# Structural Equation Modeling of Airlines Service Quality : A Study of Airlines Industry in India

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## Abstract

**Providing quality service is an integral part of any airline's efforts to increase profitability and cope with the growing aggressive competition that has emerged after the deregulation. To do this, the airlines must understand the requirements of their passengers and try to meet their expectations. This study tried to develop a scale consisting of the dimensions of service quality in the domestic airline industry in India, which has been experiencing a boom owing to the increasing number of passengers traveling by air. An extensive literature review was done, followed by empirical research conducted with the help of 384 questionnaires consisting of 28 items. The validity and reliability of the items were checked with KMO's Bartlett's test. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used for the study. The research established five dimensions of service quality known as EATRC (i.e., Employees, Assurance, Tangibles, Reliability, and Check-in) along with 23 sub-dimensions that depicted passengers' perception of service quality. CFA was used to confirm the overall fitness of the model and validate the hypothesized relationships.**

***Keywords :*** **dimensions, airlines industry, structural equation modeling, factors**

**JEL Classification Codes : M31, Z32, Z33**

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India's aviation industry is one of the fastest-growing sectors, and the demand for air travel has more than doubled, especially in the last seven years. As per an Indian Brand Equity Foundation (IBEF) report published in January 2021, India experienced a substantial air passenger traffic of 341.05 million in 2020 and is expected to transcend the UK and flatter the third largest aviation market by 2024. For India to fetch the number one position in the aviation industry by 2030, the airlines must strive towards continuously luring new customers and retaining the older ones by delivering quality service even beyond customers' expectations. There also has been economic prototype transference from commercial to customer value, making providing quality service an integral part of any airline's efforts to boost profitability. With the augmentation of the aviation market and technological breakthroughs, the aviation industry now faces aggressive and cut-throat competition (Spicer, 2018). In this progressively competitive local and global marketplace, delivering outstanding quality service has become an inevitable part of the marketing strategies of service-based organizations. Today, every airline strives to establish a strong brand image and alleviate passenger satisfaction and retention, ultimately leading to profitability. Due to the competition in the aviation industry, many researchers have concluded that delivering

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high-quality service is most crucial for gaining a competitive advantage and profit generation (Zeithaml et al., 1996). Grönroos (1984, 2000) elucidated the significance of service quality as an antecedent of customers' perception regarding the brand image. Rajaguru (2016) inveterated that service quality and value for money strongly impact passenger satisfaction and behavioral intention in full-service airlines.

Studies have signaled that service quality is the central factor driving the airline choice of customers. Consistent appreciative service quality aids in customer acquisition, customer retention, and loyalty (Dolnicar et al., 2011). Airlines providing outstanding service quality to travelers can gain the benefits of customer satisfaction and loyalty (Kim & Lee, 2011; Koklic et al., 2017; Leong et al., 2015). Upgrading the quality of services has become the linchpin strategy to warrant customer satisfaction, which is bracketed to customer loyalty, branding and image, positive word-of-mouth, and increasing the market share (Fida et al., 2020; Jiang & Zhang, 2016). Min and Min (2015) also accentuated that service quality is a prerequisite to procuring customer loyalty and satisfaction and escalating profits. Chen (2008), Park et al. (2004), and Park (2007) deliberated on the behavioral intentions of air travelers and contemplated the impact of service quality, switching barriers, service value, and product image on buying demeanor. Good service quality is one of the significant considerations that govern the behavioral intentions concerning a service or brand (Chen et al., 2011; Chen et al., 2019). Service quality has been embellished as a crucial value-adding/fortifying driver for achieving veritable and enduring competitive advantage in the global marketplace. Chen et al. (2008) and Ostrowski et al. (1993) elucidated that the airline industry comprises companies that offer comparable ticket prices and frequent flyer programs, making quality service an inevitable strategy to gain a competitive edge over others, which helps to unsheathe passengers from other carriers.

Nevertheless, in the present scenario, where the consumer is much more aware and enlightened, it has become challenging for the airlines to provide quality service because of the competition and cosmopolitan expectations of passengers. Customers today are particular and peculiar in their needs, and there is a tendency in them to switch to other airlines if their needs are not satisfied. Thus, it is clear that quality service plays a pivotal role in this fiercely growing and competitive airline industry. It is significant to comprehend how passengers assess the services and recognize the critical primary and ancillary dimensions to measure airline service quality.

Many academicians have unearthed the significance and varied aspects of service quality through their research, especially in the context of Western countries, but there is a dearth of research in the Indian context. This study attempts to understand the dimensions of quality service in airlines so that the Indian airline industry can work religiously towards improving those factors that will aid in achieving customer satisfaction and loyalty. The study results put forward a limpid perspective to airline service providers to recognize and understand the traveler behavior to help them build more robust market segmentation, targeting, and positioning.

## Literature Review

Service quality is a widely studied subject in various fields. Singh et al. (2017) examined the relationship between employees' job satisfaction, perceived customer satisfaction, service quality, and profitability in luxury hotels in Kuala Lumpur. Panigrahi et al. (2018) investigated the empirical relationship between service quality, trust, satisfaction, and customers' intentions to purchase life insurance products. Robledo (2001) recognized that defining and appraising service quality is crucial for the airline industry.

Nadiri and Hussain (2005) highlighted that service quality has many advantages as it alleviates customer satisfaction, revives the intention to buy again, and uplifts recommendations. There is ample evidence in both service quality and customer satisfaction literature to posit that the intention to buy again has a significant, positive, and direct relation to service quality and satisfaction level of customers from the purchases made (Singh, 1988; Smith et al., 1999; Zeithaml & Bitner, 2000). Studies by Dagger et al. (2007), Clemes et al. (2014), and

Bloemer et al. (1998) accentuated that service quality is a vigorous predictor of customer satisfaction, and only after experiencing the service and analyzing the quality level is a decision made regarding satisfaction or dissatisfaction. Repurchasing intentions and recommending a brand to others result from superior service quality.

Some studies examined the impact of service quality on customer satisfaction. Arun Kumar et al. (2010) and Suki (2014) asserted that tangibles remarkably impact customer satisfaction. Namukasa (2013) investigated the impact of airline service quality on customer satisfaction and commitment. The findings of this study revealed that the quality of pre-flight, in-flight, and post-flight services had a statistically substantial impact on passenger satisfaction. Furthermore, passenger satisfaction, as a moderating variable, had a considerable impact on passenger loyalty. It was discovered that passenger satisfaction varied from individual to individual. Some were more interested in off-board services, some in onboard facilities or food quality, while others were yearning for more extra luggage.

Parasuraman et al. (1988) contemplated 10 facets or aspects of service quality: reliability, credibility, customers' expectations, security, tangibles, sensitivity, access, courtesy, communication, and competence. Later in 1988, they reduced the dimensions to five: tangibles, responsiveness, empathy, credibility, and assurance, and deduced a widely accepted and used model known as SERVQUAL. Nadiri et al. (2008) conducted their study on national airline companies in North Cyprus, intending to reproduce the AIRQUAL model, a multiple-item scale assessing airline service quality. The study instituted that, for customer satisfaction, airlines should concentrate on aircraft appearance, technical upkeep of the aircraft, systematic cargo handling, and efficiently trained staff. The study also emphasized the significance of catering facilities and a qualified marketing workforce in delivering service quality and customer satisfaction. Andotra et al. (2008) stated that prices of tickets, in-flight services, staff attitude towards passengers, flight schedules, facilities, and the process adopted for ticketing are the critical areas in shaping service quality and have an impact on the choice of airlines by passengers. Other dimensions that are directly linked with service quality are the hygiene level of toilets in airplanes, catering and air-conditioning quality, the interior of the aircraft, and the comfortability of seats. Specific terminal tangibles like parking space, the capacity of the airport, waiting halls, steady security, and trolleys also play a crucial role in customer satisfaction.

Hung and Ching (2013) identified some important facets of service quality in airlines; for instance, the quality of interaction, which includes conduct, expertise, and problem-solving by the service provider, and the quality of the physical environment, which embodies comfort, cleanliness, various tangibles, safety and security, standard of access to the service in the form of information and convenience, and worth of outcome in terms of valence. Pappachan and Koshi (2014) used CFA with SEM applying AMOS and recuperated three dimensions of service quality in airlines: factors related to employee performance, dimensions related to flight schedules, and factors related to travel comfort, i.e., effective in-flight services. Suki (2014), in his research on airlines in Malaysia, deployed SEM and recouped the attributes significant in airlines service quality as on-time departures and arrivals, appropriate transport facility between city and airport, effective luggage handling, trained personnel for emergency handling, friendly cabin crew, and quality in-flight meals. The study also revealed that terminal tangibles did not significantly affect customer satisfaction but empathy.

In their research, Min and Min (2015) addressed passenger service concerns, highlighted prospects for continuous service improvement, and proposed service benchmarking standards that can be used to measure an airline's performance. According to statistics and findings, “air safety” was the most crucial service attribute for airline customers' perceptions of service excellence. The authors also discovered that proper “baggage handling,” “reasonable pricing,” and “on-time arrival/departure” were the most significant service features, with “frequent flyer” and “code-sharing programs” coming in last. Furthermore, “airline branding” can help create positive perceptions of service quality and, as a result, attract more consumers in the future. Brochado et al. (2019) conducted a content analysis of 1,200 online reviews by airline travelers. Significant elements in the reviews were

airplane tangibles, inflight services, employees (crew and ground), entertainment, airport operations, and ticket classes.

The Indian airline industry has attracted more passengers than before in the last few years and is further expected to grow aggressively. However, dimensions of service quality associated with airlines operating in India have not been fully traversed. This study sought to bridge this gap by analyzing the service quality dimensions of India's airline market. Park et al. (2020) sought to link airline service quality and overall satisfaction. According to the findings of this study, the quality of certain service features, such as "cleanliness," "food and beverages," and "in-flight entertainment," had an impact on the positive ratings as a satisfier. Other aspects of airline service, such as "customer service," "check-in," and "boarding," had an impact on negative rating deviations. Apart from airline qualities, various features and types of airline merchandise were also evaluated to help better comprehend such linkages.

## Research Gap and Objective of the Study

SEM has been used by various authors globally for different objectives. Shimpi (2016) applied it to examine consumer behavior for men's cosmetics purchases in the Pune region. Gupta et al. (2012) used this technique to investigate the impact of integrated marketing communication in building brand equity in the life insurance industry. Using SEM, Kazi et al. (2018) studied the relationship between perceived morality in ads and behavioral intentions. Kao et al. (2009) predicted cabin safety outcomes among Taiwanese airlines. Eboli and Mozulla (2012) worked on rail operators in Northern Italy to determine the relationship between service quality attributes and global customer satisfaction. Pappachan and Koshi (2014) scrutinized airlines' service quality dimensions in the Indian aviation industry. Sukhi (2014) also employed SEM to examine the effect of airline service quality on levels of customer satisfaction in Malaysia. SEM has been used to estimate airline companies' financial and non-financial performance (Jenatabadi & Ismail, 2014). Singh et al. (2021) employed SEM to identify the factors that influence the sustainable competitive advantages of Indian low-cost carriers. Most studies corresponding to SEM and service quality have been conducted with a global perspective and endeavored to find relationships. However, limited research has been administered to explore the attributes the Indian aviation industry can use to measure service quality.

This specific research gap motivated us to augment further India's airline industry, which is already experiencing a significant increase in air passenger traffic. The investigation aims to use SEM to identify airline service quality as a crucial dimension/factor in the Indian domestic aviation sector.

## Research Methodology

### *Development of Questionnaire*

The study is empirical and exploratory. With the help of a literature review, a questionnaire was developed with 28 statements (Table 1), all for measuring service quality perceptions on a 5-point Likert-type scale, in which 5 was rated as *very good* and 1 as *very bad*. To validate the questionnaire format, it was mailed to 15 academicians for their views and comments. Based on their feedback, some minor changes were made to the structure and the order of the questions.

### *Sample Design and Data Collection*

The primary aim of the present investigation was to determine the crucial elements of airline service quality in the

**Table 1.** ***Service Quality Dimensions of Airlines***

| Variable Code | Service Quality Dimensions of Airlines | Author(s) |
|---|---|---|
| *SQ 01* | Convenient flight schedules | Kazançoğlu (2013) ; Kim (2013) ; Wu & Cheng (2013) |
| *SQ 02* | On-time arrival of flights | Chiou & Chen (2012) ; Curry & Gao (2012) ; Huang (2010) ; Kazançoğlu (2013) ; Kim (2013) ; Nadiri et al. (2008) ; Rajaguru (2016) ; Suki (2014) ; Wu & Cheng (2013) ; Gupta (2018) ; Osaki & Kubota (2016) |
| *SQ 03* | On-time departure of flights | Chiou & Chen (2012) ; Curry & Gao (2012) ; Huang (2010) ; Kazançoğlu (2013) ; Kim (2013) ; Nadiri et al. (2008) ; Rajaguru (2016) ; Suki (2014) ; Wu & Cheng (2013) ; Gupta (2018) ; Osaki & Kubota (2016) |
| *SQ 04* | Uniform and appearance of employees | Etemad-Sajadi et al. (2016) ; Gupta (2018); Kazançoğlu (2013) ; Rajaguru (2016) ; Wu & Cheng (2013) |
| *SQ 05* | Availability of the option to contact the staff | Rajaguru (2016) ; Wu & Cheng (2013) |
| *SQ 06* | The language used by the staff (whether it is easily understood by passengers) | Huang (2010) ; Pitchayadejanant & Nakpathom (2016) |
| *SQ 07* | The staff's willingness to help the passengers | Huang (2010) ; Kim (2013) ; Pitchayadejanant & Nakpathom (2016) ; Wu & Cheng (2013) |
| *SQ 08* | Knowledge of airlines' staff in responding to passengers' questions (whether adequate or not) | Etemad-Sajadi et al. (2016) ; Nadiri et al. (2008) ; Pitchayadejanant & Nakpathom (2016) ; Rajaguru (2016) ; Wu & Cheng (2013) |
| *SQ 09* | Offering services right at the very first time | Rajaguru (2016) |
| *SQ 10* | Polite and courteous behavior of the staff | Curry & Gao (2012) ; Kim (2013) ; Rajaguru (2016) ; Wu & Cheng (2013) ; Kim & Lee (2011) |
| *SQ 11* | The staff's understanding of the specific needs of passengers | Kim (2013) ; Pitchayadejanant & Nakpathom (2016) ; Rajaguru (2016) ; Wu & Cheng (2013) |
| *SQ 12* | Employees' willingness to provide individual attention to the passengers | Huang (2010) ; Kazançoğlu (2013) ; Kim (2013) ; Pitchayadejanant & Nakpathom (2016) ; Rajaguru (2016) ; Wu & Cheng (2013) |
| *SQ 13* | Quick services provided to passengers by the staff | Curry & Gao (2012) ; Kim (2013) ; Pitchayadejanant & Nakpathom (2016) ; Rajaguru (2016) |
| *SQ 14* | Provision of seats as per the choice of passengers | Etemad-Sajadi et al. (2016) ; Gupta (2018) ; Wu & Cheng (2013) |
| *SQ 15* | Waiting time at check-in counters | Chiou & Chen (2012) ; Etemad-Sajadi et al. (2016) ; Huang (2010) ; Wu & Cheng (2013) |
| *SQ 16* | Waiting time at the boarding gate | Wu & Cheng (2013) |
| *SQ 17* | Special services for patients and disabled passengers | Gupta (2018) |
| *SQ 18* | Modern appearance of the aircraft | Huang (2010) ; Nadiri et al. (2008) ; Pitchayadejanant & Nakpathom (2016) ; Rajaguru (2016) ; Suki (2014) ; Wu & Cheng (2013) |
| *SQ 19* | Cleanliness of the aircraft | Chiou & Chen (2012) ; Etemad-Sajadi et al. (2016) ; Kim (2013) ; Nadiri et al. (2008) ; Pitchayadejanant & Nakpathom (2016) ; Suki (2014) ; Wu & Cheng (2013) |
| *SQ 20* | Cleanliness and comfort of the seats during the flight | Chiou & Chen (2012) ; Gupta (2018) ; Huang (2010) ; Kazançoğlu (2013) ; Kim (2013) ; Nadiri et al. (2008) ; Pitchayadejanant & Nakpathom (2016) ; Suki (2014) ; Wu & Cheng (2013) |
| *SQ 21* | Comfortable air conditioning within the aircraft | Nadiri et al. (2008) ; Pitchayadejanant & Nakpathom (2016) ; Wu & Cheng (2013) |

| | | |
|---|---|---|
| *SQ 22* | On-board entertainment facility | Kim (2013) ; Wu & Cheng (2013) ; Gupta (2018) ; Huang (2010) |
| *SQ 23* | Clean lavatory (toilets) in the aircrafts | Suki (2014); Wu & Cheng (2013) ; Nadiri et al. (2008) |
| *SQ 24* | Quality of food served during the flights | Chiou & Chen (2012) ; Gupta (2018) ; Huang (2010) ; Kazançoğlu (2013) ; Kim (2013) ; Nadiri et al. (2008) ; Wu & Cheng (2013) |
| *SQ 25* | Handling of baggage at the time of check-in | Gupta (2018) ; Kazançoğlu (2013) ; Wu & Cheng (2013) |
| *SQ 26* | Delivery of baggage | Chiou & Chen (2012) ; Curry & Gao (2012) |
| *SQ 27* | Ticket prices charged by the airlines as compared to their competitors | Chiou & Chen (2012) ; Etemad-Sajadi et al. (2016); Gupta (2018) ; Rajaguru (2016) |
| *SQ 28* | Safety provided by the airlines while traveling | Huang (2010) |

Indian domestic sector. To accomplish this purpose, passengers who had used the services of any domestic airline in the previous year became the target population for the research work. The data were collected in the arrival area of Indira Gandhi International Airport, New Delhi, through face-to-face interaction from November 2019 to February 2020. Convenience sampling was used to collect the data. Individual passengers were approached, and data were collected only from the passengers willing to fill out the survey form.

## Data Analysis and Results

Two statistical techniques—EFA and CFA—are used to achieve the research objective. For applying EFA, SPSS 20.0 version was used, while AMOS 20.0 version was used for CFA. A total of 436 questionnaires were collected. Out of these, 52 questionnaires were found to be incomplete and, hence, were not included in the study. The remaining 384 questionnaires were subjected to analysis.

### *Purpose of Analysis*

Table 2 gives a brief profile of the respondents. Male respondents (68%) were more in numbers than female (32%) respondents. The majority of the respondents (60.7%) were married. Most of the respondents (39.3%) were in the age group of 26–35 years. As far as the educational level of the respondents is concerned, 40.6% were graduates, and 27.1% were postgraduates. The annual income of 37% of the respondents was between ₹ 3 – 6 lakhs. Most of the respondents (56.5%) took 1 – 5 flights yearly. As far as the recently used airlines are concerned, 33.1% used the services of Indigo, followed by Spice Jet (16.1%), Vistara (14.8%), Air India (13.8%), Go Air (5.5%), and Air Asia (3.6%) ; whereas, 13.0% of the respondents used other airlines. Regarding the sponsorer of flights, about 43.5% of the respondents mentioned that they had purchased their tickets on their own. Family members or friends paid the flight ticket price of 29.7% of the passengers, and the remaining 26.8% traveled on a company-sponsored flight ticket.

### *Exploratory Factor Analysis (EFA)*

EFA was applied to 28 items with 384 observations to examine perceived airline service quality dimensions. Before applying EFA, sampling adequacy was checked with the help of Kaiser – Meyer – Olkin (KMO) and Barlett's test of sphericity. A KMO value greater than 0.6 can be considered acceptable for factor analysis (Kaiser & Rice, 1974). For Barlett's test of sphericity, the significance value should be <0.05 for the factorability of the correlation matrix (Hair et al., 2010; Pallant, 2007). The KMO value of 0.929 shows that the variables are highly

**Table 2.** ***Passenger Profile***

| Attributes | Distribution | Frequency | % |
|---|---|---|---|
| Gender | Male | 261 | 68.0 |
| | Female | 123 | 32.0 |
| Marital Status | Single | 145 | 37.8 |
| | Married | 233 | 60.7 |
| | Divorced | 6 | 1.6 |
| Age | 25 years or younger | 126 | 32.8 |
| | 26 – 35 years | 151 | 39.3 |
| | 36 – 45 years | 65 | 16.9 |
| | 46 years or above | 42 | 10.9 |
| Education | Up to 10 + 2 | 43 | 11.2 |
| | Diploma | 56 | 14.6 |
| | Graduation | 155 | 40.4 |
| | Postgraduation | 104 | 27.1 |
| | Above Post Graduation | 26 | 6.8 |
| Annual Income | Up to 3 lakhs | 104 | 27.1 |
| | 3 – 6 lakhs | 142 | 37.0 |
| | 6 – 10 lakhs | 86 | 22.4 |
| | Above 10 lakhs | 52 | 13.5 |
| Average no. of flights per year | 1 – 5 | 217 | 56.5 |
| | 6 – 10 | 113 | 29.4 |
| | 11 – 15 | 29 | 7.6 |
| | 16 – 20 | 9 | 2.3 |
| | 21 or more | 16 | 4.2 |
| Airlines services used | Indigo | 127 | 33.1 |
| | Spice Jet | 62 | 16.1 |
| | Go Air | 21 | 5.5 |
| | Air Asia | 14 | 3.6 |
| | Air India | 53 | 13.8 |
| | Vistara | 57 | 14.8 |
| | Others | 50 | 13.0 |
| Sponsorer of recent flight ticket | Self | 167 | 43.5 |
| | Family members/friends | 114 | 29.7 |
| | Company | 103 | 26.8 |

correlated, and the data is desirable for factor analysis. Barlett's test of sphericity compares an observed correlation matrix to the identity matrix. A significance value of 0.000 shows that the data do not form an identity matrix (George & Mallery, 2003). Hence, KMO and Barlett's test of sphericity indicated that the data was fit for applying EFA. Three rounds of factor analysis were applied; one variable in each round was found to have factor loading less than 0.50 and hence was removed.

**Table 3.** ***Results of Exploratory Factor Analysis***

| Factor Label | Variables (Variable Code) | Factor Loadings | Mean | Std. Deviation | Percentage of Variance Explained | Alpha |
|---|---|---|---|---|---|---|
| **Airlines' Employees** | Employees' (ground staff/cabin crew) willingness to help passengers *(SQ7)* | 0.759 | 3.98 | 0.77 | 42.785 | 0.898 |
| | The language used by ground staff/cabin crew *(SQ6)* | 0.704 | 4.00 | 0.73 | | |
| | Knowledge of ground staff/cabin crew in responding to passengers' questions *(SQ8)* | 0.702 | 3.98 | 0.75 | | |
| | Polite and courteous behavior of the ground staff/cabin crew *(SQ10)* | 0.700 | 4.05 | 0.73 | | |
| | The staff's understanding of the specific needs of passengers *(SQ11)* | 0.647 | 3.96 | 0.74 | | |
| | Availability of the option to contact the ground staff/cabin crew *(SQ5)* | 0.642 | 3.89 | 0.75 | | |
| | Offering services right at the very first time *(SQ9)* | 0.628 | 3.92 | 0.77 | | |
| | Employees' willingness to provide individual attention to the passengers *(SQ12)* | 0.604 | 3.90 | 0.80 | | |
| **Assurance** | Delivery of baggage at the time of check out *(SQ26)* | 0.786 | 3.63 | 0.933 | 8.433 | 0.846 |
| | Handling of baggage at the time of check-in *(SQ25)* | 0.718 | 3.77 | 0.825 | | |
| | Ticket prices charged by the airlines *(SQ27)* | 0.693 | 3.67 | 0.849 | | |
| | Quality of food served during the flights *(SQ24)* | 0.630 | 3.76 | 0.850 | | |
| | Safety provided by the airlines while traveling *(SQ28)* | 0.609 | 3.94 | 0.729 | | |
| **Tangible** | Cleanliness of the aircraft *(SQ19)* | 0.764 | 4.07 | 0.774 | 6.195 | 0.834 |
| | Cleanliness and comfort of seats during the flight *(SQ20)* | 0.741 | 3.96 | 0.796 | | |
| | Air conditioning within the cabin *(SQ21)* | 0.668 | 4.11 | 0.703 | | |
| | Modern appearance of the aircraft *(SQ18)* | 0.665 | 4.00 | 0.756 | | |
| **Reliability** | On-time arrival of flights *(SQ2)* | 0.856 | 4.01 | 0.744 | 4.884 | 0.848 |
| | Convenient flight schedules *(SQ1)* | 0.829 | 3.90 | 0.727 | | |
| | On-time departure of flights *(SQ3)* | 0.767 | 3.89 | 0.749 | | |
| **Check-in** | Waiting time at check-in counters *(SQ15)* | 0.770 | 3.67 | 0.854 | 4.152 | 0.806 |
| | Waiting time at the boarding gate *(SQ16)* | 0.718 | 3.76 | 0.793 | | |
| | Provision of the seats as per the choice of passengers *(SQ14)* | 0.641 | 3.87 | 0.833 | | |

Further analysis showed that two items were loaded onto the other dimensions; hence, they were removed from the analysis. Finally, five factors were extracted for 23 variables, accounting for 66.45% of the cumulative variance in the study. Table 3 explains the summary of factor loadings, means, standard deviations, and variance explained by each factor.

The maximum variance (42.785%) is explained by Airlines' Employees followed by Assurance (8.433%). Tangibles, Reliability, and Check-in explain the variance of 6.195%, 4.884%, and 4.152%, respectively. The alpha value is also acceptable and ranges from 0.806 – 0.898.

### *Confirmatory Factor Analysis (CFA)*

Figure 1 shows a measurement model of the five latent factors that were derived from factor analysis. Airlines' Employees, Assurance, Tangible, Reliability, and Check-in are indicated by eight, five, four, three, and three items, respectively. To test the measurement model, zero-order CFA was conducted with the help of the AMOS 20.0 version. The convergent validity of the construct was checked with the help of average variance explained (AVE) and composite reliability (CR).

Table 4 shows the results of AVE and CR. The AVE values for each construct are above 0.50, as suggested by Hair (2009), and the value of CR is above the threshold level of 0.70, as suggested by Nunnally (1978). To check the model fitness, model fit indices such as discrepancy function chi-square (CMIN/*DF*), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), and root mean square of error approximation (RMSEA) were selected. The results are presented in Table 5. The initial observed values of three fit indices — CMIN/*DF* (2.87), CFI (0.91), and RMSEA (0.07) — are within the range of recommended values, while the values of GFI (0.87), AGFI (0.84), and NFI (0.87) are slightly out of range. Verification and modification indices show a high level of convergence between some items; thus, the items with codes (e1↔ e4, e3↔ e7, and e3↔ e8) converge. After converging the values, all the selected modification indices fall within the range of the recommended values, representing a good model fit.

**Figure 1.** ***Measurement Model for Zero Order CFA***

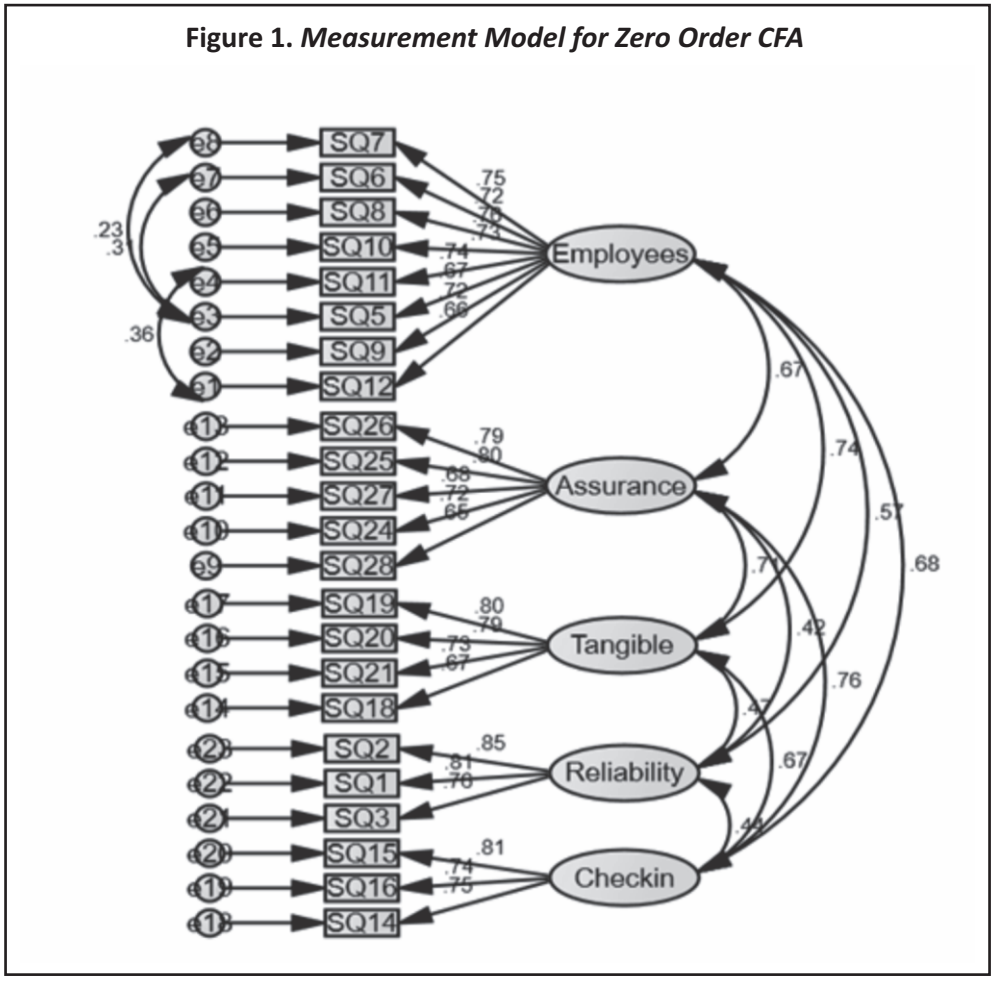


**Table 4.** ***Average Variance Explained (AVE) and Composite Reliability (CR)***

| Factor Labels | Factor Items (Item Code) | Factor Loadings | Average Variance Explained (AVE) | Composite Reliability (CR) |
|---|---|---|---|---|
| **Airlines' Employees** | Employees' (ground staff/ cabin crew) willingness to help the passengers *(SQ7)* | 0.759 | 0.533 | 0.888 |
| | The language used by the ground staff/cabin crew *(SQ6)* | 0.704 | | |
| | Knowledge of ground staff/cabin crew in responding to passengers' queries *(SQ8)* | 0.702 | | |
| | Polite and courteous behavior of the ground staff/cabin crew *(SQ10)* | 0.700 | | |
| | The staff's understanding of the specific needs of the passengers *(SQ11)* | 0.647 | | |
| | Availability of the option to contact the ground staff/cabin crew *(SQ5)* | 0.642 | | |
| | Offering services right at the very first time *(SQ9)* | 0.628 | | |
| | Employees' willingness to provide individual attention to the passengers *(SQ12)* | 0.604 | | |
| **Assurance** | Delivery of baggage at the time of check out *(SQ26)* | 0.786 | 0.616 | 0.827 |
| | Handling of baggage at the time of check-in *(SQ25)* | 0.718 | | |
| | Ticket prices charged by the airlines *(SQ27)* | 0.693 | | |
| | Quality of food served during the flights *(SQ24)* | 0.630 | | |
| | Safety provided by the airlines while traveling *(SQ28)* | 0.609 | | |
| **Tangible** | Cleanliness of the aircraft *(SQ19)* | 0.764 | 0.657 | 0.851 |
| | Cleanliness and comfort of the seats during the flight *(SQ20)* | 0.741 | | |
| | Air conditioning within the cabin *(SQ21)* | 0.668 | | |
| | Modern appearance of aircraft *(SQ18)* | 0.665 | | |
| **Reliability** | On-time arrival of flights *(SQ2)* | 0.856 | 0.609 | 0.823 |
| | Flight schedules *(SQ1)* | 0.829 | | |
| | On-time departure of flights *(SQ3)* | 0.767 | | |
| **Check-in** | Waiting time at check-in counters *(SQ15)* | 0.770 | 0.588 | 0.810 |
| | Waiting time at the boarding gate *(SQ16)* | 0.718 | | |
| | Provision of seats as per the choice of passengers *(SQ14)* | 0.641 | | |

**Table 5.** ***Fit Indices of the Measurement Model (CFA)***

| Fit indices | Recommended Values* | Initial Observed Values | Converging e1 ↔ e4 | Converging e3 ↔ e7 | Converging e3 ↔ e8 |
|---|---|---|---|---|---|
| **CMIN/*DF*** | <3.0 | 2.87 | 2.64 | 2.50 | 2.43 |
| **GFI** | >0.90 | 0.87 | 0.89 | 0.89 | 0.90 |
| **AGFI** | >0.90 | 0.84 | 0.86 | 0.867 | 0.87 |
| **NFI** | >0.90 | 0.87 | 0.89 | 0.89 | 0.90 |
| **CFI** | >0.90 | 0.91 | 0.92 | 0.93 | 0.94 |
| **RMS** | <0.070 | 0.07 | 0.07 | 0.06 | 0.06 |

*Source : Hu & Bentler (1998); Hooper et al. (2008); Hair et al. (2010); Malhotra & Dash (2011).

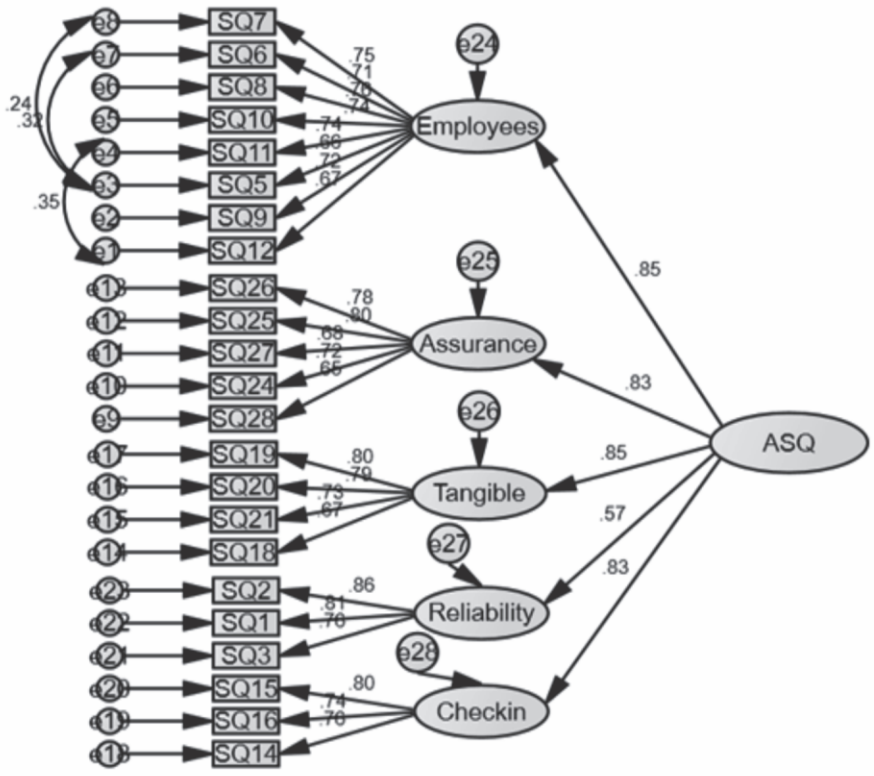
The second-order model is tested to evaluate whether the sub-constructs underlay a single high-order construct for Airlines Service Quality (ASQ). The results are shown in Table 6. It is found that no modifications in the model are required, and the model shows the goodness of fit. The measurement model is depicted in Figure 2.

**Table 6.** ***Fit Indices of the Measurement Model (CFA)***

| Fit Indices | Recommended Values* | Initial Observed Values |
|---|---|---|
| CMIN/*DF* | <3.0 | 2.47 |
| GFI | >0.90 | 0.90 |
| AGFA | >0.90 | 0.87 |
| NFI | >0.90 | 0.90 |
| CFI | >0.90. | 0.94 |
| RMS | <0.070 | 0.06 |

*Source : Hu & Bentler (1998); Hooper et al. (2008); Hair et al. (2010); Malhotra & Dash (2011).

**Figure 2.** ***Measurement Model for the Second-Order CFA***



The data analysis consists of statistically significant figures, indicating that the airline industry's proposed model of service quality is well-grounded in the Indian domestic sector. The results furnish empirical evidence that there are five dimensions of service quality, known as EATRC, that is, Employees (Andotra et al., 2008; Brochado et al., 2018; Hung & Ching, 2013; Nadiri et al., 2008; Park et al., 2020; Pappachan & Koshi, 2014; Parasuraman et al., 1988; Suki, 2014) ; Assurance (Andotra et al., 2008; Gupta, 2018; Hung & Ching, 2013; Min & Min, 2015; Nadiri et al., 2008; Namukasa, 2013; Park et al., 2020; Rathee et al., 2016; Suki, 2014) ; Tangibles (Andotra et al., 2008; Brochado et al., 2018; Gupta, 2018; Hung & Ching, 2013; Nadiri et al., 2008; Park et al., 2020; Parasuraman et al., 1988); Reliability (Andotra et al., 2008; Min & Min, 2015; Pappachan & Koshi, 2014; Parasuraman et al., 1988; Rathee et al., 2016; Suki, 2014); and Check-in (Brochado et al., 2018; Park et al., 2020), with 23 sub-dimensions that represent the passengers' overall perception of service quality. Confirmatory factor analysis confirms the overall fitness of the structural model and validates the hypothesized relationship. The present model fits the Indian domestic aviation sector.

## Managerial and Theoretical Implications

This research accords engrossing and significant implications for future researchers and practitioners, as service quality attributes form an essential research topic. There is still a lack of conceptual and theoretical base for apprehending the characteristics of air passengers and their perception of service quality, especially in the Indian domestic sector. This research is a modest and significant step toward filling the research gaps in the Indian aviation industry. Concerning practical industry application, research findings will aid in airline strategic management and revamp its service quality by apprising the different attributes identified by the study, which will help in better segmentation according to the demands of their target market. The dimensions proposed by the study will be efficacious for managing various airlines doing business in the Indian domestic aviation market by acknowledging passengers' expectations and delivering the services as per their expectations. The study adds a new dimension of service quality, Check-in (waiting time at check-in and boarding and provision of seats as per passengers' choice), which was found earlier only in the studies of Brochado et al. (2018) and Park et al. (2020). However, in the Indian context, this dimension is a novel finding. These days, passengers are always in a hurry and, therefore, expect less waiting time. Their presumption regarding delivering what has been promised, especially the seat of choice, is also a new dimension in service quality.

The 23 sub-dimensions contemplating specific facets of delivering quality service in airlines can be kept in mind by practitioners while devising management strategies and tactics. These factors testify to customers' experiences, which airlines can use to ferret out the major aspects required to attain affirmative post-purchase behavior and reduce dissenting intentions. The results also provide the relative importance of factors that airlines can use to develop a competitive advantage. Policymakers of the airline industry will certainly be benefitted from this study by putting distinct consideration to such findings and recommendations.

## Limitations of the Study and Scope for Further Research

Future studies will have a scope to advance this research by dilating the number of variables, burgeoning the sample coverage, and analyzing a diverse geographical location considering that India is a vast country. It will help get a more representative sample, which will ward off one of the limitations of this study, i.e., the use of convenient sampling. The sample size can also be increased to generalize the results better. More attributes can be added in future research. Also, to get a genuine evaluation of the full-service experience of passengers, face-to-face interviews could be a better method that will contemplate more accuracy.

## Authors' Contribution

The idea and design to undertake this empirical research were developed by Dr. Anoop Kumar. Dr. Gunjan Malik extracted research papers with high repute using Scopus and Web of Science databases, segregated them based on keywords, and finally identified the research gaps. Further, Dr. Gunjan Malik wrote the manuscript's introduction and literature review sections. Dr. Kumar planned the entire research methodology section. The collected data were analyzed and interpreted by Dr. Kumar using SPSS 20.0. Dr. Kumar wrote the research methodology, analysis, and interpretation sections. Both authors wrote the research implications and conclusion.

## Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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