Comparative Analysis and Construction of Evaluation Indexes of Civil Aviation Service Quality

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Abstract. Scientific and effective evaluation of civil aviation service quality is of great significance to improve customer satisfaction and the main competitiveness of civil aviation enterprises. In combination with the core ideas of the service quality model, this paper compares and analyzes the service quality evaluation process of airports and airlines from the two dimensions of service contents and evaluation indexes on the basis of literature arrangement and summary. Based on the SERVQUAL model and the "China Civil Airport Service Quality Evaluation Index System", the related contents of the system is appropriately revised combined with the characteristics of airport and airline services. To this end, the service quality evaluation indexes of airports and airlines are respectively built. The research shows that there are indeed some differences in five dimensions of evaluation indexes between airports focusing on ground services and airlines responsible for in-flight services. Only when scientific and reasonable evaluation index system for the quality of civil aviation transportation services is established for evaluation in line with the characteristics of civil aviation transportation services in the two scenarios, can the overall service level of passenger transportation in civil aviation industry be upgraded to achieve the high-quality development of civil aviation transportation industry in China.

Keywords: airport, airline, service quality, evaluation index, SERVQUAL

1. Introduction

With the economic development and the improvement of people's living standards, civil aviation passenger transportation has gradually become a popular way of travel, and the quality of civil aviation transportation services has also aroused increasing public attention. Since the civil aviation industry is a basic and leading industry in China, relevant national industries have released polices and documents to support the sustainable development of the civil aviation industry. Meanwhile, higher requirements are also set to improve civil aviation service quality. In 2017, the Air Traffic Management Industry Management Office of the Civil Aviation Administration of China issued The Technical Specifications for Airport Slot Capacity Assessment, and proposed “focusing on the construction of” the four systems of “airline operation management, airport security management, air traffic control operation service management and government supervision management”. It tries to achieve the transformation from the focus on scale and speed to that on quality and efficiency. The year 2018 saw the publication of The Guiding Opinions on Further Improving the Quality of Civil Aviation Services, The Action Outline for Building a Leading Country in Civil Aviation in the New Era. In 2019, China Civil Aviation High-Quality Development Indicator Framework System (Trial), and Outlines of Building a Leading Country in Transportation were promulgated, and The 2019 Special Action on “Civil Aviation Service Quality Breakthroughs” was launched. On January 3, 2020, the Civil Aviation Administration issued The Outlines of Action for Constructing Four-Type Airports of China Civil Aviation (2020-2035) ", which clarifies the connotation, goals and key tasks of the construction of the four-type airports. To the passengers, their requirements for the quality of air transportation services are no longer only the transportation from place A to place B, but are all-round services, including hardware requirements such as ground service environment, aircraft type, aircraft cabin equipment, etc. and software requirements such as the attitude of the service staff and the service convenience. At present, it has been 6 years since the overall service quality improvement management of the civil aviation

industry. Airlines have made significant improvement in terms of flight punctuality rate, baggage transportation and other aspects with high passenger complaint rates. However, it is obviously not enough to measure the development and changes of the service level of the entire industry with an individual index. It is one of the urgent tasks to establish an objective, systematic and comprehensive tool for measuring the quality of civil aviation transportation services and passenger satisfaction.

Most of the existing researches on civil aviation service quality expound the status quo of service quality of airports or airlines, or apply service quality models or evaluation methods proposed abroad to a specific company to build its service quality evaluation system. There are few researches on the comparison and analysis of the similarities and differences between the two in the service quality evaluation index systems in line with the characteristics of their respective transportation services so as to build their own respective evaluation index systems in a more targeted manner. The civil aviation transportation service enjoyed by passengers starts from passenger booking, including the complete process from the departure to arrival of both ground and in-flight services. Airline Service Evaluation Report issued by Civil Aviation Resource evaluates the quality of China civil aviation services respectively from the two aspects of ground service and in-flight service. Among them, the ground service is mainly provided by the airport, and the in-flight service is mainly responsible for the airlines. Based on this, it is necessary to evaluate, compare and analyze respectively the service quality of airports and airlines from the perspective of passengers in the evaluation of civil aviation service quality. According to the existing case studies of civil aviation service quality evaluation, this paper mainly compares and analyzes the service quality evaluation process of airports and airlines from the two dimensions of service content and evaluation index system construction to establish two major service quality evaluation index systems respectively for the two major civil aviation service entities of airports and airlines.

2. Overview of Service Quality Evaluation

2.1. Theoretical research on service quality evaluation

Many classical service quality models and evaluation methods, such as the Perceived Service Quality Model, Kano Evaluation Model and Gap Model of Service Quality, originate from foreign countries because they started early on theoretical research on service quality evaluation. In contrast, related domestic research, which started relatedly late, is mostly extended research or application examples of foreign service quality models or evaluation methods. There is a lack of theoretical research.

The Perceived Service Quality Model holds that the process of customer evaluation of service quality is the result of comparing the actual feelings in the process of receiving service with the psychological expectations before being served. If customer expectations are not met, even if the actual quality is good by objective standards, the customer's perceived quality is still poor (Grönroos and Christian, 1982). Noriaki Kano introduced a two-factor theory and established Kano Evaluation Model from the subjective perception of customers and the actual supply of services. Based on the customer's service demand, this model studies the relationship between customer satisfaction and service quality and comprises five dimensions of service qualities, namely attractive quality, must-be quality, one-dimensional quality, reverse quality and indifferent quality (Noriaki Kano 2002). Three scholars, A. Parasuraman, Zeilthaml, and Berry (PZB), constructed the Gap Model of Service Quality (Service Quality, SERVQUAL), pointing out that the main reason why service quality can't meet customer demand comes from five gaps between service production and delivery (Parasuraman et al, 1985) and providing a very enlightening theoretical basis for the study of service quality evaluation methods. On this basis, PZB then proposed the well-known SERVQUAL, which includes theories of five elements: tangibles, reliability, assurance, responsiveness and empathy (Parasuraman et al, 1988).

2.2. Empirical research on civil aviation service quality evaluation

At present, scholars generally establish civil aviation service quality evaluation index systems based on the Gap Theory of Service Quality and the SERQUAL model. SERQUAL is viewed to take into account the feelings of customers to the greatest extent from the perspective of customers. Gourdin and Kloppenborg(1991)adopted the Gap Model of Service Quality and put forward 14 important factors that affected the service quality of airlines, such as check-in, transit convenience, flight punctuality rate and lost baggage disposal. Domestic scholars such as Zhao Jianling (2000), Chen Lihua, Xu Mei (2001) and Li Xing (2003) deployed Gap Theory to investigate the service quality of airlines and finally put forward improvement suggestions for airlines according to their actual situation, requiring airlines to truly understand the demand of passengers and provide a series of service management to ensure that the passengers' demand was met. Some scholars have properly modified SERQUAL by modifying, adding or reducing dimensions and specific indexes. For example, KUO (2011) replaced SERQUAL's reliability with safety and reliability. Gilbert and Wong (2003) retained reliability, assurance and responsiveness of SERQUAL, and specified tangibles and empathy with four dimensions: equipment and facilities, service personnel, flight patterns and personalized services. Hao Yong and Wu Yiping (2009) used 40 indexes of the five dimensions of SERQUAL plus the sixth dimension of remedy service to evaluate the service quality of Shanghai Airlines, the results of which showed that customer expectations in all dimensions were not met. Yu Wenying and Li Jingli (2010) developed an airline service quality measurement tool, which included the five dimensions of SERQUAL, the sixth dimension of in-flight meals and 23 questions.

Since passenger transportation service quality can be interpreted as the extent to which airlines meet the different needs of passengers starting from ticket booking and during the process from departure to arrival, thus some scholars established evaluation index systems from the perspective of the process. For example, Li Qi (2006) established an airline service quality index system from seven dimensions: operation quality, non-scheduled flight service quality, ground service quality, air service quality, ticket sales service quality, customer complaints and customer loyalty. Chen and Chang (2005) believed that passengers had different expectations at different stages in the process of receiving airline services and therefore respectively constructed evaluation indexes from ground and air service stages. In a study of the difference in cross-strait passenger service quality satisfaction, Lu and Ling (2008) took into consideration the six indexes of pre-travel ground service quality, flight scheduling, in-flight cabin equipment and services, safety and frequent flyer programs, service personnel's professional skills and their ability to communicate with and respond to passengers.

3. Comparative analysis of airports and airlines

Airports and airlines are two important links of civil aviation services. Both airports and airlines serve passengers, but there are obvious differences between the two service providers in terms of specific services and thus the selection of evaluation indexes varies greatly. This paper establishes index systems from the two links of airports and airlines.

3.1. Service comparison

The services provided by civil aviation airports for passengers can be categorized into three types, basic services, convenience services and support services (Wang Haixin, 2005). Basic services refer to a series of services provided by airport personnel on top of the existing facilities in the airport to ensure that passengers can board normally and safely, which mainly include passenger ticket service, baggage drop service, check-in service, security check service, waiting service and boarding service. Convenience services refer to the services provided to make it easier for passengers to check in at the airport, such as check-in services provided by cellphone check-in, Internet check-in and self-service check-in facilities, and airport transportation service, inquiry service, trolley availability and convenience of airport baggage drop. Support services refer to the services provided by airports to meet more consumption needs of passengers, which mainly consist of shopping and catering services,

convenience of bank ATMs, leisure and entertainment service and facilities services like parking, Internet communication, drinking rooms and restrooms.

Passenger transportation services of airlines can be decomposed into three basic combination levels: core services, support services and additional services (Zhang, Lizhang, 2009). Core services create core value for customers and constitute the basic reason for the survival of airlines in the market. The core services of airlines are defined as transportation services that make possible the physical space transfer of customers or their entrusted items. Support services are all supportive measures provided by airlines for customers to use or facilitate the use of core services, which can be divided into explicit support services and implicit support services. For example, ticket sales offices, business agent outlets and authorized sales outlets set up by airlines, customer service hotlines, reception consultation, airport service and security check fall into the category of explicit support services, while airlines' airport construction and maintenance, corporate operation, administrative management, logistics support and other work without direct contact with customers are basically implicit support services. Additional services are some additional services provided by airlines for customers other than core services and support services, which aim to enhance customers' perceived service value and distinguish the service business of the enterprise from that of competitors. For example, food, beverages, newspapers, periodicals, audio-visual programs provided by airlines for customers during flights, and the interaction between airline employees and customers are all within the category of additional services.

3.2. Comparison of evaluation indexes

The existing research generally uses the Gap Theory of Service Quality and SERQUAL model to establish evaluation index systems of civil aviation service quality. When comparing and analyzing the service quality evaluation index systems of airports and airlines, this paper also draws on the case study of the model to increase the comparability of the selected indexes of the duo in various dimensions. Based on the five elements of the SERQUAL model, this paper collects statistics on common indexes for evaluating the service quality of airport airlines through the fives dimensions of tangibles, reliability, responsiveness, assurance and empathy (primary indexes), the results of which are shown in Table I and Table II, respectively. It can be seen from the statistics that the service quality evaluation index systems of airports and airlines constructed by scholars taking the same five dimensions as standards are indeed different in the specific evaluation index under each dimension.

Table 1. Statistics of common indexes for airport service quality evaluation

Primary index	Meaning	Secondary index	Index source basis
Tangibles	Actual facilities, equipment, and service employees' appearance	The airport has a clean and orderly environment	
		The airport has modern service facilities and business and trade support services	
		Flight information display and guidance signs are clear and accurate	
		The service employees are groomed and decent	
		The airport provides passengers with efficient, fast and convenient check-in, boarding and baggage claim services	
Reliability	Ability to reliably and accurately fulfil service commitments	Show concern and offer help.to customers when they are in trouble	
		The airport can accurately provide the committed services	
		Transportation convenience from urban areas to the airport	
		Baggage error rate	
		Customers can be properly arranged after flight delays or cancellations	
		What the airport commits to passengers can be done timely and effectively	
Responsiveness	Willing to help customers and provide timely services	Timely response to passengers' service needs	
		Able to inform customers of the exact time of service provision	
		Boarding, check-in, security check waiting time and service efficiency	
		Airport bus departure frequency and punctuality rate	
		Waiting time of airport buses and other buses	
		Airport employees are always willing to help customers	
Assurance	Employees' knowledge, understanding and ability to express confidence and credibility	Airport employees have sufficient knowledge and skills to perform duties	
		Airport employees are trustworthy	
		Airport employees make passengers feel at ease when providing services	
		The airport employees are polite	
Empathy	Care for and provide personalized services for passengers	Provide passengers with personalized services	
		Retail and catering charges are reasonable	
		Retail restaurant service variety	
		The service hours of the airport can meet the needs of all customers	
		Services for special passengers	
		Airport employees have a clear understanding of the needs of passengers	

Tangibles emphasize the service facilities, equipment and the appearance of service personnel. A clean environment and complete facilities are essential conditions for the scenarios of airports and cabins and the common requirements of airport and airline passenger transportation services. For airports, it is necessary to clearly display flight information and set up guidance signs to ensure passengers' arrival to the waiting room. At the same time, providing efficient, fast and convenient check-in, boarding and baggage claim services is also the key to providing customers with a good flight experience. However, airlines mainly provide in-flight services, and the tangibles dimension is not clearly reflected on this front. Reliability refers to the ability of service providers to reliably and accurately fulfill their service commitments and emphasizes whether the company can fulfill its commitments accurately and effectively. Both airports and airlines are required to provide committed services for customers accurately and effectively, and the indexes related to the requirement can be used as the common evaluation indexes of the service quality of the two service providers. Whether airports can properly arrange customers after flight delays or cancellations is the embodiment of the reliability of airport service quality. Responsiveness refers to the service providers' ability to help customers and quickly improve service and emphasizes whether the service provided is fast and convenient. Both airports and airlines require service personnel to satisfy the reasonable needs of passengers unconditionally, including timely responding to passengers' requests and complaints or telling customers the exact time of service provision, which can serve as the common evaluation

indexes for the service quality of airports and airlines. In addition, it can be seen from the statistics that relevant indexes that reflect the convenience of public transportation tools at the airport, like departure frequency and punctuality rate of airport buses and the waiting time for airport buses and other buses, are different from the secondary evaluation indexes of the service quality of airlines in the responsiveness dimension. Assurance refers to the knowledge, skills, and trustworthiness of service employees and emphasizes their professional skills and service attitude. The difference in assurance evaluation indexes of the service quality between airports and airlines is relatively limited. Both airport service personnel and airline service personnel need to first gain the trust and confidence of passengers and have enough professional knowledge to answer passengers' questions and deal with unexpected situations that may occur on the way. Therefore, whether the service personnel can gain the trust of passengers and whether they have enough knowledge and skills to be competent for their jobs are the common requirements of airport and airline passenger transportation services. Empathy refers to the ability of service providers to provide personalized services for customers and emphasizes whether service providers and service personnel have a human touch. Understanding the personal needs of customers is the prerequisite for providing personalized services. Providing special care for the elderly, children, pregnant women, people with disabilities and other types of special passengers is a common requirement of the service quality of airports and airlines. In addition, passengers waiting at the airport have an additional requirement for airport business services, such as whether the retail and catering charges are reasonable and whether the variety of retail and restaurant services is abundant. This requirement should be reflected in the empathy dimension of airport service quality. For airlines, whether there are passenger loyalty programs or frequent flyer programs for frequent customers are different from the secondary evaluation indexes of the airport service quality in the empathy dimension.

Table 2. Statistics of common indexes for airline service quality evaluation

Primary index	Meaning	Secondary index	Index source basis
Tangibles	Actual facilities, equipment, and service employees' appearance	Clean and comfortable cabins/seats	
		In-flight entertainment/facilities	
		In-flight network/email/fax/telephone facilities.	
		Appearance and model of airplanes	
Reliability	Ability to reliably and accurately fulfil service commitments	Flights are punctual and safe	
		Delicious and healthy drinks and food	
		Consistency of ground/air services	
		Error-free services	
		Honor service commitments	
Responsiveness	Willing to help customers and provide timely services	Fast, timely and efficient baggage delivery	
		Service employees can timely respond to passengers' requests or complaints	
		Service employees are always willing and enthusiastic to timely help passengers	
		Convenient, timely and efficient ticket booking, endorsement and refund services	
		Fast, accurate, convenient and friendly inquiries, boarding pass handling, boarding services, etc.	
		Timely and accurate dynamic information display of flight and boarding normal, change and delay	
Assurance	Employees' knowledge, understanding and ability to express confidence and credibility	Able to gain passengers' trust	
		Service employees have sufficient expertise to answer passengers' questions	
		Service employees have sufficient language skills to communicate with passengers	
Empathy	Care for and provide personalized services for passengers	Provide special care based on passengers' conditions	
		Passenger loyalty programs	
		Frequent flyer programs	
		Understand the individual needs, interests, and characteristics of passengers	

4. Establishment of civil aviation service quality evaluation indexes

4.1. Theoretical basis of SERVQUAL

Three scholars, A. Parasuraman, Zeilthaml and Berry (PZB for short), constructed the Gap Model of Service Quality (Service Quality, SERVQUAL), pointing out that the main reason why service quality can't meet customer demand comes from five gaps between service production and delivery, as shown in Figure 1.

Gap one is the gap between customer expectation and management perception. Gap two is the gap between management perception and service quality specification. Gap three is the gap between service quality specification and service delivery. Gap four is the gap between service delivery and external communication. Gap five is the gap between customer expectation and customer perception, which is the direct source of service quality gaps (Parasuraman et al, 1985). Gap Model of Service Quality provides a very enlightening theoretical basis for the study of service quality evaluation methods. On this basis, PZB then proposed the well-known SERVQUAL, which includes theories of five elements: tangibles, reliability, assurance, responsiveness and empathy (Parasuraman et al, 1988). SERVQUAL model uses a multilevel scale to measure the gap between customer service expectations and customer service experience through 22 indexes. Respondents are asked to rate services based on their expectations and the actual service experience (each index is rated on a scale from 1-5, representing "strongly agree" to "strongly disagree"). Thereby the score of the overall perceived service quality is determined and used as the basis to judge the level of service quality.

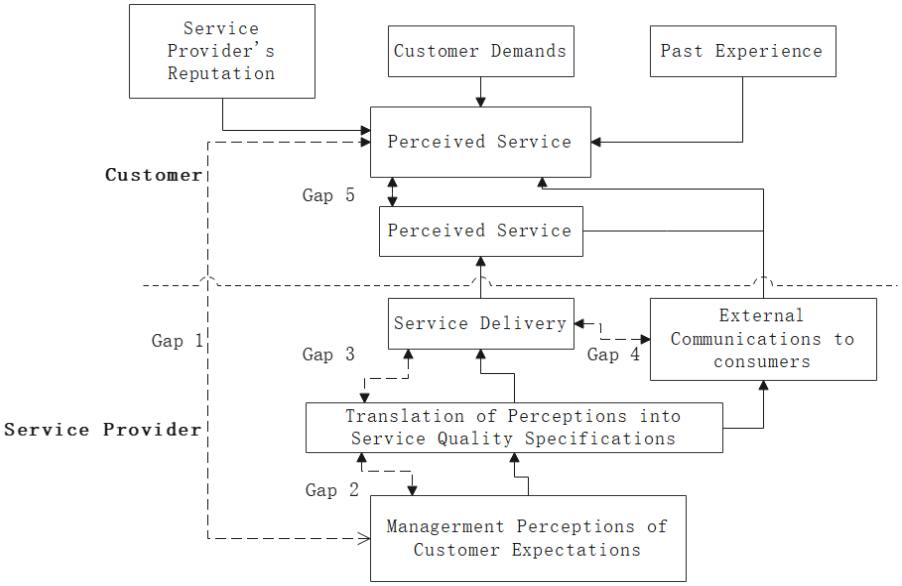


Figure 1. Gap Model of Service Quality

4.2. Principles of index system establishment

The principle of balancing scientificity and practicality. To construct the evaluation index system of civil aviation service quality, the selection of indexes should be based on the principle of scientificity, which requires the evaluation indexes to be easy to operate, easy to obtain customer information and gain customer understanding, etc.

The principle of balancing comprehensiveness and representativeness. The selection of evaluation indexes should take into account both comprehensiveness and representativeness and cover the needs of customers. Second, on the basis of meeting the needs of customers, the selected indexes should be representative, and all indexes should be comprehensively analyzed and evaluated. According to the differences in surveyed customers' selection, the selected indexes should be both comprehensive and representative. Feasibility and operability principles. The evaluation indexes are established with the expectation of being able to scientifically improve civil aviation service quality, find out problems in civil aviation services and provide references for the implementation of service quality evaluation by

airport civil aviation. Therefore, all indexes must be comparable, which should not only take into account the vertical comparability of data across time periods, but also the horizontal comparability and compatibility of indexes. This can effectively help airport civil aviation position the level of express services and provide a basis for enhancing service quality.

The principle of combining qualitative indexes with quantitative indexes. When selecting evaluation indexes, qualitative indexes should be combined with quantitative indexes. According to the analysis of the results of the surveyed customers, the selection of qualitative indexes is somewhat involved with human factors and the requirement of evaluation data analysis and processing is relatively low. However, the selection of quantitative indexes is, to some extent, difficult and the requirement of data processing is relatively demanding. Therefore, when selecting evaluation system indexes, it is necessary to combine quantitative indexes with qualitative indexes, for the evaluation index system will lack systematicness and comprehensiveness if only using qualitative indexes or quantitative indexes. Only by combining the two sets of indexes can a complementary, comprehensive, systematic, scientific and operational evaluation index system be established.

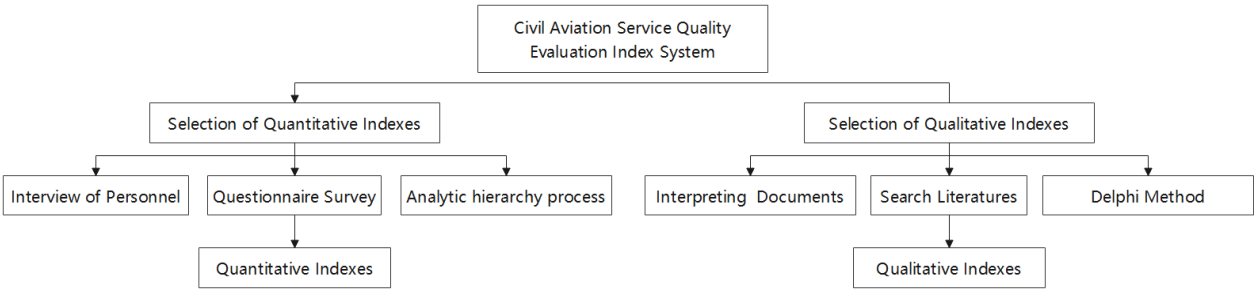


Figure 2. Construction method of evaluation index system

In addition to the above principles, the selection and determination of civil aviation service quality evaluation indexes should be designed based on the characteristics of the industry and the management and expert opinions of relevant departments, as shown in Figure 2.

4.3. Establishment of service quality evaluation indexes for airports and airlines

Civil aviation service is mainly measured by passenger perception, and its quality depends on the degree of passenger service perception. SERVQUAL is an effective tool for evaluating service quality and determining actions to improve service quality. SERVQUAL theory is a new service quality evaluation system based on the Total Quality Management (TQM) theory in the service industry, whose theoretical core, the Gap Model of Service Quality has been widely accepted and used by managers and scholars. As for China's industry evaluation standards, China Civil Airports Association (CCAA) officially released China Civil Airport Service Quality Evaluation Index System (CCASQEIS) in 2017. CCASQEIS (standard number MH/T5114-201) jointly formulated by CCAA and China Academy of Civil Aviation Science and Technology has become an industry standard, which standardized CCASQEIS, evaluation method and calculation method for the first time, and played a positive role in improving airport service management system and further enhancing the service of airports. The evaluation method of civil aviation service quality of this paper borrows ideas from the SERVQUAL model and CCASQEIS, combines the characteristics of China's civil aviation enterprises, adjusts the applicability of survey questions, modifies, adds or removes some indexes, grasps the main law of airports and airlines, and constructs a general index system suitable for China's civil aviation passenger service quality evaluation. SERVQUAL model respectively uses five scales to evaluate the service quality of different services received by customers. In the following part, this paper mainly explains the evaluation index system of airports and airlines respectively from the two dimensions of common indexes and characteristic indexes.

In the tangibles dimension, a comfortable and clean environment and employees' compliance with basic service standards are the common evaluation indexes of the service quality of airports and airlines. In terms of characteristic indexes, the characteristic evaluation indexes of airport passenger transportation services in the tangibles dimension are reflected in the following aspects: first, indexes

such as complete airport system equipment, normal information display, accurate, understandable and timely updated information and overall consistent display can be categorized as the flight information display system; second, indexes such as airport check-in service, flight dynamic information and introduction of transportation means can be categorized as the mobile Internet applications and software services such as WeChat and cellphone APPs. For airlines, a reasonable flight schedule is also an important index of the tangibles dimension, which is mainly manifested in whether the flight operation time of airlines is reasonable and the proportion of early morning and late-night departures. In the reliability dimension, passenger opinions/complaints, flight delay services, whether service errors can be effectively remedied and showing concern and offering help when customers are in trouble are the common indexes for civil aviation service quality evaluation, with the only difference reflected in service providers. In terms of the characteristic indexes, fight safety and punctuality rate, or whether the flights can depart and arrive on time, are important indexes of the reliability dimension of airline service quality. In the assurance dimension, service employees' politeness and sufficient knowledge and skills to perform duties are the common evaluation indexes of service quality of airports and airlines. As for the characteristic indexes, guaranteed operation and baggage transportation are important indexes of the assurance dimension of airport service quality. Responsiveness is mainly demonstrated in the efficiency and timeliness of services. There are no significant differences between airports and airlines in the evaluation indexes of the responsiveness dimension, which includes the five aspects of fast and timely boarding procedures, fast, timely and reliable baggage drop and delivery, timely response to customers' service needs, ability to inform customers of the exact time of service provision, and convenient and effective inquiry service. In the empathy dimension, warm service for each customer provided by service employees, special care given to customers based on their personal conditions, effective communication with customers to understand their needs, and abundant food, beverages and entertainment services such as TV and magazines are the common requirements of services provided by airports and airlines. The related survey questions can be used as the common indexes for service quality evaluation. The characteristic indexes of the empathy dimension of airport service mainly contain the following two aspects: first, sufficient buses and cabs provided by airports, orderly dispatching, relatively comfortable waiting areas with facilities to avoid rain and snow, and punctual departures of buses and rail transportation can be categorized as public transportation vehicles; second, whether the number of first-class and business flight lounges in the airport is sufficient and whether the environment is comfortable can be categorized as first-class and business flight and business traveler VIP services. The final preliminary design of the airport service quality evaluation index system consists of five dimensions and 24 specific indexes. Under the same dimension, the airline service quality evaluation index system contains 21 specific indexes. We have listed specific evaluation purposes and questions for each secondary index, including source basis and collection methods. The details are shown in Table III and Table IV.

Table 3. Dimension, Index and Measurement of Airport Service Quality Effectiveness Evaluation

First-level indicators	Second-level indicators	Assessment Purpose and Questions	Evidence sources and collection methods
Tangibility	Comfort and cleanness of waiting environment	Are the glass, seats, toilets, etc. in the airport waiting hall clean and comfortable?	Questionnaire
	Service staff basic service compliance	Are the airport staff clean, decent, and generous, uniformly dressed, and wearing identity certificates as required?	Site investigation
	Flight information display system	Airport system equipment is in good condition, and the information display is normal? Is the information accurate, easy to understand, updated in time, and displayed consistently across the board?	Site investigation
	WeChat, mobile APP and other mobile Application software services	Airport check-in service, flight information, transportation means introduction, etc. unblocked?	Airport or airline feedback

Reliability	Passenger comments / complaints	Percentage of airports are complained about by passengers? What rate does the airport respond to passenger complaints? Are there multiple complaint channels? Are complaints and suggestions handled in time?	Airport or airline statistics
	Flight delay service	Does the airport inform the delay information in time and accurate? Can customers be properly arranged after a flight is delayed or cancelled? Among the passengers who accepted the arrangement, what is their level of satisfaction?	Questionnaire
	Whether the service failure can be effectively remedied	Can the airport make up for the service mistakes to passengers in time? After making up, what is the satisfaction level of the passengers?	Questionnaire
	Concern and offering assistance when customers facing difficulties	Does the airport offer help and care?	Questionnaire
Assurance	Service staff have sufficient knowledge and skills to be competent for the job	Whether airport service staff have sufficient service skills	Questionnaire
	Staff are polite	Are airport staff polite when serving passengers?	Questionnaire
	Operational assurance	Are the bridges, passenger elevator cars, and shuttles in place in time? Is those equipments clean?	Site investigation
	Luggage transportation	Does the airport arrange for special inspections? How clean is the luggage carousel? Is luggage monitoring complete? Are there oversized and excess baggage receive areas?	Site investigation
Responsiveness	Quick and timely check-in	Can Airports Address Passengers' Complaints?	Airport or airline statistics
	Fast, timely and reliable luggage check and delivery	Mainly include if the luggage is arriving with the same plane, damaged luggage, lost luggage, lost luggage contents, wrong luggage, etc.	Airport or airline statistics
	Respond to customers' demand in time	Can the airport quickly resolve passenger inquiries, and how effective it to resolve passenger inquiries?	Questionnaire
	Able to tell customers the exact time when service is provided	Is the airport able to tell customers the exact time when services is provided	Questionnaire
	Convenient and effective inquiry service	the counter and service facilities are in good condition? Can the staff provide mobile inquiry services and take the initiative to guide and help passengers?	Questionnaire
Empathy	Service staff provide warm service to each customer	Can the airport meet the requirements of every passenger?	Questionnaire
	Service staff give special attention to the customer's personal situation	Can the airport provide special services for special groups (the elderly, young children, the sick, the disabled, pregnant women, medical assistance services)? Is there a dedicated service desk? Boarding equipment etc. for disabled is provided? Are the quantity, environment and location of baby rooms appropriate?	Site investigation
	public transport vehicles	Is there enough buses and taxis at the airport? Are they Scheduled in order? Is the waiting area relatively comfortable and equipped with rain and snow shelters? Are buses, rail transits, etc. departing and arriving on time.	Site investigation
	Two-Class and Business Passenger (VIP) Service	Are there enough two-class lounges at the airport? Is the environment comfortable?	Site investigation
	Staff can effectively communicate with customers to understand passengers' needs	Is the airport able to communicate effectively with passengers?	Questionnaire
	Dining Services	Can the airport provide affordable, delicious meals? Can an airline offer delicious in-flight meals?	Questionnaire
	TV magazines and other entertainment contents	Does airport ground service provide rich entertainment content? Are there English programs in international areas?	Questionnaire

Table 4. Dimension, Index and Measurement of Airline Service Quality Effectiveness Evaluation

First-level indicator	Secondary indicators	Assessment Purpose and Questions	Evidence sources and collection methods
tangibility	Comfortable and clean cabin environment	Are the overall cabin environment, toilet environment, fuselage cleaning, ground environment, seat environment, wall panel environment, newspapers and magazines, in-flight WIFI etc. complete?	Questionnaire
	Staff Basic Service Specifications	Are airline staff clean, decent, and generous, uniformly dressed, and wearing identity certificates as required ?	Site investigation
	Reasonable flight schedule	Is airline flight operating hours reasonable? What percentage of departures are in the early morning or late at night?	Airport or airline statistics
reliability	Passenger comments/complaints	What percentage of airlines are complained about by passengers? What percentage of airlines respond to passenger complaints? Are there multiple complaint channels? Are complaints and suggestions handled in a timely manner?	Airport or airline statistics
	Flight delay service	Does the airline inform the delay information in time and accurate?	Questionnaire
	Whether the service failure can be effectively remedied	Can the airline make up for the service mistakes to passengers in time? After making up, what is the satisfaction level of the passengers?	Questionnaire
	Shows concern and offers assistance when customers encounter difficulties	Does the airline offer help and care?	Questionnaire
	What is the overall impression of the airline	What is the overall impression, security etc. of the airline in the minds of travelers?	Questionnaire
	Flights take off and arrive on time	What is the punctuality rate of airline flights?	Airport or airline statistics
Assurance	Service Staff have sufficient knowledge and skills to be competent for the job	Whether airline service staff have sufficient service skills	Questionnaire
	Service staff are polite	Are airline staff polite when serving passengers?	Questionnaire
Responsiveness	Quick and timely check-in	Can Airlines Address Passengers' Complaints?	Airport or airline statistics
	Fast, timely and reliable baggage check and delivery	Mainly include luggage not arriving on the same plane, damaged luggage, lost luggage, lost luggage contents, wrong luggage, etc.	Airport or airline statistics
	Respond to customer service needs in time	Can the airline quickly resolve passenger inquiries, and how effective is it to resolve passenger inquiries?	Questionnaire
	Be able to tell customers the precise time when services is provided	Can the airline inform the exact time of service in time	Questionnaire
	Convenient and effective inquiry service	Are the Enquiry counter and service facilities in good condition? Can the staff provide mobile inquiry services and take the initiative to guide and help passengers ?	Questionnaire
Empathy	Service staff provide warm service to each customer	Can the airline meet the requirements of every passenger?	Questionnaire
	Service staff give special attention to the customer's personal situation	Can airlines provide special services for special groups (the elderly, young children, the sick, the disabled, pregnant women, medical assistance services)? Is there a dedicated service desk? Boarding equipment for disabled etc.? Are the number, environment and location of infant & mom rooms appropriate?	Site investigation
	Staff can communicate effectively with customers to understand passenger needs	Are airline service staff able to communicate effectively with passengers?	Questionnaire
	Catering Services	Can an airline offer delicious in-flight meals?	Questionnaire
	TV, magazines and other entertainment contents are rich	Does the airline cabin provide rich entertainment content? Are there English programs in international areas ?	Questionnaire

5. Conclusion

The civil aviation industry is a basic and leading industry in China. With the economic development and the improvement of people's living standards, civil aviation passenger transportation has gradually become a popular way of travel, and the quality of civil aviation transportation services has also aroused increasing public attention. This undoubtedly sets higher requirements for the civil aviation service quality. it has become a common choice to improve the quality of civil aviation services for the sustainable development of the civil aviation industry. Establishing an effective evaluation index system is the first step to implement this choice. Based on the five elements of the SERQUAL model, and on the basis of arrangement and summary of relevant literatures, this paper compares and analyzes the services quality evaluation index system of the two major civil service entities of airports and airlines from five dimensions: tangibility, reliability, responsibility, assurance and empathy, and builds respective evaluation index systems. The research shows that there are differences in the five dimensions of evaluation indexes between airports focusing on ground services and airlines responsible for in-flight services, but there are also general standards. Only when scientific and reasonable evaluation index system for the quality of civil aviation transportation services is established for evaluation in line with the characteristics of civil aviation transportation services in the two scenarios, can the overall service level of passenger transportation in civil aviation industry be upgraded in accordance with the evaluation results to keep on improving service quality. This will maximize the pillar role of the civil aviation industry in China's economic development.

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