Identifying airline passengers satisfaction and ground airport services perception of Kolkata airport during COVID19- ASQ (Airport Service Quality) perspective

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Abstract—Background: The research on the airlines’ ground services in airports is central to the business environment, impacting the departure and arrival functions, while COVID-19 has adversely affected service capabilities, impacting passenger safety and satisfaction. Aims: The aim is to find the factors influencing airport services during COVID-19 from the passenger perspective using the Airport Service Quality (ASQ) framework. Methods- ASQ (Airport service quality) scale was used with 39 items for a sample of 200, tested in SPSS for reliability and validity, and underwent factor analysis. Results-Airport management of Kolkata has emphasize the role of leadership management to focus on the airport ground services, with a new set of service protocols by WHO adapted to Kolkata ground services. Moderately satisfactory COVID-19 arrangements with, hand washing provision, facilities for immediate quarantine facility, disposal procedure, and way finding within Kolkata airport also have passengers who do not exhibit social conformance behaviour towards social distancing. Conclusion- Airport leadership management in airport ground services has accommodated the new COVID19 service that needs to match passenger behaviour aberrations to eliminate issues of contamination. Visual signage and way-finding guide passengers’ well-being and satisfaction, while passengers must be patient in the face of increased service time when following COVID19 service protocols.
Introduction

The current aviation industry is witnessing change in terms of disruption of operations due to lockdown, and opening up of sectors as per government protocols. The airline business and the airport infrastructure are facing pressure, as the COVID-19 pandemic protocol requires them to maintain a gap between two individuals in a public place. The implications have affected the alignment of service scape in airport operations, the metrics of service delivery. It has led to having to accommodate the passengers in the lounge, queue, and luggage retrieval areas to stand apart in order to eliminate the chances of the COVID-19 virus spreading between humans. The entire process is leading to a change in airline passenger perception towards new rules during and post-landing of flight procedures. In this research, the aim is to understand how Kolkata airport in India is developing its airport passenger satisfaction quality plan from ASQ (Airline service quality) model.

The airports serve as the entry and exit point of the airlines as they serve the cities in movement of passenger and cargo. As civilisation is evolving, the lifecycle of the airline industry has undergone a tremendous change, with full-service carriers and low-cost airlines serving different target customer segments to meet the airline passengers' differentiated needs. Thus, air transportation has emerged as a solution for short haul and long-haul flights connecting domestic destinations and international destinations for arrival and departure all of which aims to satisfy airlines passenger quality (Shah et al. 2020). It is obvious that, as the fastest mode of transportation between cities in the twenty-first century, air transport requires adequate support from airport terminals. Park et al. (2006) stated the criticality of the ground services has gained traction as the volume of flights on all routes. This is because there is an increased volume of new airline brands being launched in India, which shows the need for adequate infrastructure in airports to serve their needs for arrivals and departure activities. Carlos Martn et al. (2008) added that in a competitive market, the equation of local airports trying to maintain the standards of service quality in order to meet the airline passengers' expectations is set. The triad relationship between passengers, the airport ground service, and airline inflight service constitutes the total experience continuum for a journey. The role of airline ground services is central, as it helps the airline companies to offer the boarding and de-boarding activities through the use of infrastructure (Babbar and Koufteros, 2008). Airports that serve international airlines must identify the underlying infrastructure and service creation aspects in order to meet passenger expectations, for passenger safety and security (Chen et al. 2019), and for low-cost airlines (Lerrthaitrakul and Panjakajornsak, 2014).

The previous academic research has focused on the Indian airports' measuring ASQ while establishing the airline's passenger perception. However, the COVID-19 protocols have stressed the service providers and airline passengers. It is not only about the infrastructure but procedures that are impacting airlines'
passenger's satisfiers' and 'dissatisfiers' quotients. This study will contribute to understanding gaps in current service levels for Kolkata airport ground operations management during the COVID19 pandemic from a consumer perspective and the criticality of ASQ to testify as to how it helps airline staff and airport staff manage passengers travelling amidst new bubble agreements. It is important for passenger health, wellbeing, and safety against COVID-19 contamination while in service. The creation and consumption process have a direct impact on how Kolkata airport links airport infrastructure, services range to meet current protocols and also airlines' passenger expectations. Therefore, the objective of this research —

- To identify the gaps using the airport service quality (ASQ) framework in customer services delivered by ground staff at the airport ground operation

- To identify the impact of service quality on the Kolkata airport's airline passengers' perception and satisfaction.

**Literature Review:**

**Asq (Airport Service Quality):**

The performance of the airport is best understood in terms of the quality of services rendered to each passenger. Chen and Chang (2005) stated that the airport physical environment and the flow of cargo and passengers at the airport form the key activities, while the airport needs to identify those elements (tangible and intangible) which lead to airline passenger satisfaction. International airports have set up their own standards of performance, where the assessment of actual performance, service quality standards, and pathways to improvement have been outlined. Tiernan et al. (2008) stated that service delivery and consumption are continuous processes, and hence, in order to improve customer satisfaction surveys or procurement of feedback, grievances at the airport must be there. Liou and Tzeng (2007) stated that there are different dimensions of activities in the airport, which must be considered while the degree to which passengers place importance is also important.

Shah et al. (2020) explained that three main elements constitute the airport passenger satisfaction measurement criteria – a) the airport service scape where the exchange of services between passengers and airport ground staff happens; b) the behaviour, competencies, and attitude of airport ground staff; c) provisions of shops or entertainment; and food. Greenfield (2014) argued that while services are about offerings, there are structural issues like airport architectural design, natural light, and spatial views that impact the deeper cognition of a passenger in terms of time spent inside the airport terminal. Han et al. (2012) stated that way finding, lounges in airport service scape, the distance which passengers have to walk, and provisions of lifts instead of staircases help to form the overall perceptions of the airport. However, the difference between the structural and process-based services consumed has the employee-based service delivery that emphasises that it is the environment or the service atmosphere created by the staffs that appeal to the customer.
ASQ airport service quality consists of 39 elements of the end-to-end airport dimensions across different issues. It is widely accepted and commonly used in the business environment to map and measure service quality. However, the importance of airport ground operations and the linkages of service quality in various activities is important as different customer groups and different airline brands use the airport infrastructure. The ability to standardise or identify gaps is an indicator of how involved the owners are in expressing concern about redesigning the service dimensions in an expanded form, Bezerra and Gomes (2015) in Brazil found that passenger perception of facilities in the country’s airports is based on seven dimensions. i) check-in; ii) security; iii) convenience; iv) basic amenities provided; v) ambience; vi) prices; and vii) security. The Jiang and Zhang (2016) research on Melbourne airport shows thirty elements of airport services that are important: i) essential airport services ii) leisure, convenience, and comfort services; iii) business and creche services Pantouvakis and Renzi (2016) found three main factors that help airport service quality: i) servicescape and image; ii) airport signage; and iii) airport services.

The online booking of tickets, travel sites, review sites, and web2.0 (social media) has led to an explosion in online reviews by airline passengers, shifting the power of expression to be captured by the online platform. There are Google reviews, Facebook comments, and Twitter reactions that have brought in more dynamism and activity through e-WOM (electronic word of mouth). The criticism or feedback about airline experiences is viewed by a wider audience even though it is for the airport, airlines (employees and management) (Tansitpong, 2020), while Gitto and Mancuso (2017) stated that airlines’ passenger sentimental analysis. Han et al. (2012) have criticised service quality as it may not reflect the real quality as it is a conceptualised model of perception that passengers tend to compare. Roades et al. (2000) argued that airport service quality should be "passenger focused" and stressed on four factors: airport access, airline-airport interface, inter-terminal transport, and passenger service issues as the key issues. AsQ is a benchmarked airport service quality tool in industry practise supported by ACI (Airports Council International) and IATA, which conducts surveys of big and smaller airports globally as an annual exercise. Though it is a tool to measure airport service quality, it does not report the extent or depth of the satisfaction that the diverse airline passenger segments perceive. It is important as there are common service areas and designated service areas in airline ground services for economy and business class passengers (Fodness and Murray, 2007). Even in terms of comparing, the airlines’ subject explanation about good, better is a relative term used in reference to another service received at another airport that relates to their previous experience of a service in any airport.

There is an underlying commonality that what makes airline passengers happy and satisfied depends on the infrastructure design and service creation capabilities. However, the perception of expectations of ground services and standards/levels of service delivered forms an airline passenger perception gap or being satisfied is a subjective matter in the above research context. The COVID19 protocols present additional service design and elements such as social distancing to safeguard health and safety for airline passengers and employees serving.
**Customer Satisfaction**

The concept of satisfaction and dissatisfaction in tourism has been cited in the airline service attributes as those components which meet the wants and become a need (Chan and Baum, 2007). The customers are entities that consume the supplied products and services. American Service Quality (2020) states of output that determines the level the customers are happy with the company products and services. It is also about capabilities of the firm offering the product/service which is able to meet the customer demands on time, every time.

The structural part of customer satisfaction is the feedback process to the service provider or to a third-party review platform, which helps the organisation to determine the best way to improve or change features in products or services (Kim et al. 2016). The model of customer satisfaction is defined pictographically by the American Service quality, which clearly shows the consumption activity is based on customer expectations and pre-set perceived value in mind. There are also certain expectations about the quality of product/service that consumers expect, failing which it leads to complaints. Organizations offering features embedded in products or services to meet customer needs are bound to exceed expectations and gain customer loyalty in the long run (Park et al. 2020). Customer satisfaction is a continuous process as it requires improvement by the organisations who need to be ‘customer-centric’ in their promise to maintain the levels of service (de Barros et al. 2007). They need to read, collect and act on feedback provided by the customers to approach customer satisfaction problems and their resolution.

Aviation related organisations that are able to link customer satisfaction and product design towards developing a better alternative solution is a progressive or developmental approach to close the service gap in airlines. Bilgihan et al. (2018) argued that it is evident that customer satisfaction is dependent on the service delivered and created by employees, guided by the management staff, which is nowadays talked about and rated online. Hence, the RBV (resource-based view) theory of Ferreira et al. (2016) is pertinent as it actions the services for defining the service delivery process in the service scape. The job descriptions and competencies need to match the task creation capabilities and offer customisation to meet the needs of the customers.

**Service Scape:**

Booms and Bitner (1990) earliest study detailed the servicescape model where the behaviour of people with respect to environment was outlined. The service scape does not include processes, but only the exterior and interior in which the environment or atmosphere is added to define the manner in which tangible (infrastructure) and intangible (services) are necessary.

Traveller anxiety and enjoyment, as reported by McIntosh (1998), have been reported to impact on emotions that are induced by experiences in the airport environment. Early studies on the environment and its being a stimulus have been reported as dependent on design, social factors, and the service scape (Batra, 2014). Bogicevic et al. (2016) reported that the satisfaction of airline
passengers is directly linked to the improved airport physical environment, improved standards of service, facilities, and amenities that serve the purpose. The airport consists of the physical dimensions of its external environment (parking, access by road, metro, railways), and internal environment (spatial layout and design, functionality, airport signs and symbols) to define the service landscape design for serving the passengers in the ground service consumption process (Chan and Chen, 2012). There is a SR stimulus response theory which states that individuals in an environment are likely to produce: pleasure-displeasure, arousal-non-arousal, dominance-submissiveness in the service environment. All of these are different dimensions of the environment as a stimulus that forces customers to explore unfamiliarity, remain in the environment, and show willingness to interact. White and Yanamandram (2007) argued that customers in which they are not in control and are unattractive lead to ignoring service and generate feelings of disappointment.

The satisfaction quotient stems from the convenience of airline travel at pre-boarding and post-de-boarding activities, which instil trust in the airport management system among passengers. academic literature in process perspective as discussed by Chen and Chang (2005) shows the results in the sense of safety and security, issues of wait times for service creation to happen, and the employee attitude towards service, all of which define the airport efficiencies. Therefore, it is evident that airline passengers would prefer efficiency (at less time, cost, and hassle) to define a service’s efficiency every time it is demanded. From a management perspective, the ability to use the employees and their competencies to meet the varied passenger expectations in the service scape of ground airport operations is key. There are elements of comfort like sound levels, light, ambience, temperature-humidity (Kotopouleas, 2015), crowding level, employee friendliness, which impact the experience factor in an airline passengers’ point of view (Donnelly, 2021).

The pre-journey anxiety, which comprises of infrastructure and services (tangible and intangible) elements of the airport facilities in managing the crowd with social distancing during queuing, seating and sanitisation processes to avoid COVID-19, impacts the passenger satisfaction continuum adversely.

**COVID19:**

The first instance of airport ground services in the physical environment being reported in academic research was reported by Liou et al. (2011). The researchers found the importance of the airport terminal, immigration, customs, security, quarantine area, along with employee service, affected the passenger perception of airport service. The aspects of health and wellbeing are integrated with the services offered. People are more cautious about their security and safety after the COVID-19 outbreak (Hamid and Azhar, 2021). The global pandemic COVID-19 that spreads through the air has necessitated each airport to follow the WHO guideline protocols. After the COVID-19 pandemic, the WHO states-
1. Detection of any airline passenger is a must for airports.

2. Interview of the airline passenger to determine symptoms and level of exposure (contamination mapping of COVID-19)

- Reporting cases documenting the chain of events related to airline passengers and COVID-19

1. National public health provisions for medical screening, testing, isolation immediately at the airport and subsequent medical attention by national public health

The implications are that additional measures in social distancing between two passengers in seating, standing in a queue, or in security checking at POE (points of entry and exit). Bolat and Ateş (2020) found that precautions for passenger safety are taken even in the small-scale airport check-in facility, while Kour et al. (2020) tried to ascertain the ground operations service quality and its impact on the revisit intention and reuse of the services related to COVID19 safety protocols. The current COVID-19 situation has heightened the level of stress and anxiety about the airport protocols. The airline passengers' concerns about health and safety are due to a highly contagious epidemic spreading through the air. Therefore, airline passenger satisfaction depends on how the ground services operations are able to maintain WHO guideline protocols for airports to ensure case-by-case safety, leading to satisfaction.

The spread of COVID19 is contagious and hence using ASQ as a service quality tool, to map its effectiveness at procedural level in meeting the WHO airline guidelines for passenger health safety needs a deeper blending.

Research Methods:

The research uses the survey methods to address the above ASQ elements applied in the COVID19 service delivery in airport operations. The sample size of (n=200) has been surveyed for both inbound and outbound airlines passengers passing through Kolkata airport in the month September, October and November 2021. Total 280 questionnaires were distributed among the passenger and after discarding the incomplete responses and outliers 200 sample were found to be appropriate for further analysis.

Data Analysis:

Reliability for factor 1 shows that validity of the questionnaire instrument used falls in the range of falls in the range of 0.907 by using the SPSS software. Sekaram & Bougie (2010) stated the following decision rules for the validity and reliability of the instrument: very good reliability (0.80-0.95), good reliability (0.70-0.80), fair reliability (0.60-0.70), poor reliability (less than 0.60). The Cronbach alpha coefficient (α) values in this research, therefore predict that in the context of the past research done and in the context of Kolkata airport the relevance of the tool is acceptable for this research. Reliability test result is shown in table 1.
Table 1: Reliability

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.907</td>
<td>9</td>
</tr>
</tbody>
</table>

Factor Analysis

In correlation matrix, the determinant value should not be = 0
Determinant = 1.879E-12

Table 2: KMO and Bartlett’s Test

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</th>
<th>.916</th>
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</thead>
<tbody>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td></td>
</tr>
<tr>
<td>Approx. Chi-Square</td>
<td>4810.515</td>
</tr>
<tr>
<td>Df</td>
<td>741</td>
</tr>
<tr>
<td>Sig.</td>
<td>.000</td>
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</tbody>
</table>

For sample adequacy the number of samples of respondents are taken, which is sufficient enough to carry factor analysis or not. It should be more than 0.7 , which indicate that is number of respondents is sufficient enough to carry out the factor analysis. In, our study its 0.916, hence required sample is sufficient enough to continue our study. In the ASQ questionnaire, a total 39 variables were taken for the Kolkata airport research study in which V4, v6,v17, v38 was not selected. The justification for this is based on the factor loading which is not sufficient and also communalities value is below 0.5. Table 3 shows the values of communalities for each item.

Table 3: Communalities

<table>
<thead>
<tr>
<th>Initial</th>
<th>Extraction</th>
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<tbody>
<tr>
<td>V1</td>
<td>1.000</td>
</tr>
<tr>
<td>V2</td>
<td>1.000</td>
</tr>
<tr>
<td>V3</td>
<td>1.000</td>
</tr>
<tr>
<td>V5</td>
<td>1.000</td>
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<tr>
<td>V7</td>
<td>1.000</td>
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<tr>
<td>V8</td>
<td>1.000</td>
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<td>V9</td>
<td>1.000</td>
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<td>V10</td>
<td>1.000</td>
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<td>V11</td>
<td>1.000</td>
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<tr>
<td>V12</td>
<td>1.000</td>
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<tr>
<td>V13</td>
<td>1.000</td>
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<tr>
<td>V14</td>
<td>1.000</td>
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<tr>
<td>V15</td>
<td>1.000</td>
</tr>
<tr>
<td>V16</td>
<td>1.000</td>
</tr>
<tr>
<td>V18</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Extraction Method: Principal Component Analysis.

The rotated component matrix in SPSS has shown the following- number1 component have (no of total variables) v18, v19, v16, v26, v15, v25, v13, v20, v24, while the number 2 component have v10, v1, v12, v14, v9., similarly the number 3 component have v28, v27, v22, v23, v21, v29. Further the number 4 component have v34, v33, v36, v32, v31, while the number 5 components have v41, v40, v42, v39. The number 6 component have v30 and v43, number 7 components have v3 and v2, and number 8 component have v7 and v8. These are the gaps in Airport
service quality (ASQ) that is eliminated, in offering customer services while new WHO protocols-based service quality for ground staff has been moderately found to impact perception.

**Conclusion:**

From the above SPSS analysis, it is evident that airport management in Kolkata has emphasized the role of leadership management to focus on the airport ground services during COVID 19. The employees who are enablers of the services have unlearned previous service quality dimensions at task and have incorporated the new COVID-19-based protocol. The COVID-19 service components are visible as per the perception of the passengers, though the impact of the human resource training and protocol-based service delivery is found to be moderately satisfactory during arrival and departure activities at Kolkata airport. The implications for airline passenger perception and satisfaction in the COVID-19 context are that the entire service touch points, from the start to end, required to follow the social distancing between two passengers in seating, standing in a queue, or in security checking at POE (points of entry and exit). However, there are exposed visible gaps which are attributed to passenger laxity towards social conformance behaviour that can be linked to organizational citizenship behaviour in public places while consuming the service. The changes that happened in the lives of individuals, communities, firms, and organization because of the COVID-19 pandemic have entirely re-devised the world (Kukreti and Dangwal, 2021).

In the Kolkata airport, given the current situation of COVID19, has heightened fear of anxiety, strain and tension in passengers that impacts the psychological well-being. It has affected the Kolkata airport ground service capabilities, in terms of time, speed, and positive outcomes every day for all arrivals and departures, as lack of cohesive behaviour impacts ground staff, to manage to adherence of social behaviour that supports passenger well-being. It has in place signage and direction-finding way, sanitisation, medical reusable bins at appropriate places in the Kolkata airport that impacts actions at behavioural level, cognition, thinking leading to positive well-being of airlines passengers passing through Kolkata. The airlines passenger faces the challenge, to find personal safety and avoid the highly contagious epidemic virus, through contact-less behaviour cues, guidance, using cognition and self-judgement. Therefore, ground airport services operations efficacy maintaining the WHO guiding protocols for airports, need periodical audits randomly, on daily basis, to create mechanisms to close the gaps to maintain the passenger health safety, leading to passenger satisfaction. The airport includes the infrastructure dimensions of its outside environment (parking, getting right of entry to via avenue, metro, railways), and inner surroundings (spatial layout and design, functionality, airport signs and symptoms, and logos) to outline the carrier-scapes design for serving the passengers in the ground offerings consumption process. The passenger satisfaction quotient emanates from the ease of airline travel at pre-boarding, submit de-boarding activities in all customer touch points in a service scape that generates a self-belief of assurance in the Kolkata ground airport for the travelers.
**Future Scope**

The present study have some limitations, the sample for the current study is limited to 200, further study can be conducted with bigger sample size which can lead to different result. The present study also have a geographical limitation the study area is limited to one airport further study can be done in other airports and comparison can be done. The study is limited to identify the factors, further it can be done to know the impact of these factors on the customer satisfaction and well-being. The similar study can be done from the prospective of the ground staff and management of the airport, which will help in understand the different view and the challenges of Kolkata airport (CCU).

**Reference:**


