns with its unique features and sets it apart from competitors. The most common models are full-service carriers (FSC) and low-cost carriers (LCC). Full-service airlines are the traditional airline business model. This model is distinguished by its extensive global network that connects major destinations. These airlines operate a frequent schedule in a hub with central airports, transferring passengers between points (Kováčiková et al., 2024), offering a comprehensive in-flight service (Fageda et al., 2015), and multiple classes (Sezgen et al., 2019). This suite of services, including in-flight food and beverages, in-flight duty-free, access to the internet, amenities, loyalty and frequent flyer programs (Magdalina & Bouzaima, 2021) and in-flight entertainment, those are intended to cater to the diverse passengers who seek prosperity and luxury. Most full-service airlines in many countries are former state-owned flag carriers; EgyptAir is the state-owned carrier of Egypt. Low-cost carriers are based on cost-saving measures, where short-to medium-haul fleets, unbundled fares, high seat capacity, low wages, and limited services are provided, with any additional services offered for extra fees (Fageda et al., 2015). It most properly uses secondary airports for its cheap landing fees (Karwowski, 2016).

1.3 Egypt Travel & Tourism and EgyptAir Airline

a. Egypt Travel and Tourism

Tourism is one of Egypt's most important sources of income, contributing around 12% to its GDP (Economics, 2025), and serving as a vital source of foreign currency. Recently, there has been a notable rise in tourist arrivals compared to previous years. As reported by Ahram Online on January 2, 2025, Egypt welcomed approximately 15.3 million tourists in 2024, reflecting a 5% rise compared to 2023. The country has set an ambitious target of drawing in 30 million tourists by 2028.

Travel: In January 2025, the Ministry of Civil Aviation released infographics (Aviation, 2025, January 14), indicating that Egyptian airports experienced a 9% growth in passenger traffic and a 3% increase in flight operations during 2024 compared to the previous year. Ahram Online reported on January 2, 2025, that the government plans to boost the annual passenger volume to 72.2 million by the end of 2025, with a target of reaching 110 million by 2030 as part of the Egypt 2030 vision.

The remarkable expansion rate highlights the essential contribution of the travel and tourism industry to Egypt's economy, underscoring the need for ongoing modernisation and development.

b. EgyptAir Airline

EgyptAir, the state-owned flag carrier of Egypt, was founded in 1932 and is headquartered in Cairo. As the first state airline in the Arab Region and Africa, it joined the Star Alliance in 2008, connecting customers to 195 countries. With 93 years of operation, it now serves 90 destinations worldwide. In 2025, EgyptAir ranked 68th in Skytrax's "World's Top 100 Airlines," improving from 88th in 2024 due to enhanced services. (SKYTRAX, 2025). During the 2023/2024 period, Skytrax (2024) awarded it a three-star rating for service quality, which includes factors such as seating, amenities, food, in-flight entertainment, and cleanliness

.1.4 Airline Services Quality

The quality of services is a crucial element that impacts the success of organisations across various sectors. Service is distinct from physical products in its nature; it is variable and intangible (Lovelock & Wirtz, 2016). Kottler (2003) stated that service quality begins with the customer's expectations of the level of service they will receive, and ends with their perception of the service provided.

1.4.1 Perceived Services Vs Expected Services

Competition has become fierce, forcing airlines to differentiate themselves from their competitors by providing high-quality services that meet passengers' expectations and enhance their perceived experience

Service Expectations: In today's world, customers are more contemporary and informed, holding high expectations for proactive assistance and tailored professional care. Customer perception is based on how well the quality of services aligns with their expectations, which are influenced by the company's actions and attitudes towards them. (Gligor & Bozkurt, 2021). Customers become satisfied when the quality of services meets their expectations.

Perceptions, unlike expectations, are easy to measure. Parasuraman et al. (1985) suggested that perception is the actual services provided or experienced. It is the effect of the delivered services on customers and how they perceive these services, as well as assessing their value, which in turn affects customer satisfaction and enhances retention. (Bogicevic et al., 2016)

1.5 Perceived Service Quality

Airlines must provide high-quality services to customers to determine their satisfaction and loyalty, ultimately influencing repurchase intentions and the airline's market reputation (Ostrowski et al., 1993; Boonlertvanich, 2019; Kasiri et al., 2017). Which in turn emphasises passengers' repurchase (Calisir et al., 2016) word of mouth (Farooq et al., 2018), and elevate airline reputation in the market (Park et al., 2005).

Air travel is costly, with passengers paying for services they cannot physically take home, making it crucial to meet their needs to maintain sales and retention. Management focuses on enhancing perceived service quality as passenger requirements evolve. For example, IATA's Senior Vice President Nick Careen notes that today's travellers prioritise convenience, seeking streamlined booking processes, payment options, and proximity to airports. This shift necessitates advanced technology for a seamless online experience, (Careen, 2023, October)

1.6 Corporate Reputation

Corporate reputation (CR) is an important intangible asset (Ali, 2022) that reflects a firm's business decisions (Ruiz et al., 2016) and cannot be imitated (Gotsi & Wilson, 2001). A good reputation enables companies to

provide services/products with superior quality that add value to customers and, on the other hand, will limit the company's future performance uncertainty (Gök & Özkaya, 2011). That makes firms achieve competitive advantages (Almeida & Coelho, 2019).

Firms can have more than one reputation, according to each group of stakeholders' perspective, and based on the industry. So, Walsh and Beatty (2007) and Walsh et al. (2009) relied on the customer group from all stakeholders' groups as the customer is the associated one with reputation, particularly in the service industry, where the service customer is the centre of attention.

1.7 Research Objective

The research generally aims to investigate the effect of the airline's quality of service on its reputation by attempting to:

- Determine the effect of the airline's tangible services on customer-based reputation.
- Investigate the effect of an airline's Reliable services on customer-based reputation.
- Examine the effect of the airline's assurance on CBR.
- Investigate the effect of airline responsiveness services on CBR.
- Investigate the effect of airline empathy on CBR.

2. Literature Review

2.1 Customer-Based Reputation

Reputation is the sum of beliefs and attributes held by others, or evaluations towards reputation (Dowling, 2016). The study adopted (Walsh & Beatty, 2007, p.129; Walsh et al., 2009, p.191) definition is "Customer-based reputation is the customer's overall evaluation of a firm based on his or her reactions to the firm's goods, service, communication activities, interactions with the firm and/or its representatives (employees, management) and/or known corporate activities". Customer-Based Reputation (CBR) is measured throughout five dimensions, namely: customer orientation (CO), good employer (GE), products, reliable and financially strong company (RFS), as well as social and environmental responsibility (CSR).

2.1.1 Customer Orientation

Customer Orientation (CO) is the degree to which the company and employees interact towards fulfilling customers' needs, from the customer's perception. Chen & Peng (2021) highlighted that service provider engagement is very important, where front-line employees can find effective solutions for customers' problems. These positive interaction between the service provider and the customers establishes a long-term relationship that, in turn, enhances business performance (Kasemsap, 2017). Brown et al. (2002) definition is adopted, where customer orientation is the customer perception of how employees are willing to fulfil customer needs (

2.1.2 Good Employer

The frontline staff of the service corporation are assessed as the corporation's representatives (Mohammadi et al., 2023), where the presence and competence of ground staff during check-in, and the role of cabin crew during boarding and all over the flight make the passengers comfortable, which in turn enhances the flight experience. (Vink et al., 2012). The study adopted Walsh et al. (2009a) definition, where a good employer is

one who the company treats their employees fairly and pays attention to their interests. From the customer side, they expect that the company will have competent employees.

2.1.3 Reliable and Financially Strong Company

It is based on firm performance and profitability, as well as the customers' perceptions of the company's competence and financial position. Reber et al. (2022) suggested that a good reputation reduces uncertainty and risk, in which high-quality financial reports and fewer violations of accounting standards are found (Cao Y et al, 2012). So, reliable and financially strong company dimension can be defined, the customers' perception of the company in terms of competence, solidity, and profitability (Walsh & Beatty, 2007).

2.1.4 Social and Environmental Responsibility

Social and environmental responsibility (CSR) refers to corporations' actions and responsibilities towards society and the environment. A corporation that scores high in Citizenship spends more on social and ecological efforts and takes an active stand to make the world a better place. Bucaro et al (2020) found that stakeholders have become more involved in CSR than before, and Charity is a socially responsive action that reveals CSR awareness. (Gardberg et al, 2019). The social and environmental responsibility dimension can be defined as capturing customers' beliefs that the company plays a positive role in society and the environment in general.

2.2 Perceived Service Quality

Osarenkhoe et al. (2017) addressed that service quality is difficult to define, but it is the result of customer perceptions compared to their expectations for the quality of the services, while Ramya et al. (2019) relied on customer retention as a preferable measure of service quality. Parasuraman et al. (1985) defined service quality as delivering customers with premium services relative to their expectations. SQ is essential for airlines since it sets them apart by the level of service they offer. It is operationalised as "Service quality is a focused evaluation that reflects the customer's perception of specific dimensions of service, namely reliability, responsiveness, assurance, empathy, tangibles" (Zeithaml & Bitner, 2003, p. 85).

ServQual Measurement

SERVQUAL is a widely used measurement tool utilised across various industries to assess service quality. Created by Parasuraman et al. in 1985, it included seven determinants of service quality. However, it was later refined to focus on five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy, as outlined by Zeithaml et al. in 1990. Previous research on airline service quality has utilised the SERVQUAL framework, applying its five dimensions and a 22-item scale (Pakdil & Aydan, 2007; Gilbert & Wong, 2003; Park et al, 2004).

2.2.1 Perceived Airline Tangible Services

Ramya et al. (2019) addressed that tangibility encompasses all tangible elements, such as equipment and staff. Companies should recognise the importance of these physical factors and invest significantly to align with customer perceptions, as these elements provide insight into the corporation and contribute to its overall image (p.40). In the airline sector, tangible aspects include in-flight entertainment, lounges, check-in services, aircraft cleanliness, and food and beverage offerings during flights (Al Awadh, 2023). This research adopts Zeithaml et al. (1990) tangible definition, which includes the form of physical facilities, the appearance of personnel, the equipment used, technology and communication materials.

2.2.2 Perceived Airline Reliability Service

Reliability is important as customer requires firms to keep promises for the quality of services, delivery, and solving problems, so companies can meet customers' expectations. For the airline sector and in-flight services, reliability includes accurate service delivery, flights on time, procedures and policies, dealing with complaints, and keeping the passengers informed (Al Awadh, 2023), and baggage handling (Rezaei et al., 2018). Reliability is operationalised as the company's ability to consistently deliver convenient services with a full response (Muzinda, 2021, p. 23).

2.2.3 Perceived Airline Assurance

Assurance refers to the capability of employees to instil trust in customers. This aspect is particularly crucial in industries that prioritise safety and security, such as banking and air travel, where customers may feel apprehensive about service outcomes. Consequently, businesses strive to cultivate trust with their customers. In the airline industry, the emphasis on security and safety significantly enhances the overall customer experience, contributing to a sense of safety and reassurance (Haeruddin et al., 2022). Moreover, employees' expertise regarding the products plays a key role in establishing customer trust (Maria et al., 2020). The study adopts the assurance definition provided by Wu & Gao (2019), which encompasses "knowledge of the right product, politeness of employees in providing services, skills in providing information, ability to provide security, and ability to instil trust and confidence in guests."

2.2.4 Perceived Airline Responsiveness

In the airline sector, responsiveness is a crucial aspect of service quality, reflecting how well service employees respond to passenger needs and problems. Suresh et al. (2017) underscore its impact on overall customer satisfaction and perception of service quality, the employees' ability to resolve issues, the speed at which they respond to inquiries, and their efforts to keep passengers informed about any changes or updates. This research utilises the definition of responsiveness by Zeithaml et al. (1990), which describes a company's readiness to assist and promptly meet customers' requests while providing high-quality services.

2.2.5 Perceived Airline Empathy Services

The concept encompasses the personal attitudes of service providers or employees towards customers to meet their needs. It reflects the care and consideration that the service provider shows in addressing customer requirements (Zeithaml et al., 1990). Empathy is interpreted as the delivery of tailored services to individuals who require special consideration (Al Awadh, 2023). This study follows the definition provided by El-Adly (2019), which highlights the attitudes of both companies and employees towards customers, including those with special needs who require customised services.

3. Relation between Variables

3.1 *Perceived Airline Tangible Services (TN) and CBR*

Basfirinci and Mitra (2015) found that tangible services are the basic concerns of passengers; they include clean, comfortable seats, besides the check-in process, which refers to airline tangibility. This makes passengers comfortable and satisfied (Truitt & Haynes, 1994). In this context, AI Awadh (2023) stated the importance of providing good food and offering comfortable seats, which enhances customers' perception of the airline

services (Chen, 2016). An and Noh (2009) conducted a study on the quality of meal service within the flight and mentioned that the good selection of the passenger's menus and the interactive encounters with them impact overall passenger service quality perceptions and airline image; both airline service quality and corporate image impact on corporate reputation (Song et al., 2019). From the previous discussion, the research proposed hypothesis 1:

H1 *Perceived airline tangible services have a positive effect on customer-based reputation.*

3.2 *Perceived Airline Reliable Services (RB) and CBR*

Herbig and Milewicz (1993) noted that when corporations fulfil their promises to customers, it enhances their reputation, whereas failing to meet expectations can harm it. Song et al. (2019) emphasised reliability as a key dimension in SERVQUAL, supporting Aydin and Yildirim (2012), who highlighted that airlines like Taiwan and Malaysia Airlines achieve success by meeting high-quality service standards. Kim et al. (2011) added that reliability is crucial for building corporate image and distinguishing full-service carriers from low-cost ones. The competence of ground and cabin staff enhances passenger comfort and overall flight experience (Vink et al., 2012), as availability aligns with Gountas et al. (2007) in stating that frontline staff significantly impact passenger satisfaction.

A study by Basfirinci and Mitra (2015) on American and European airlines using ServQual found that reliability is the key aspect of airline service quality. Timely services and reliable flight schedules enhance passenger satisfaction (Chen et al., 2019; Wu, 2005), while delays negatively impact their experience and intention to repurchase (Walsh et al., 2009a; Walsh et al., 2009b). Thus, schedule reliability boosts brand reputation (Chen, 2016). So, hypothesis 2 proposed:

H2 *Perceived airline reliable services have a positive effect on customer-based reputation.*

3.3 *Perceived Airline Assurance (AS) and CBR*

Assurance refers to employees' skills and ability to build relationships with passengers based on trust and confidence by providing reliable services and high standards of safety (Hussain et al., 2015). Moreover, Chen (2016) mentioned that airlines improve their quality of service by providing passengers with safety and security, which keeps them comfortable and enhances their service experiences; this action results in brand reputation. Gilbert and Wong (2003) found that passengers rank the assurance dimension as the most important ServQual dimension, where an employee's knowledge and politeness transmit confidence and earn passengers' trust (Buttle, 1996). On the other hand, delivering quality services impacts customer satisfaction and trust (Kao & Lin, 2016), where customer satisfaction and trust drive customers' assessment of the airline's reputation (Song et al., 2019). From the previous discussion, the study can propose hypothesis 3:

H3 *Perceived airline assurance has a positive effect on customer-based reputation.*

3.4 Perceived Airline Responsiveness (RS) and CBR

Wu et al. (2018) identified a strong link between service quality and skilled frontline employees, enhancing customer perceptions. Competent flight crews effectively address passengers' needs (Nikbin et al., 2019), so it's crucial for cabin crew to be knowledgeable to ensure passenger satisfaction and loyalty (Amir et al., 2019). Furthermore, passengers consistently evaluate the performance of ground and flight staff, appreciating crews with expertise and positive behavior.

Responsiveness requires employees to address customer needs and complaints promptly. In airlines, this enhances the customer experience and shows concern for all interaction points (Şahin et al., 2017). It is vital for service quality, influencing customer repurchase intentions (Chen et al., 2019) and shaping perceptions that impact market positioning and reputation (Gursoy et al., 2005). Based on this discussion, the research proposes the following hypothesis 4:

H4 *Perceived airline responsiveness has a positive effect on customer-based reputation.*

3.5 Perceived Airline Empathy Services (EM) and CBR

Mohammadi et al. (2023) emphasise the importance of addressing passengers' special food requests, including medical, religious, and lifestyle needs, as these impact satisfaction and repurchase intentions. The study highlights that passengers value factors like staff empathy, noting that crew expressions and smiles can significantly influence overall service perception. This aligns with Chen and Chang (2005), which states that satisfied passengers tend to rate the flight crew's appearance highly.

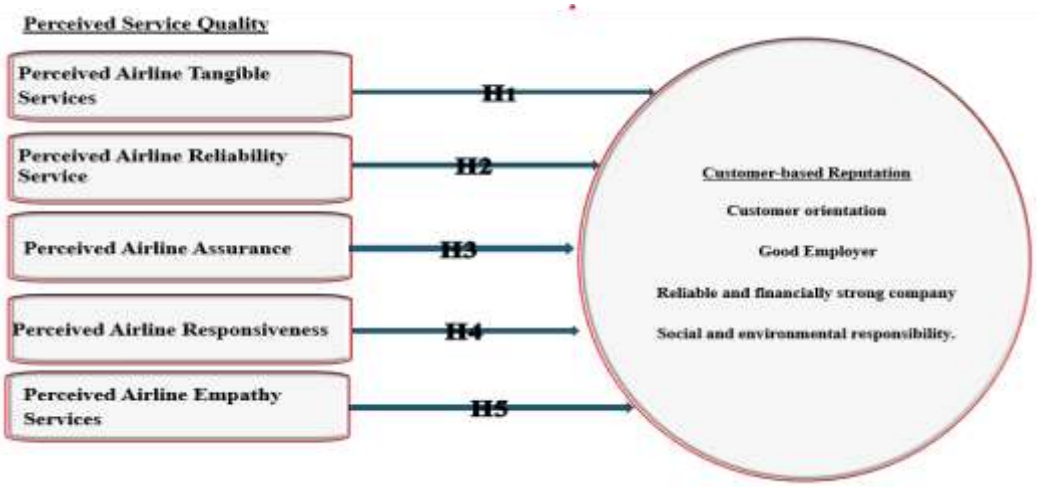
The numbers of individuals over sixty with reduced mobility and the demand for special assistance have increased (Major & Hubbard, 2019). Complaints from passengers with disabilities have risen more than those from other passengers. Airlines need to understand and cater to these special needs to enhance passenger satisfaction and loyalty (Chen et al., 2019). These factors contribute to the airline's reputation (Money et al., 2017; Hussain et al., 2015; Bartikowsk et al., 2011). Based on this, the study proposes hypothesis 5:

H5 *Perceived airline empathy has a positive effect on customer-based reputation.*

4. Research Framework

The research proposed a conceptual framework (see Figure 4.1) to investigate the effect of the independent variable, the perceived service quality, on the dependent variable, customer-based reputation. ServQual is utilised as a multidimensional measurement to measure PSQ, represented in five dimensions (tangible, reliability, assurance, responsiveness and empathy); however, CBR is operationalised as a unidimensional variable.

Figure 4.1 *Research Conceptual Framework*



Developed by the Researcher

5. Research Design and Strategy

5.1 Research Design

The research utilised a positivist philosophy (paradigm). It operates on the assumption that a customer-based reputation is influenced by the quality of service as perceived by customers. Consequently, the study aims to determine if there is a significant positive impact or not. The deductive approach was chosen as it is heavily based on existing scholarly literature and aims to contribute to advancements in airline service quality research. The research starts with a specific hypothesis about the relationship between service quality and customer-based reputation. Then, it tests this hypothesis through empirical data collected to confirm or refute it.

5.2 Research Strategy

5.2.1 Research Methodology

The research followed the quantitative approach to minimise researcher bias and enhance the reliability of findings, and on the other hand, to emphasise numerical data and statistical analysis. (Ghanad, 2023). So, the relationship between the variables can be tested.

5.2.2 Data Collection

The study employed a questionnaire that included a series of closed-ended questions aimed at collecting information from participants and obtaining their responses based on the inquiries presented. The questionnaire was sent to participants via online links through emails and social media platforms such as WhatsApp and LinkedIn, it consists of two parts, part one is designed to consider the significance of the passengers' attributes on the outcomes of the study through a set of demographic questions related to passenger's age, education, occupation, flying frequencies, flight class, number of flights and purpose of flying, and the second part to measure the latent variable perceived service quality (PSQ) and the customer-based reputation. The study used the Five-point Likert-type scales to measure the variables with anchors ranging from (1- Strongly disagree) to (2- Strongly agree) as shown below:

1-Strongly Disagree	2-Disagree	3-Neutral	4-Agree	5-Strongly Agree

PSQ was measured by ServQual comprises five dimensions, namely, tangible, reliability, assurance, responsiveness and empathy. It is measured by a 23-item scale adopted from Basfirinci and Mitra (2015) and Hussain et al. (2015), while CBR was measured as a unidimensional variable by 13 questions, which covered the four dimensions, namely: customer orientation, good employer, reliable, financially strong company and social and environmental responsibility, the products/services dimension was excluded to avoid overlapping between variables. (see Table 1)

Table 1: *Dimensions Mapping*

Variable	Dimensions/ Reference	Code
Perceived Service Quality (INP)	Perceived Tangible Services (Hussain et al, 2015)	TNQ1 to TNQ5
	Perceived Services' Reliability (Hussain et al, 2015)	RBQ6 to RBQ9
	Perceived Assurance's Services (Basfirinci and Mitra, 2015)	ASQ10 to ASQ13
	Perceived Service's Responsiveness (Hussain et al, 2015)	RSQ14 to RSQ19
	Perceived Airline Empathy (Basfirinci and Mitra, 2015)	EMQ20 to EMQ23
Customer-Based Reputation (DV)	Customer-orientation, Good Employer, Reliable and financially strong company, Social and environmental responsibility. (Walsh et al, 2009a)	CBRQ24 to CBRQ36

5.2.3 Population and Sampling

The research target population includes passengers who fly on the EgyptAir airline's international fleet; however, the sample unit was the passengers who travelled on EgyptAir international flights at least once from July 2023 to June 2024, to ensure the accuracy of the perceived service quality and avoid any unconventional emergency errors. The research used a non-probability sampling technique, and a convenience sample was selected to conduct the study. A total of 1062 online questionnaires were distributed, and a total of 584 participants responded to the survey, while only 369 surveys were valid according to the determinants of the demographic questions. Most of the invalid surveys referred to respondents who did not fly during the specified period or used other airlines.

6. Data Analysis

6.1 Demographic Analysis

The statistical analysis of the sample demographics attributes in Table 2 represented the following:

a) Sample Age: shows that 6.5% of the sample is under 25, 32.2% are between 25 and 39, 45.5% are between 40 to 55, and 15.7% are over 55.
b) Travel Times: Between July 2023 and June 2024, 37.1% travelled once, 38.5% travelled twice, and 24.4% travelled more than twice.
c) Sample Education: it is noticed that the sample with high school education was 12.8% of the total sample, the sample with a bachelor's degree was 55.3% and the postgraduate (Master/Doctoral) was 31.9% of the sample.
d) Sample Occupation: An average of 36.4% of the study sample worked in the private sector, 19% belonged to the government, 18.5% not working, 15.5% had their own business, and 9.8% retired.
e) Frequent Flyer Member: The frequent flyer members in Figu were 26% of the valid sample, and the non-frequent flyer program members were 74% of the sample.

Table 2: Sample Demographics Attributes Analysis

Attributes	Description	No of Respondents	Percent
Age	Less than 25	24	6.5
	25 less than 40	119	32.2
	40 less than 55	168	42.5
	Over 60	58	15.7
Education	High School or less	47	12.7
	Bachelor's Degree	203	55
	Postgraduate	117	31.7
Occupation	Not working	68	18.4
	Government officer	70	19
	Business Owner	57	15.4
	Private sector	134	36.3
	Retired	36	9.8
Travel Purpose	Vacations	180	48.8
	Pilgrimage/Umrah	13	3.5
	Medical	18	4.9
	Education	30	8.1
	Business	128	34.7
Travel Times on EgyptAir during the period from July 2023 to June 2024?	One time	137	37.1
	Two times	142	38.5
	More than two times	90	24.4
What was the duration of your last flight?	Less than 3 hours	107	29
	3 to 6 hours	176	47.7
	More than 6 hours	86	23.3
Frequent Flyer Program Member	Yes	96	26
	No	273	74
Flight Class	Business class	71	19.2
	Economy class	298	80.8

f) Travel Purpose demonstrates that passengers who travelled on vacation were 48.8% of the total sample, 4.9% travelled for medical purposes, 8.1% for education and 34.7% for business purposes.
g) Frequent Flyer Member: The frequent flyer members in Figure 4.5 were 26% of the valid sample, and the non-frequent flyer program members were 74% of the sample

6.2 Descriptive statistics

The statistics include the arithmetic Mean, which reflects average opinions, and Standard Deviation, indicating data dispersion. A low SD suggests opinions are clustered around the mean, while a high SD indicates more variability. Table 3 presents descriptive statistics of the study variables, highlighting respondents' trends toward airline service quality. Overall, there were no missing values, and respondents generally agreed with most airline service quality items, with mean scores above 3 for all but three exceptions: RB3, RB4, and RS1. The Assurance, Tangibles, and Responsiveness dimensions had the highest means with low SDs, while the Reliable service dimension had the lowest Mean but remained acceptable.

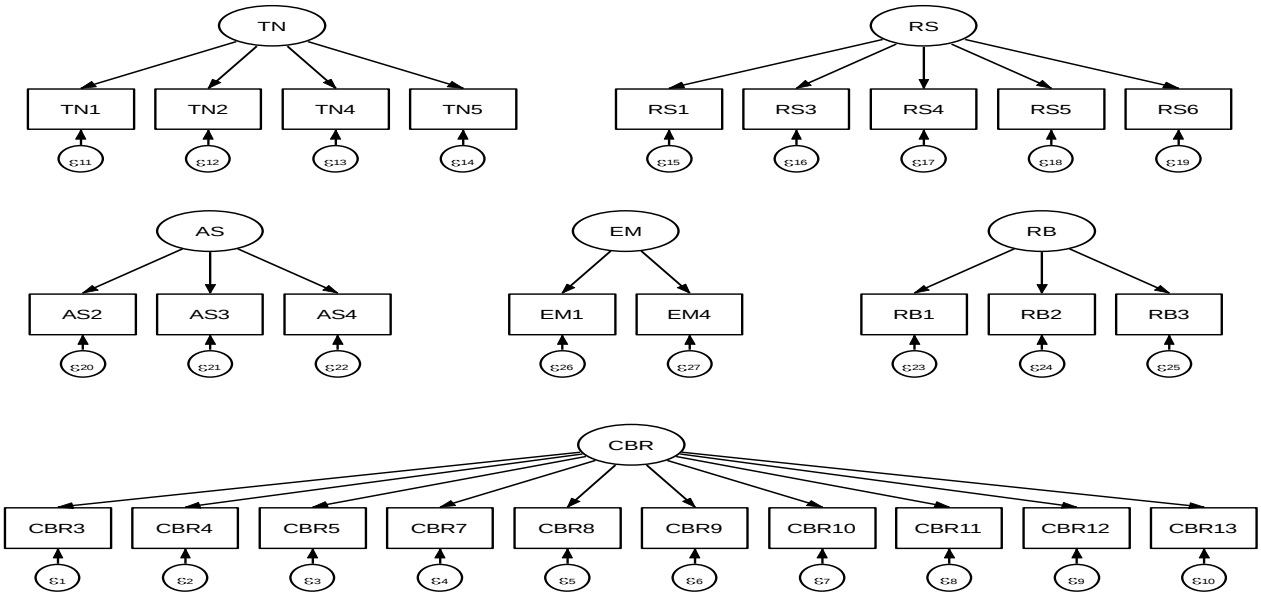
Table (3): Descriptives of the study variables

Dimensions	Valid N	Mean	SD
TN	369	3.62	0.71
RB	369	3.09	0.94
AS	369	3.69	0.65
RS	369	3.35	0.79
EM	369	3.33	0.86
CBR	369	3.20	0.82

6.3 The confirmatory factor analysis

The confirmatory factor analysis final model indicates that several items were excluded due to incompatibility or weak factor loading. For instance, the 3rd item of Perceived Tangible Services ("EgyptAir provides a variety of in-flight entertainment options") and specific items from Responsiveness, Assurance, Empathy, and Reliability were removed. Additionally, three items from customer-based reputation, including "EgyptAir employees treat customers courteously," were also excluded. Maximum likelihood estimation was used for the model.

Figure (2): The confirmatory factor analysis of service quality dimensions and customer-based reputation scales



The confirmatory factor analysis indicates that the measurement model fits the data well. The fit indices (CFI, TLI, RMSEA, SRMR) meet acceptable limits, with values over 0.90, RMSEA = 0.052, and SRMR = 0.049<0.05. The $\chi 2$ statistic is not significant ($\chi 2(299) = 594.40$, p-value < 0.0001 < 0.05). This could be attributed to the fact that the $\chi 2$ test can be less reliable with large sample sizes. However, the value of $\chi 2$ divided by its degrees of freedom is less than 3 ($\frac{\chi^2}{df} = 2 < 3$), which indicates the acceptable fit of the model. (Table 4)

Table (4): Goodness of fit indices of the measurement model

Goodness of fit index	Value
$\chi^2_{(299)}$	**594.40**
p-value	**< 0.0001**
χ^2/df	**2.0**
Root Mean Squared Error of Approximation (RMSEA)	**0.052**
Standardised Root Mean Squared Residual (SRMR)	**0.049**
Comparative fit index (CFI)	**0.926**
Tucker-Lewis index (TLI)	**0.913**

6.4 Reliability and validity tests

Reliability pertains to the degree to which a set of questionnaire items remains consistent and free from contradictions. Cronbach's alpha is used to test the reliability of the list of questionnaire items; however, the validity of the items indicates that the questions in the questionnaire effectively reflect the population under investigation. Table 5 shows that all Cronbach's alphas meet the acceptable threshold of 0.7, except for Perceived Airline Empathy (0.58) and Perceived Assurance and Perceived Tangible Services (0.61 and 0.68). However, the values of Cronbach's alpha greater than 0.6 are still acceptable. It is calculated through the following equation:

$$Alpha = \frac{n}{n-1}\left(1 - \frac{\sum_{i=1}^{n} V_i}{V_t}\right)$$

This suggests that the questionnaire items are generally stable and effectively measure the intended variables, indicating they represent the study population well. Thus, the data can be trusted for subsequent statistical analyses.

Table (5): The results of the reliability and validity tests of scale items

Dimensions	Number of items	Reliability Coef.	Validity Coef.
Perceived Tangible Services (TN)	4	**0.68**	0.82
Perceived Services' Reliability (RB)	3	0.74	0.86
Perceived Assurance's Services (AS)	3	**0.61**	0.78
Perceived Service's Responsiveness (RS)	5	0.78	0.88
Perceived Airline Empathy (EM)	2	**0.58**	0.76
Customer-Based Reputation (CBR)	10	0.91	0.95

6.5 Testing the hypotheses of the study

The correlation coefficient matrix reveals a strong positive relationship (greater than 0.8) between CBR and each dimension of the airline PSQ. This strong correlation also exists among the dimensions of PSQ, indicating potential multicollinearity issues in a structural equation model. Therefore, the impact of each dimension on CBR will be tested individually.

Table (6): The correlation matrix of study latent variables

Scales	CBR	TN	RB	AS	RS	EM
Customer-Based Reputation (CBR)	1.00					
Perceived Tangible Services (TN)	0.85	1.00				
Perceived Services' Reliability (RB)	0.88	0.86	1.00			
Perceived Assurance's Services (AS)	0.89	0.92	0.91	1.00		
Perceived Service's Responsiveness (RS)	0.95	0.91	0.96	0.93	1.00	
Perceived Airline Empathy (EM)	0.95	0.94	0.93	0.96	0.98	1.00

H1 Perceived Tangible Services (TN) have a positive effect on CBR. The structural model in Table 7 represented a good fit (CFI=0.94, TLI=0.93, RMSEA=0.05, SRMR=0.05). Furthermore, the analysis in Table 7 confirms a significant effect of TN on CBR (β=0.34, p-value < 0.0001), indicating that a 1-unit change in TN results in a 0.34-unit change in CBR, supporting hypothesis (1).

H2 Perceived Reliable Services (RB) have a positive effect on CBR. The structural model in Table 7 shows a good fit, with key indices falling within acceptance limits: CFI = 0.94, TLI = 0.92, RMSEA = 0.064, and SRMR = 0.057. The χ^2 to degrees of freedom ratio is less than 3, indicating model goodness of fit. Table 8 presents unstandardized coefficients and z-test results for the effect of RB on CBR, revealing a significant effect at the 5% level (β = 0.33, p < 0.0001). This indicates that a 1-unit change in RB leads to, on average, a 0.33-unit change in CBR, thus confirming hypothesis (2).

H3 Perceived Airline Assurance (AS) has a positive effect on CBR. The Pearson correlation coefficient indicated a highly correlated coefficient of 0.89; the goodness-of-fit indices for the structural model, shown in Table 7, demonstrate a good fit, with a CFI of 0.94, TLI of 0.93, RMSEA of 0.058, and SRMR of 0.058—all within acceptable limits. Table 8 presents the standardised coefficients and z-test results for the effect of AS ON CBR. The analysis reveals a statistically significant effect on the 5% level (β=1.47, p-value < 0.0001), suggesting a 1 unit increase in AS corresponds to a 1.47 unit increase in CBR, confirming hypothesis (3).

H4 Perceived Airline Responsiveness (RS) has a positive effect on CBR. The goodness-of-fit indices in Table 7 show a good model fit: CFI = 0.93, TLI = 0.91, RMSEA = 0.06, and SRMR = 0.06, all within acceptable limits and minimally affected by sample size. The $\chi 2$ to degrees of freedom ratio is below 3, validating the model. There is a significant effect of RS on CBR at the 5% level (β=0.35, p < 0.0001), indicating that a 1-unit change in RS leads to a 0.35-unit change in CBR, confirming hypothesis (4).

H5 Perceived Airline Empathy (EM) has a positive effect on CBR. Although the correlation coefficient is high at 0.95, the model fails to converge, indicating that it does not support the hypothesis suggesting a positive impact on CBR. In other words, the hypothesis H5 regarding empathy does not have a positive effect on customer-based reputation.

Table (7): Goodness of fit indices of the SEM model of Perceived Service Quality and CBR Scales

	$\chi^2_{(120)}$	p-value	χ^2/df	Root Mean Squared Error of App. (RMSEA)	Standardised Root Mean Squared Residual (SRMR)	Comparative fit index (CFI)	Tucker-Lewis index (TLI)
TN	255.25	<0.0001	2.13	0.05	0.05	0.94	0.93
RB	259.026	<0.0001	2.49	0.064	0.057	0.94	0.92
AS	229.31	<0.0001	2.23	0.058	0.058	0.94	0.93
RS	327.97	<0.0001	2.41	0.062	0.063	0.93	0.91
EM	_	_	_	_	_	_	_

Table (8): Summary of the SEM model of customer-based reputation and Perceived Service Quality

Variable	Coef.	Standard error	z	p-value	Acceptance
Perceived Tangible Services (TN)	0. 34	0.06	5.65	<0.0001	Accepted
Perceived Services' Reliability (RB)	0.33	0.06	5.79	< 0.0001	Accepted
Perceived airline assurance (AS)	1.47	0.33	4.45	< 0.0001	Accepted
Perceived airline responsiveness (RS)	0.35	0.06	5.47	<0.0001	Accepted
Perceived airline Empathy (EM)	_	_	_	_	Rejected

7. Discussion

The Demographic Attributes analysis revealed that most respondents (79%) are Egyptian, with a highly educated sample where 87.2% hold bachelor's or postgraduate degrees. The majority of respondents, averaging 77.7%, are aged between 22 and 55 years, indicating maturity in their survey responses. Additionally, 80.8% of the sample reported flying in economy class, with 71% having taken flights longer than three hours.

The descriptive statistics revealed that respondents generally agreed with the five dimensions of service quality, with all variables having an Arithmetic Mean above 3 and low standard deviations. Assurance, tangibles, and responsiveness had the highest means at 3.69, 3.62, and 3.35, while empathy and reliability were around 3.33 and 3.09. However, three items showed lower means: RB3 (2.57) for timely flights, RB4 (2.92) for handling lost baggage and RS1 (2.94) for keeping passengers informed. These low means indicate important trends in passenger dissatisfaction. For RB3, 54% of respondents expressed dissatisfaction, and for RB4, 55% remained neutral as they had not experienced such issues. Consequently, some items were excluded from the main analysis to maintain the validity of the findings and address key passenger concerns.

All ServQual dimension items were valid, effectively measuring the study's objectives and performing well within the population. The reliability analysis indicated stability and internal consistency in all variables except for the Empathy dimension, resulting in the rejection of that hypothesis. Cronbach's alpha values above 0.6 are generally acceptable, with values over 0.7 indicating strong reliability and over 0.8 reflecting excellent reliability (Raza et al., 2022; Parasuraman et al., 1988; Ladhari, 2009).

H3 Airline Assurance: The study findings indicate that among the SERVQUAL dimensions, Assurance ranks highest (β = 1.47; correlation coefficient = 0.89), with significant factor loadings for AS4, AS3, and AS2 at 0.62, 0.47, and 0.45, respectively. This is consistent with Gilbert and Wong (2003), who emphasised Assurance as a key priority for passengers selecting airlines, highlighting the importance of demographic factors. In this study, Assurance reflects the airline's safety and the staff's capability, with 93% of respondents feeling safe with the airline, while only 2% disagreed. This underscores the significance of safety in the airline's reputation, aligning with findings by Chien-Chang et al. (2011) and Sultan & Simpson (2000). The high ranking may also be linked to the educational level of the sample, with 83% being well-educated, as they tend to perceive air travel as safer. Egyptian travellers, comprising 80% of the sample, prioritise safety and value access to information and assistance, with average agreement ratings of 77%, 82%, and 61% on service aspects.

H4 Airline Responsiveness: is the second-highest effect affecting airline reputation, showing a significant correlation coefficient of 0.95 and β 0.35. High importance is noted in the ratings for responsiveness indicators

(RS4, RS3, RS1, RS5, RS6) with scores ranging from 0.54 to 0.77. The study highlighted that only 46% of respondents agreed that airlines keep them informed about flight changes, while 38.5% disagreed. Similarly, for RS4, 50% agreed with 31.5% disagreeing. Quick responses to delays and issues greatly influence passenger satisfaction and the airline's reputation, as emphasised in literature (Ban & Kim, 2019; Gonzalez et al., 2007; Efthymiou et al., 2018). The staff's attitudes and willingness to help are also crucial, as 89.7% of respondents felt staff were helpful, and about 79% trusted crew behaviour. Despite some studies suggesting different dimensions of service quality (Chien-Chang et al., 2011; Zeithaml et al., 1990), the consensus is that knowledgeable and responsive frontline staff is vital to enhancing service ratings and overall airline reputation.

H1 Tangible Services: The study result showed that the airline's tangible dimension ranks third, with a correlation coefficient of 0.88 and a β of 0.34. Key factors include aircraft cleanliness, employee dress, flight entertainment, luggage handling, and check-in procedures. While earlier studies (Liou et al., 2011; Chen & Chang, 2005) stated that tangible aspects are less important, they emphasise aircraft cleanliness and cabin crew professionalism. Conversely, other research (AI Awadh, 2023; Lippitt et al., 2023; Tahanisaz, 2020) indicated that factors such as cleanliness and crew appearance are vital for passenger satisfaction, influenced by respondent age and flight purpose. The study indicates that tangible services are not top priorities, yet over 77.5% of respondents valued well-dressed employees, and around 76% appreciated efficient check-in processes. This contrasts with findings that prioritise professionalism over appearance. Areas needing improvement include in-flight entertainment (61%), baggage handling (62%), and aircraft cleanliness (66%). Cleanliness, legroom, and overall design notably affect passenger recommendations, while mishandled luggage and delays harm satisfaction and reputation.

H2 Reliability Services: Reliability significantly affects reputation with a correlation coefficient of 0.82 and a β of 0.33, but is considered the least important service priority among SERVQUAL dimensions. This contrasts with Basfirinci & Mitra (2015), who viewed reliability as paramount for airlines in the USA and Europe. Other studies emphasise reliability as crucial, indicating demographic differences in evaluations. Reliability relates to the efficiency of the check-in process (RB1), which has a strong impact ($\lambda = 0.64$), yet only 60.7% of respondents expressed satisfaction, highlighting a service quality gap.

Among the reliability factors, the accuracy of airline services (RB2) is the most significant factor affecting reputation, reinforcing customer loyalty and corporate image, aligning with Song et al. (2019) and Zhu et al. (2017). On-time flight performance (RB3) revealed significant dissatisfaction, with 53.75% of passengers disagreeing that flights operated on schedule, stressing its importance for reputation and satisfaction. Finally, handling missing or delayed luggage (RB4) showed that only 22.5% felt issues were managed well, while 54% were neutral, possibly due to a lack of experience with luggage problems.

8. Research Limitations, Recommendations and Future Study

8.1 Research Limitations

The research faced several limitations, primarily a lack of studies on customer-based reputation and the direct link between perceived service quality and customer reputation. While over a thousand questionnaires were sent out, only about 600 people responded, likely due to cultural factors. Additionally, the limited time frame for collecting data restricted valid responses to 364 from 585 passengers travelling between July 1, 2023, and June 30, 2024. Since the study focused on the airline industry in Egypt, the results may not be generalizable to other regions. Future research is recommended in other countries to explore dimensional variations.

8.2 Recommendation for the Airline

The research results can help EgyptAir management prioritise improvement areas based on passenger feedback. Airline employees play a crucial role in creating a positive experience for passengers, so it's recommended that managers enhance service attitudes through modern training programs that focus on negotiation skills, positive behaviour, and leadership. Creating a positive work environment is also essential to reducing stress and increasing productivity, which ultimately leads to customer satisfaction.

Managers must maintain high standards of tangible service quality, particularly regarding cleanliness, comfortable seating, and updated technology. Furthermore, implementing a marketing strategy that highlights EgyptAir's contributions to social responsibility could improve its market position and set it apart from competitors.

8.3 Future Study Recommendation

This research utilised a convenience sample, highlighting the need for further studies with larger samples to improve generalizability. Future research should also include longitudinal studies in SERVQUAL to identify key areas and assess the impact of services on airline passengers. Moreover, many airport services, essential to the overall passenger experience but managed independently from airlines, were not evaluated. It's recommended that these services—such as buses, shops, restrooms, and restaurants—be assessed in future studies. Treating airport services as a separate variable could enhance their evaluation. For greater validity, employing a mixed-method research approach or alternative sampling methods is advisable.

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