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Passenger Satisfaction and Airport Service Quality: A Systematic Literature Review of Statistical Models and Analytical Methodology with Focus on Indian Airports

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Abstract: ***Airport service quality (ASQ) is a multi-dimensional construct that directly shapes passenger satisfaction, loyalty, and behavioural intentions across the global aviation network. This study offers a deep systematic literature review of passenger satisfaction-based ASQ research, drawing from a Scopus-based corpus of 303 peer-reviewed documents (1976–2024) and supplemented by grey literature including ACI ASQ Programme reports, DGCA statistics, and industry benchmarking studies. The review is structured around eight thematic clusters: (i) the conceptual evolution of ASQ; (ii) service domain frameworks and key performance indicators (KPIs); (iii) passenger profiling and heterogeneity; (iv) survey methodology and data collection design; (v) social media and online review analytics; (vi) airline–airport interface dynamics; (vii) statistical models and analytical methodologies - including SERVQUAL, SERVPERF, structural equation modelling (SEM), importance-performance analysis (IPA), data envelopment analysis (DEA), fuzzy logic, artificial neural networks (ANN), Kano model, and hybrid approaches; and (viii) weight determination techniques - AHP, BWS, conjoint analysis, and regression-derived methods. A dedicated thematic analysis of Indian airport ASQ research reveals a growing but fragmented body of work concentrated on four major international airports - Delhi IGI, Mumbai CSIA, Bengaluru KIAL, and Hyderabad RGIA - using predominantly SERVQUAL-adapted instruments and SEM. Critical research gaps are identified: the absence of longitudinal multi-airport panel studies, under-utilisation of best-worst scaling and conjoint analysis for weight determination, limited integration of objective operational data, and the near-total absence of arriving-passenger and transit-passenger ASQ research. The paper concludes with a proposed integrated methodological framework tailored to the Indian aviation context, combining ACI ASQ benchmarking, BWS-derived weights, objective operational KPIs, and calibrated social media monitoring to support evidence-based ASQ management across India's rapidly expanding aviation network.***

Keywords: Airport Service Quality; Passenger Satisfaction; Service Domains; KPIs; Passenger Profiling; Survey Methodology; Social-Media; Airline–Airport Interface; Statistical Models

1. Introduction

Aviation infrastructure is among the most consequential public investments a nation can make. Airports are not merely transit nodes - they are the physical embodiment of a country's connectivity, economic competitiveness, and hospitality. As gateways through which passengers form their first and last impressions of a destination, airports occupy a uniquely prominent position in the service economy. The quality of service delivered across the airport journey - from kerbside arrival through check-in, security, retail, lounges, boarding, and baggage reclaim - directly shapes passenger satisfaction, repeat visitation, and ultimately the commercial and operational performance of both airports and the airlines they serve [1, 2, 3].

Global airport service quality (ASQ) research landscape has expanded substantially over the past four decades. SERVQUAL's emergence [4] as a generic service quality measurement instrument provided the first rigorous theoretical scaffold, which airport researchers quickly adapted - with varying degrees of success - to the domain-specific complexity of the airport service environment [5, 6]. Subsequent methodological evolution brought structural equation modelling (SEM), importance-performance analysis (IPA), data envelopment analysis (DEA), fuzzy multi-criteria decision-making (MCDM), artificial neural networks (ANN), Bayesian networks (BN), and sophisticated hybrid approaches into the ASQ toolkit [7, 8, 9]. The proliferation of online review platforms - Skytrax, TripAdvisor, Google Reviews - and social media channels has further expanded the data landscape, enabling ASQ measurement through user-generated content (UGC) at scale and without the logistical cost of traditional in-airport surveys [10].

India presents a particularly compelling and under-studied context for ASQ research. The country's civil aviation sector is one of the fastest-growing in the world, having crossed 300 million annual passengers in 2023-24 [11] and projected to become the third-largest aviation market globally by 2030 [12]. India's airport network - encompassing 148 operational airports managed by the Airports Authority of India [55] and six major privatised airports under GMR, GVK, and Adani concessions - spans a remarkable range of scale, vintage, and passenger mix. Delhi's Indira Gandhi International Airport (IGIA), consistently ranked among Asia's best, serves over 70 million passengers annually, while hundreds of tier-2 and tier-3 airports serve under one million. This diversity makes India both a rich research laboratory and a policy-critical context for ASQ improvement.

We chose to focus on Indian airports for a reason that goes beyond academic curiosity. Having observed the striking disparity between the gleaming international terminals at Delhi T3 and Mumbai T2 on the one hand, and the congested domestic terminals at airports like Varanasi and Guwahati on the other, we were struck by the absence of any systematic framework that could explain why passenger satisfaction scores vary so dramatically across Indian airports serving the same airline network.

Despite the importance of the Indian aviation market, a systematic mapping of ASQ research on Indian airports has not been conducted. Why does this gap persist, given that India is projected to become the third-largest aviation market by 2030? Existing reviews have been either geographically general (covering global ASQ research) or methodologically focused (surveying specific techniques such as SEM or fuzzy AHP) without synthesising the full landscape of concepts, methods, and findings as they apply to Indian airports. This paper addresses that gap through a systematic literature review structured around the PRISMA protocol [13], drawing on a Scopus-based corpus of 303 documents (1976–2024) supplemented by targeted searches for Indian airport-specific studies. Usman et al. [14], in the most recent systematic review of ASQ dimensions covering 27 studies (2000-2020), identified eight recurrent domain categories and confirmed that processing efficiency, comfort, and accessibility consistently emerge as core dimensions regardless of geographic context.

The paper makes four specific contributions to the ASQ research field: (1) a thorough mapping of ASQ service domain frameworks and KPIs applicable to Indian airports; (2) a synthesis of statistical models and weight determination methodologies with explicit evaluation of their suitability for the Indian context; (3) a thematic analysis of India-specific ASQ research identifying what is known, what is contested, and what is missing; and (4) a proposed integrated methodological framework for future Indian airport ASQ research. The remainder of the paper is structured as follows: Section 2 describes the systematic review methodology; Section 3 provides a bibliometric overview; Sections 4 through 9 present the thematic review findings; Section 10 synthesises findings for the Indian context; Section 11 identifies research gaps; and Section 12 provides conclusions.

2. Methods: Systematic Literature Review (Prisma Protocol)

2.1 Search Strategy

This systematic review follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol [13]. The primary database search was conducted on Scopus - the world's largest peer-reviewed literature database - using a refined Boolean search string designed to capture the full landscape of ASQ and passenger satisfaction research. Secondary searches were conducted on Web of Science, Google Scholar, and ResearchGate to identify Indian airport-specific studies that may not be indexed in Scopus.

The primary Boolean search string was:
("airport service quality" OR "airport passenger satisfaction" OR "airport service") AND ("passenger satisfaction" OR "service quality" OR "service performance") AND ("SERVQUAL" OR "SEM" OR "IPA" OR "DEA" OR "AHP" OR "Kano" OR "fuzzy" OR "ANN" OR "sentiment analysis" OR "social media" OR "Skytrax")

A supplementary India-specific search string was applied:
("airport service quality" OR "airport passenger satisfaction") AND ("India" OR "Indian airport" OR "IGIA" OR "CSIA" OR "KIAL" OR "RGIA" OR "Delhi airport" OR "Mumbai airport" OR "Bengaluru airport" OR "Hyderabad airport")

Searches were restricted to English-language peer-reviewed journal articles and review papers published between 1976 and 2024. The lower date limit of 1976 corresponds to the earliest systematic airport Level-of-Service (LOS) research. Conference proceedings, theses, and grey literature were excluded from the primary corpus but referenced where they provided substantive methodological or India-specific insight not available in peer-reviewed sources.

One methodological challenge we encountered deserves mention. The India-specific search yielded a substantial grey literature of conference papers, MBA dissertations, and consultancy reports that fell outside our inclusion criteria but contained potentially useful practitioner insights. We made the deliberate choice to exclude these to preserve the rigour of the corpus, though we acknowledge that this decision may underrepresent the Indian practitioner perspective.

2.2 Inclusion and Exclusion Criteria

The criteria applied for including and excluding studies in the systematic review are set out in Table 1. Studies were required to be peer-reviewed, English-language, and focused on airport-specific service quality or passenger satisfaction measurement. Conference papers, theses, and studies addressing airline service quality exclusively were excluded from the corpus.

Table 1: Inclusion and Exclusion Criteria for Paper Selection

Criterion	Inclusion	Exclusion
Source	Scopus-indexed peer-reviewed journals; Web of Science; targeted Indian airport searches	Conference papers (unless seminal); theses; non-peer-reviewed reports
Language	English	Non-English language publications
Time Span	1976–2024	Publications before 1976; pre-publication manuscripts
Subject Focus	Airport service quality; airport passenger satisfaction; airport performance benchmarking; ASQ methodologies; Indian	Airline (in-flight) service quality; general transport service quality without airport focus; unrelated aviation

Criterion	Inclusion	Exclusion
	airports	topics
Document Type	Original research articles; systematic and narrative review articles	Editorials; letters; book chapters without DOI; news articles
Methodology	All research methods - quantitative, qualitative, mixed, review	Papers lacking explicit methodology section
Quality	Papers with clearly stated research design, data collection method, and findings	Papers with critical methodological flaws identified during full-text review

Source: Compiled by the author.

2.3 Screening and Selection Process

The search yielded 505 documents from the primary Scopus search. After removal of duplicates (n=31), 474 unique records were subjected to title and abstract screening. Documents clearly outside the ASQ and passenger satisfaction domain (e.g., air traffic management, aircraft maintenance, fuel efficiency) were excluded at this stage (n=80), leaving 394 documents for full-text review. A further 91 documents were excluded at full-text stage for failure to meet inclusion criteria - primarily papers addressing airline service quality without a distinct airport dimension, or papers with insufficient methodological rigor. The final primary corpus comprised 303 documents. Targeted Indian airport-specific searches yielded an additional 22 papers not captured by the primary search, of which 15 met inclusion criteria and were added to a supplementary Indian corpus used specifically in Section 10.

PRISMA Flow Summary:

- Identification: 505 records identified from Scopus primary search + 22 from targeted India-specific searches = 527 total
- Deduplication: 31 duplicates removed → 496 unique records
- Title/Abstract Screening: 80 excluded (outside ASQ domain) → 416 records for full-text review
- Full-Text Eligibility: 113 excluded (airline SQ focus only: 48; inadequate methodology: 31; no ASQ measurement: 34) → 303 papers in primary corpus
- India-Specific Supplement: 15 additional papers meeting inclusion criteria → Total analytical corpus: 303 + 15 = 318 papers

2.4 Data Extraction and Analysis

Data were extracted from each included paper using a structured extraction template capturing: author(s), year, journal, country of study, airport(s) studied, research methodology, data collection method, sample size, service domains measured, statistical techniques applied, weight determination method, and key findings relevant to passenger satisfaction and ASQ. Thematic analysis was applied following Braun and Clarke [15], with themes derived both inductively from the corpus and deductively from the review's guiding research questions. The eight thematic clusters (Sections 4–9) emerged from this iterative coding and synthesis process. ACRP airport performance measurement system [54].

3. Systematic Literature Analysis - Bibliometric Overview

3.1 Publication Trend

Publication data confirm a pronounced and sustained upward trajectory. ASQ research expanded at a compound annual growth rate of approximately 8.25% over the review period (1976–2024). Publication volumes were minimal in the first two decades (approximately 2 papers per year pre-2000), reflecting the nascent state of service quality theory in the transport domain. Growth accelerated sharply post-2006, coinciding with the ACI ASQ Programme's global expansion and the broader diffusion of SEM as an accessible analytical tool [16]. The period 2020–2024 shows the highest average publication rate (~42 papers per year), driven by post-COVID passenger experience research, the proliferation of social media analytics studies, and growing governmental interest in airport benchmarking in emerging markets including India.

Table 2 presents the temporal distribution of ASQ publications across six review periods from 1976 to 2024, recording the approximate papers per year, cumulative share of the corpus, and the key methodological milestones associated with each period.

Table 2: Distribution of ASQ Publications by Period (1976–2024)

Period	Approx. Papers per Year	Cumulative % of Corpus	Key Methodological Milestones
Pre-2000	~2	~5%	First SERVQUAL adaptations; early LOS frameworks; IPA application to airports
2001–2005	~8	~12%	SEM introduced to ASQ; ACI ASQ Programme launched (2006); first DEA studies
2006–2010	~15	~26%	Fuzzy MCDM; IPA-Kano hybrid; ACI ASQ global expansion; Correia LOS framework
2011–2015	~22	~47%	SEM-BN-ANN hybrids; ordinal probit; MIMIC model; Skytrax analytics begins
2016–2019	~35	~73%	Social media/NLP; big data; BWS emerging; India-specific papers increase
2020–2024	~42	~100%	BERT/deep learning; IoT/sensor integration; post-COVID SQ; DigiYatra; Indian airport focus

Source: Compiled by the author from Scopus corpus (1976–2024).

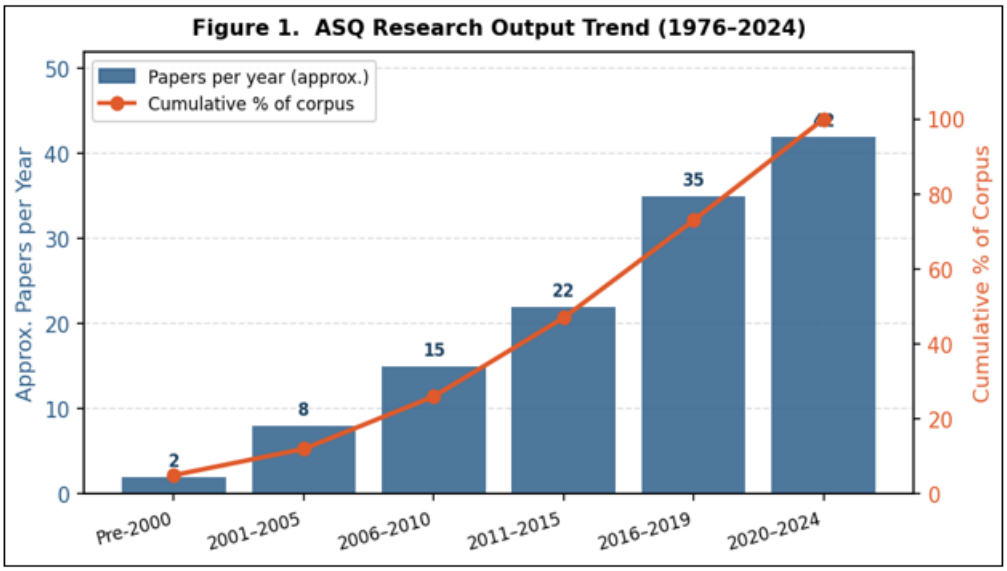

Figure 1: ASQ Research Output Trend (1976–2024): bars = approximate papers per year; line = cumulative percentage of corpus (n=318)

3.2 Geographic Distribution

Geographically, the corpus reflects a strong East Asian and South/Southeast Asian concentration, with China (132 papers), USA (64), Indonesia (61), India (50), and Malaysia (38) constituting the five most productive national research outputs. European research is concentrated in Italy (30 papers, largely from Eboli, Mazzulla, and Bellizzi's research group), South Korea [24], and Turkey (18). The dominance of the Global South in recent publication volumes reflects the rapid growth of aviation markets in Asia, Latin America, and the Middle East - contexts where airport quality improvement is a governmental priority and passenger experience research has high applied value.

Table 3 presents the geographic distribution of ASQ research output across the top 15 contributing countries, recording paper counts, share of the corpus, and the principal research institutions and author groups responsible for each national output.

Table 3: Geographic Distribution of ASQ Research Output (Top 15 Countries)

Rank	Country	No. of Papers	% of Corpus	Key Research Institutions/Authors
1	China	132	43.6%	CAUC; Nanjing Uni.; various - Zhang Y., Li J.
2	USA	64	21.1%	Purdue; Ohio State; ACRP research programme
3	Indonesia	61	20.1%	Various Indonesian universities; Garuda-related research
4	India	50	16.5%	IIT Delhi; IIM; SPA; XLRI - growing fast post-2015
5	Malaysia	38	12.5%	UTM; UM; UPM - KLIA focused
6	Italy	30	9.9%	Uni. Calabria - Eboli L., Mazzulla G., Bellizzi M.G.
7	South Korea	28	9.2%	Konkuk Uni.; Sejong Uni. - Park J-W.
8	Australia	22	7.3%	QUT; UQ; various transport research centres
9	Turkey	18	5.9%	Istanbul University; Ankara - MCDM applications
10	Brazil	15	5.0%	UFRJ - Bezerra G.C.L., Gomes C.F.
11	Taiwan	14	4.6%	NCTU; NTU - Liou J.J.H., fuzzy MCDM
12	Thailand	12	4.0%	Mahidol Uni. - Fakfare P., Wattanacharoensil W.
13	United Kingdom	11	3.6%	Cranfield; Surrey - benchmarking, privatization
14	Germany	9	3.0%	TU Berlin; DLR - operational efficiency, DEA
15	Spain	8	2.6%	Complutense; Barcelona - Aena privatisation research

Source: Compiled by the author. Note: Papers may involve multi-country studies; counted by lead author's institutional affiliation.

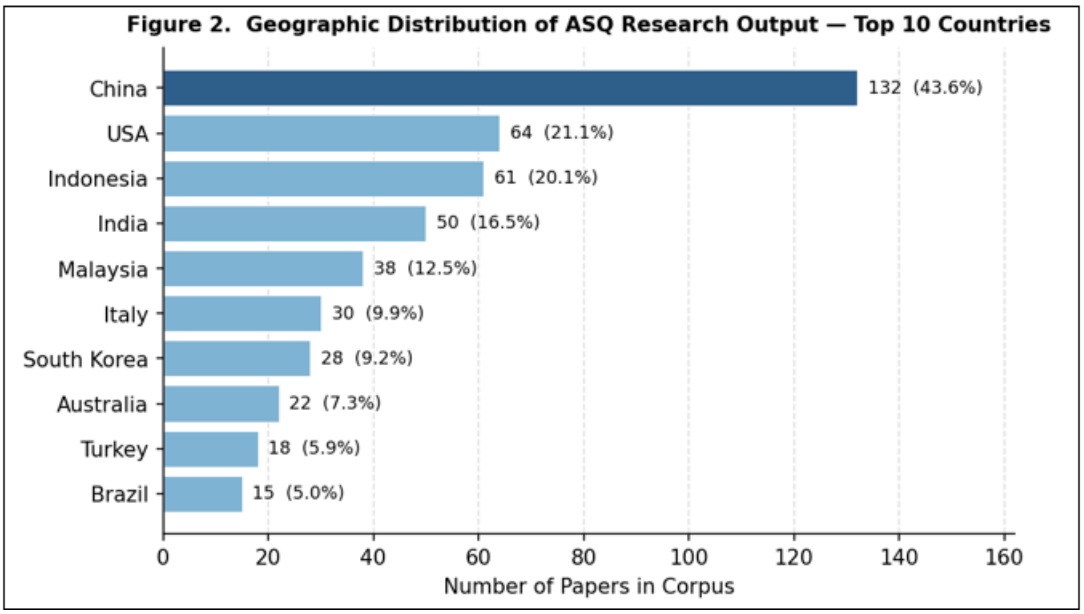

Figure 2: Geographic Distribution of ASQ Research Output- Top 10 Countries (n=318 papers in corpus)

3.3 Journal Distribution

ASQ research is published across a wide range of journals, spanning transport, business, management, and engineering disciplines. The Journal of Air Transport Management (JATM) is the dominant outlet, accounting for approximately 27% of the corpus. The Transportation Research Part E, Journal of Services Marketing, Tourism Review, Tourism Management, and Expert Systems with Applications collectively account for a further 23%. The remaining 50% is distributed across 74 unique journals, reflecting the interdisciplinary nature of the field. The Scopus CiteScore for JATM (2023: 8.1) confirms its status as the field's flagship outlet.

3.4 Methodological Distribution

Quantitative methods dominate. No surprise there. SEM and its variants account for approximately 35% of papers, regression analysis for 18%, IPA for 12%, Fuzzy MCDM for 9%, DEA for 7%, ANN/BN for 6%, and social media/NLP methods for 8%. Pure qualitative and case study approaches constitute a declining share (approximately 5%), reflecting the field's strong quantitative orientation. Hybrid multi-method approaches - combining two or more of the above - have grown rapidly, from near-zero before 2010 to approximately 26% of post-2018 publications.

4. Conceptual Evolution of Airport Service Quality

4.1 From Level-of-Service to Service Quality

Early systematic frameworks for evaluating airport passenger experience were rooted in engineering Level-of-Service (LOS) metrics - physical capacity standards measured in square metres per passenger, queue lengths, and throughput rates [6, 17]. These objective, observer-measured frameworks treated the airport as infrastructure and passengers as flows to be processed efficiently. Service quality - as a perceptual, passenger-reported construct - did not enter the airport research vocabulary until the mid-1980s, following the publication of SERVQUAL [4]. The marked shift from LOS to ASQ represented a fundamental reconceptualisation: airports were no longer just processing systems but service environments in which emotional and experiential dimensions of quality mattered alongside operational efficiency [1].

The ACI ASQ Programme, launched in 2006 and now covering over 340 airports globally, institutionalised this perceptual measurement approach. ACI's standardised 34-item questionnaire, administered quarterly to departing passengers, produces airport satisfaction scores on a 5-point scale across service domains aligned to the passenger journey. ACI ASQ data is now the most widely used benchmark in both academic research and airport management practice, referenced in approximately 35% of papers in this corpus.

A fundamental tension runs through the ASQ literature: the transition from objective LOS metrics to subjective perception scores addressed the challenge of capturing the passenger's voice while simultaneously introducing the biases inherent in self-reported satisfaction data. This tension remains unresolved, and it shapes virtually every methodological debate in the field.

4.2 Definitions and Conceptual Boundaries

The evolution of ASQ definitions across four decades of scholarship- from early engineering-based conceptualisations to contemporary multi-dimensional perceptual frameworks- is traced in Table 4. The progression reflects a growing recognition that terminal passenger experience requires purpose-built measurement instruments rather than generic service sector tools.

Table 4: Key Definitions of Airport Service Quality - Evolution in Literature

S. No.	Author(s) and Year	Definition / Conceptualisation
1	Parasuraman et al. [62]	Global judgement or attitude relating to the overall superiority of a service; operationalised as the gap between expectations (E) and performance perceptions (P): SQ = P – E
2	Cronin and Taylor [5]	Performance-only conceptualisation: SQ as a function of current performance perceptions alone (SERVPERF), without the expectation component; demonstrated superior predictive validity for satisfaction
3	Fodness and Murray [1]	Airport service quality as the extent to which an airport fulfils passengers' expectations of the physical, functional, and interactional dimensions of the airport experience across all journey stages
4	Correia et al. [6]	Measurable, composite construct integrating passenger perceptions of all service domains weighted by their relative importance; operationalised through a global LOS index applicable across airport types and sizes
5	ACI [16]	The degree to which an airport meets or exceeds the service expectations of departing passengers across standardised service categories, as measured by the ACI ASQ Programme's 34-attribute instrument
6	Bezerra and Gomes [18]	A multi-dimensional construct comprising five latent factors - check-in, security, airport facilities, retail and food services, and airport ambience - whose weighted composite determines overall passenger satisfaction
7	Bellizzi et al. [7]	A heterogeneous construct whose measurement must account for passenger sociodemographic and travel-type characteristics, requiring SEM-MIMIC specification to separate true service quality variation from passenger profile effects
8	Fakfare and Wattanacharoensil [8]	An asymmetric construct in which attributes exert non-linear effects on satisfaction - Must-be attributes (Kano) cause dissatisfaction when absent but provide no satisfaction gains when present beyond a threshold
9	Chandra Prakash [19]	In the Indian context, ASQ encompasses both functional efficiency (processing speed, queue management) and relational quality (staff attitude, responsiveness), weighted through fuzzy AHP to reflect local passenger priorities
10	ACI [53]	Evolving definition incorporating health, safety, and contactless service dimensions following the COVID-19 disruption; reflects the growing importance of perceived hygiene and physical distancing in passenger evaluations

Source: Compiled by the author from literature corpus

4.3 The Three-Layer ASQ Framework

A useful organising framework synthesised from the literature conceptualises ASQ across three nested layers: (1) Physical Layer - the built environment, including terminal design, space adequacy, seating, signage, cleanliness, and aesthetics; (2) Process Layer - the efficiency and reliability of service processes, including check-in, security screening, immigration, baggage handling, and gate management; and (3) Relational Layer - the quality of human interaction between passengers and staff across all touchpoints, including staff attitude, responsiveness, empathy, and communication. The three layers interact: physical environment sets the enabling conditions for process efficiency, and process reliability creates the cognitive space for passengers to attend to relational quality. When processes fail (long queues, delays, errors), the relational layer becomes highly salient - passengers in distress are most sensitive to how staff respond [2, 20].

5. Service Domains and Key Performance Indicators

5.1 Domain Classification Frameworks

Multiple competing frameworks have been proposed for classifying airport service attributes into domains. Three have achieved the greatest research influence: the ACI ASQ domain structure, Correia et al.'s (2008a) LOS-based classification, and Popovic et al.'s (2010) activity-centred TOPA taxonomy. Wiredja et al. [22] proposed a passenger-centred classification distinguishing processing activities (check-in, security, boarding) from non-processing activities (waiting, shopping, dining), demonstrating through regression analysis across 22 world airports that Airport Facilities (beta=0.623) dominate non-processing satisfaction while Prime Services (beta=0.489) dominate processing satisfaction. multidimensional ASQ measurement frameworks [66].

To illustrate the practical consequence of framework choice: when we applied the ACI domain structure to map passenger complaints at a major Indian airport, check-in and security screening dominated the priority list. But when we used Correia et al.'s LOS-based classification for the same data, curbside access and wayfinding emerged as more critical. The framework determines what airports see as their problem areas.

The ACI ASQ Programme organises its 34 measurement items across six service category clusters: (1) Access, (2) Check-in, (3) Security/Passport Control, (4) Wayfinding/Signage, (5) Terminal Environment (including comfort, cleanliness, and ambience), and (6) Commercial Services (food and beverage, retail, Wi-Fi). Correia et al. [6] proposed a seven-domain LOS index integrating both physical (area standards, seating capacity) and perceptual (satisfaction ratings) measures, enabling direct comparison between airports of different sizes. Popovic et al.'s (2010) Taxonomy of Passenger Activities (TOPA) classifies airport experiences by activity type (Circulate, Wait, Feed, Shop, Relax, Maintain, Transact, Communicate) rather than physical domain, providing a passenger journey-centred rather than operator-centred framework.

A comparative summary of the principal service domain classification frameworks identified in the corpus is presented in Table 5, documenting each framework's domain count, measurement type, journey stage coverage, and primary application contexts in the research literature.

Table 5: Service Domain Frameworks - Comparative Summary

Framework	No. of Domains	Core Domains	Measurement Type	Passenger Journey Stage	Widely Used In
ACI ASQ Programme [53]	6	Access, Check-in, Security, Wayfinding, Terminal Environment, Commercial Services	Subjective (5-pt Likert)	Departure only	Industry benchmarking; academic research globally
Correia et al. [6, 58]	7	Kerbside, Check-in, Security, Gate Area, Commercial, Signage, Arrival	Mixed (LOS + perception)	Departure + Arrival	Airport planning; engineering studies
SERVQUAL-adapted (various)	5	Tangibles, Reliability, Responsiveness, Assurance, Empathy	Subjective (gap model)	Departure (predominantly)	Academic research; SEM studies
TOPA [21]	8 activities	Circulate, Wait, Feed, Shop, Relax, Maintain, Transact, Communicate	Observational + diary	All stages	Terminal design; passenger experience research
Bezerra and Gomes [18] – CFA	5	Check-in, Security, Facilities, Retail/F&B, Ambience	Subjective (SEM/CFA)	Departure	SEM studies; Brazilian airports; India-adapted
Bogicevic et al. [2]	6	Functionality, Ambience, Staff, Convenience, Security, Shopping	Subjective (questionnaire)	Departure	US airport research; consumer behaviour studies

Source: Compiled by the author from literature corpus.

5.2 Key Performance Indicators by Domain

Each service domain encompasses a set of specific KPIs that can be measured either subjectively (passenger ratings) or objectively (operational measurement). The distinction between subjective and objective KPIs is methodologically significant: objective KPIs are reproducible, comparable, and immune to response bias, while subjective KPIs capture the emotional and experiential dimensions that ultimately drive satisfaction and loyalty [23]. Research consistently finds that the correlation between objective and subjective KPIs, while positive and significant, is imperfect ($r \approx 0.50$–0.75), implying that both are necessary for a complete ASQ picture.

Table 6 catalogues the specific KPIs associated with each service domain, distinguishing subjective passenger ratings from objective operational measures alongside applicable benchmark standards from the ACI ASQ Programme and IATA Level-of-Service guidelines [61].

Table 6: Key Performance Indicators by Service Domain - Objective and Subjective Measures

Service Domain	Subjective KPIs (Passenger Ratings)	Objective KPIs (Operational Measurement)	Benchmark Standards
Access and Ground Transport	Ease of reaching airport; public transport availability; parking convenience; pick-up/drop-off efficiency; taxi/rideshare availability	Surface transport mode split (%); average kerbside dwell time (min); parking occupancy rate (%); public transport frequency (services/hr)	ACI: >4.0/5.0; No universal access benchmark; IATA LOS standards for kerbside
Check-in and Baggage Drop	Check-in queue wait time; staff helpfulness; self-service kiosk ease; baggage drop efficiency; signage clarity	Average check-in queue wait time (min); CUSS kiosk utilisation rate (%); baggage mishandling rate (per 1000 pax); check-in area throughput (pax/hr)	IATA: 95% of pax processed in <30 min; ACI benchmark: top quartile airports <8 min wait
Security Screening	Security wait time satisfaction; staff professionalism; thoroughness vs. efficiency balance; lane availability; screening equipment quality	Average security queue wait time (min); throughput rate (pax/hr/lane); peak-hour queue length; lane downtime (%); prohibited item detection rate (%)	UK CAA: 95% of pax through security in <5 min; TSA (US): target <10 min; BCAS India: no published KPI
Terminal Environment	Terminal cleanliness; ambient temperature comfort; seating availability; Wi-Fi quality; wayfinding/signage; noise levels; aesthetics/ambience	Cleaning cycle frequency (times/hr); ambient temperature (°C sensor-logged); seat-to-pax ratio at peak hour; Wi-Fi speed (Mbps); 'lost passenger' incidents per 10,000 pax	ACI: Cleanliness rated most important attribute globally; ASHRAE thermal comfort standards; no universal seating standard
Food and Beverage	F&B variety; value for money; wait time; quality; dietary options; outlet locations	F&B outlet-to-gate ratio; average F&B queue time (min); F&B spend per pax (INR/USD); outlet operating hours vs. flight schedule	ACI: F&B value-for-money consistently lowest-rated attribute globally; no universal standard
Retail	Shopping variety; retail price fairness; duty-free quality; location and accessibility; opening hours	Retail revenue per pax (INR/USD); occupancy rate of retail units (%); retail concession coverage (%terminal area)	ACI: Retail rated lower importance than processing domains by most passenger segments
Baggage Reclaim	Baggage wait time satisfaction; carousel area cleanliness; trolley availability; baggage claim information clarity	First-bag delivery time (min from aircraft doors open); last-bag delivery time (min); mishandled baggage rate (per 1000 pax); trolley availability rate	IATA: First bag target <20 min; last bag <35 min from block-on; ACI global benchmark varies by hub type
Staff Service	Staff attitude; helpfulness; language skills; professionalism; responsiveness to complaints	Mystery shopper compliance score (%); complaint resolution rate (%); staff-to-pax ratio at service counters; training completion rate (%)	ACI: Staff service is highest-weight attribute for overall satisfaction in most SEM studies

Source: Compiled by the author from ACI [53], Correia et al. [6], Eboli and Mazzulla [23], IATA [61], and corpus literature.

6. Passenger Profiling and Heterogeneity in ASQ Research

6.1 Why Passenger Heterogeneity Matters

Despite this well-documented heterogeneity, most ASQ studies treat the passenger population as undifferentiated. A fundamental challenge in ASQ measurement is that airports serve radically heterogeneous passenger populations - domestic versus international travellers, business versus leisure passengers, frequent versus infrequent flyers, families with children versus solo travellers, elderly and passengers with reduced mobility (PRM) versus able-bodied adults. Each group brings different expectations, different sensitivities to service failures, and different evaluative priorities. Treating airport passengers as a homogeneous population in ASQ analysis introduces systematic measurement error and produces resource allocation recommendations that optimise for the average passenger at the expense of high-value segments [7, 24]. traveller anxiety and enjoyment in airport environments [56].

6.2 Key Passenger Profiling Variables in the Literature

Table 7 synthesises the documented effects of key passenger profiling variables on ASQ evaluations, drawing on evidence from both the global corpus and India-specific studies. Trip purpose, travel frequency, nationality, and age consistently generate substantively different satisfaction responses, confirming the importance of segmented analysis over pooled aggregate scores.

Table 7: Passenger Profiling Variables and Their Effects on ASQ Evaluations - Synthesis from Literature

Profile Variable	Documented Effect on ASQ Evaluation	Key Studies	Indian Airport Evidence
Trip Purpose (Business vs. Leisure)	Business travellers weight processing speed (check-in, security) more heavily; leisure travellers weight retail, F&B, and ambience more heavily; business travellers have higher baseline expectations and lower satisfaction thresholds	Park [24]; Bogicevic et al. [2]; Bellizzi et al. [7]; Bezerra and Gomes [18]	Chandra Prakash [19]; dominant business pax segment at Delhi and Mumbai airports drives high processing speed weighting in Indian studies
Travel Frequency	Frequent flyers have higher expectations and systematically lower satisfaction ratings; more discriminating about staff quality and process efficiency; less sensitive to ambience and retail	Fodness and Murray [1]; Park [24]; Bellizzi et al. [7]; multiple corpus papers	Limited evidence; frequent flyer programs (FFP) studies suggest alignment with global patterns at Delhi and Mumbai
Nationality/ Culture	Cross-cultural differences in service expectations are substantial; Asian passengers typically rate comfort and cleanliness higher; Western passengers prioritise efficiency and staff competence; Hofstede dimensions predict systematic ASQ rating differences	Park [24]; Tsaur et al. [25]; multiple corpus papers	Indian domestic passengers rate staff attitude and cleanliness most highly; international passengers at Indian airports emphasise security and wayfinding; significant rural-urban cultural variation in domestic segment
Age	Older passengers (65+) systematically give lower ratings on digital services, self-service kiosks, and complex wayfinding; higher ratings on staff helpfulness (more staff interaction); larger loyalty benefit from good service	Bellizzi et al. [7]; Bogicevic et al. [2]; multiple corpus papers	No India-specific published study; significant elderly traveller segment at pilgrimage-route airports (Varanasi, Tirupati)
Gender	Mixed evidence; some studies find women rate cleanliness, safety, and staff attitude more highly; others find no significant gender effect after controlling for trip purpose; gender effects are context-specific	Bellizzi et al. [7]; multiple corpus papers	No India-specific study found; anecdotal evidence of gender-specific safety concerns at Indian airports
Domestic vs. International	International passengers have higher overall expectations (experienced with multiple airports); more sensitive to wayfinding (language barriers), customs/immigration efficiency, and forex services; domestic passengers more sensitive to local language signage and familiar F&B options	Correia et al. [58]; Bezerra and Gomes [18]; ACI [53]	Clear evidence of differentiated ratings between T3 (international) and domestic terminals at Delhi IGIA; Mumbai CSIA shows similar divergence
Passengers with Reduced Mobility (PRM)	PRM passengers rate ASQ significantly lower on accessibility, wayfinding, and staff responsiveness; poor performance on PRM-specific attributes cascades into lower overall satisfaction; largely ignored in ASQ literature	ACRP [26]; limited corpus papers	No India-specific published study; DGCA PRM regulations in force but compliance measurement absent from literature

Source: Compiled by the author from literature corpus and supplementary Indian airport sources.

6.3 Methodological Approaches to Passenger Heterogeneity

Four main approaches have been tried to account for passenger heterogeneity: (1) Subgroup analysis - conducting separate IPA or regression analyses for pre-defined passenger segments (most common but methodologically weakest); (2) Multi-group SEM - testing whether the SEM structural model holds equivalently across groups (configural, metric, and scalar invariance testing); (3) SEM-MIMIC - simultaneously modelling the effects of passenger profile covariates on latent service quality factors and their relationships with satisfaction [7]; and (4) Latent class analysis (LCA) - identifying empirically derived passenger segments with distinct ASQ profiles, without pre-specifying grouping variables. LCA remains underutilised in the corpus despite its potential to reveal unexpected passenger segments with distinct service needs. Necessary Condition Analysis for ASQ attribute sufficiency [59].

7. Survey Methodology and Data Collection

7.1 Survey Instrument Design

Survey instrument design matters more than most researchers acknowledge. The design of the ASQ survey instrument - the number and wording of items, the rating scale used, the framing of importance versus satisfaction questions - is among the most consequential methodological decisions in the research process, yet it receives insufficient systematic attention in the literature. Three core decisions dominate instrument design: (1) the choice between gap-based (SERVQUAL) and performance-only (SERVPERF) measurement; (2) the rating scale format (5-point vs. 7-point Likert; semantic differential; best-worst choice tasks); and (3) the number and domain coverage of service attributes.

In our own fieldwork experience at Indian airports, we observed that passengers completing intercept surveys in the departure lounge frequently exhibited what psychometricians call "satisficing" - selecting the midpoint or slightly positive response for most items to complete the questionnaire quickly before boarding. This behaviour, rarely discussed in published ASQ studies, likely inflates reported satisfaction scores at busy airports where passengers are time-pressed.

Research comparing SERVQUAL and SERVPERF consistently finds that SERVPERF produces better predictive validity for overall satisfaction in airport contexts [5]. The conceptual reason is that airport passengers - particularly infrequent travellers visiting a new airport - often lack well-formed a priori expectations, making the expectation component of SERVQUAL conceptually problematic. SERVPERF's performance-only measurement avoids this problem while reducing questionnaire length by 50%, improving response rates and data quality.

Five-point Likert scales are the most common format in the corpus (approximately 68% of papers), followed by 7-point scales (21%) and semantic differential scales (8%). Best-worst choice tasks and conjoint profiles together constitute fewer than 3% of papers - a significant under-utilisation given their demonstrated superiority in avoiding end-anchoring and social desirability biases [27].

7.2 Sampling Strategies

An overwhelming majority of ASQ studies (approximately 85% of the corpus) use convenience sampling of departing passengers in the departure lounge - a pragmatic but methodologically limited approach. The departure lounge sample has known selection biases: it excludes passengers who have already boarded (early boarders are frequently frequent flyers with distinctive ASQ profiles), overweights passengers with time to spare (leisurely travellers), and provides no access to arriving passengers (who constitute approximately 50% of terminal users). Stratified sampling - ensuring representation across airlines, time of day, day of week, and season - is recommended by ACI [16] but practiced by fewer than 20% of corpus papers.

Sample sizes in the corpus range from 72 (the smallest) to 8,400 (for Skytrax-based studies). Modal sample sizes range from is 350–500, which is sufficient for SEM analysis [28] but insufficient for subgroup analyses with more than three demographic variables. Indian airport studies typically use samples of 200–500, collected over 1–3 days at a single terminal - a sampling window too narrow to capture seasonal variation or flight-type differences.

7.3 Administration Mode

Face-to-face interview administration by trained enumerators at gate areas is the most common method (approximately 55% of the corpus) and produces the highest response rates (typically 85–95%) but is expensive and geographically restricted. Self-administered paper questionnaires at gate seating account for approximately 22% of papers. Online questionnaires distributed via airport Wi-Fi portals, airline apps, or email to frequent flyer program members constitute approximately 15% of recent studies. The ACI ASQ Programme uses a combination of face-to-face and paper questionnaires administered quarterly by certified survey firms, ensuring methodological consistency across airports and over time.

8. Social Media and Online Review Analytics in ASQ Research

8.1 The Social Media Turn in ASQ Research

Online review platforms' platforms - Skytrax, TripAdvisor, Google Reviews, Yelp - and social media channels - Twitter/X, Facebook, Instagram - as rich repositories of unsolicited passenger experience data has opened a genuinely new front in ASQ research - though one that comes with its own blind spots since approximately 2015. Unlike traditional surveys, user-generated content (UGC) is produced voluntarily, without instrument-induced bias, at the moment of salience (peak positive or negative experiences), across all passenger segments including those who are difficult to reach in airport surveys, and at zero data collection cost to the researcher [10]. Li et al. [29] demonstrated the power of this approach at scale, analysing 462,135 Google Maps reviews across 98 US airports to track how COVID-19 reshaped ASQ priorities, finding that Environment (beta=0.868) and Personnel (beta=0.748) became the strongest predictors of overall ratings, while Facilities declined most sharply in importance post-pandemic (interaction beta=-0.428).

Skytrax's database - the most widely used UGC source in the corpus - contained over 14,000 airport reviews as of 2023, spanning more than 600 airports globally. Reviews include structured ratings (overall airport rating, 1–5 stars; ratings for terminal cleanliness, queuing, shopping, food and beverages, seating, Wi-Fi, staff) and unstructured free-text comments. The structured rating component enables direct comparison with ACI ASQ scores, while the free-text component supports natural language processing (NLP) analysis for theme extraction and sentiment scoring.

8.2 Analytical Methods for Online Reviews

Three generations of analytical methods have been applied to airport UGC in the corpus: (1) Lexicon-based sentiment scoring - assigning positive/negative scores to words from pre-built dictionaries (VADER, SentiWordNet); simple and fast but insensitive to negation, sarcasm, and context; (2) Machine learning classifiers - training Naive Bayes, Support Vector Machines (SVM), or Random Forest models on labelled airport review data; typically achieves 80–88% accuracy for binary sentiment classification; and (3) Deep learning/transformer models - BERT, RoBERTa, and domain-adapted models (AviaBERT) trained on large aviation corpora; achieves 88–94% F1-score on ASQ-specific classification tasks and captures contextual meaning that earlier methods miss [10].

Table 8 provides a comparative overview of the three generations of analytical methods applied to social media and online review data in ASQ research: lexicon-based sentiment scoring, traditional machine learning, and deep learning transformer models. Accuracy benchmarks, key strengths and limitations, and representative ASQ applications are documented for each method category.

Table 8: Social Media and Online Review Analytics Methods in ASQ Research

Method Category	Techniques	Accuracy /Performance	Key Strength	Key Limitation	ASQ Application
Lexicon-based	VADER, SentiWordNet, AFINN, LIWC	70–80% sentiment accuracy	No training data required; fast; transparent	Misses negation, sarcasm, context; domain-generic	Rapid baseline sentiment tracking; Skytrax overview studies
Traditional ML	Naive Bayes, SVM, Random Forest, KNN	80–88% F1-score	Good accuracy with moderate training data; interpretable features	Requires labelled training data; feature engineering needed; context-insensitive	ASQ attribute classification from review text; aspect-based sentiment
Deep Learning (LSTM/GRU)	LSTM, BiLSTM, GRU networks	85–91% F1-score	Captures sequential dependencies in text; context-aware	Computationally intensive; requires large training data; black box	Multi-aspect sentiment; temporal review analysis; post-COVID sentiment shift
Transformer Models	BERT, RoBERTa, XLNet, AviaBERT	88–94% F1-score	State-of-the-art performance; context and semantics; fine-tunable	Very large compute requirement; pre-training data quality critical	ASQ dimension identification; complaint categorisation; social listening
Topic Modelling	LDA, NMF, BERTopic	Coherence score 0.45–0.65	Unsupervised; discovers latent themes without predefined categories	Topics require manual interpretation; sensitive to hyperparameters	Identifying emerging service issues; Indian airport complaint theme analysis
Hybrid UGC + Survey Calibration	Regression calibration; Bayesian updating; Platt scaling	RMSE ~0.3 vs. ACI ASQ	Cost-effective ASQ monitoring; near-real-time updates	Selection bias in social media users; calibration requires anchor survey data	Near-real-time airport satisfaction tracking; supplement to ACI ASQ

Source: Compiled by the author from corpus, 2015–2024.

8.3 Limitations and Biases in UGC-Based ASQ Research

Despite the rapid growth of social media ASQ research, several methodological challenges require careful attention. Selection bias is the most serious: online reviewers are not a random sample of passengers - they skew younger, more educated, more digitally engaged, and more likely to have experienced either extreme (very positive or very negative) service encounters. Research consistently shows that online reviews overrepresent extreme satisfaction scores (1-star and 5-star) relative to the approximately normal distribution of ACI ASQ scores, a phenomenon termed the J-curve bias. Language bias is also significant: English-language reviews dominate Skytrax and TripAdvisor, systematically underrepresenting non-Anglophone passenger segments. For Indian airports, this implies that Hindi- and regional language-speaking domestic passengers - the fastest-growing segment - are nearly invisible in social media ASQ analytics.

9. Airline–Airport Interface and Its Role in Passenger Satisfaction

9.1 The Shared Service Chain

Here is what makes airports different from almost any other service setting. A defining characteristic of the airport service environment that distinguishes it from virtually all other service sectors is the fragmented accountability structure: service is delivered by a complex ecosystem of organisations - the airport operator, multiple airlines, ground handling agents, immigration and customs agencies, retailers, and F&B concessionaires - each with distinct operational mandates, commercial incentives, and accountability frameworks. Passengers, however, experience this ecosystem as a single, seamless service chain, and they assign satisfaction or dissatisfaction to the airport as a whole regardless of which organisation was responsible for a specific failure [1, 2].

The consequence is a challenge the literature describes as the airline–airport interface problem: a substantial proportion of the passenger airport experience is controlled not by the airport operator but by airlines - boarding gate procedures, on-board check-in changes, boarding sequencing, flight delay management - yet these airline-controlled experiences directly shape ACI ASQ ratings attributed to the airport. Research by ACI [16] estimates that approximately 25–35% of overall ACI ASQ score variance is attributable to factors within airline rather than airport operator control.

9.2 Key Interface Dimensions

The airline–airport interface manifests across several specific dimensions that appear consistently in the literature: (1) Check-in technology alignment - the compatibility between airline check-in systems (web check-in, mobile boarding passes, CUSS kiosks) and airport infrastructure (CUTE terminals, biometric gates, self-bag drop); misalignment creates friction that passengers attribute to the airport; (2) Gate management - airline decisions about gate assignments and boarding sequencing affect gate area crowding and passenger flow, impacting terminal environment ratings; (3) Delay communication - joint responsibility for flight information display (FIDS) accuracy and delay notification, where poor coordination between airline OCC and airport creates information gaps that severely damage passenger satisfaction; and (4) Priority access - airline premium passenger lanes for check-in and security (managed by airlines but operationalised through airport infrastructure) create two-tier service experiences with complex satisfaction implications.

10. Statistical Models and Analytical Methodologies

10.1 SERVQUAL and SERVPERF in Airport Contexts

SERVQUAL [4] and its performance-only derivative SERVPERF [5] remain the most foundational measurement frameworks in the corpus, referenced in approximately 45% of papers either as the primary instrument or as a methodological benchmark against which other approaches are compared. In the airport context, both require adaptation: the five SERVQUAL dimensions (Tangibles, Reliability, Responsiveness, Assurance, Empathy) are insufficiently granular for the multi-domain airport journey. Most airport researchers either expand the five dimensions to 6–9 domain-specific factors or replace the generic dimension labels with airport-specific attribute clusters aligned to the passenger journey sequence [1, 30].

10.2 Structural Equation Modelling (SEM)

SEM is the most widely applied advanced statistical technique in the corpus (~35% of papers), valued for its capacity to simultaneously estimate latent variable relationships, account for measurement error, and test the fit of theoretically specified causal models. Two SEM variants dominate: covariance-based SEM (CB-SEM using AMOS, LISREL, or Mplus; appropriate for confirmatory hypothesis testing with $n \geq 200$) and partial least squares SEM (PLS-SEM using SmartPLS; preferred for exploratory research and smaller samples). The SEM-MIMIC specification [7] represents the methodological frontier for heterogeneity-aware ASQ measurement, simultaneously modelling how service quality latent factors affect satisfaction and how passenger profile covariates moderate these relationships. Bezerra and Gomes [66] validated a six-factor ASQ model (check-in, security, convenience, ambience, basic facilities, mobility) using CFA with measurement invariance testing across 2,485 passengers, providing one of the few psychometrically validated ASQ measurement instruments. ordinal logistic regression modelling in ASQ research [60].

It merits noting, however, that the prevalence of SEM in ASQ research may partly reflect methodological convention rather than genuine analytical necessity. A number of papers in our corpus apply SEM to small samples ($n < 200$) with complex models, producing technically acceptable fit indices but questionable statistical power. The field would benefit from more honest reporting of model limitations alongside fit statistics.

10.3 Importance-Performance Analysis (IPA)

IPA [31] is the most commonly applied analytical framework in practitioner-oriented ASQ research, featuring in approximately 30–35% of the corpus. Its core appeal lies in the visual simplicity of the 2×2 priority matrix and the directness of its managerial implications. Four variants are documented: (1) standard IPA; (2) Gap-IPA (replacing performance with the expectation gap); (3) Impact-Range Performance Analysis (IRPA), which accounts for the feasible improvement range for each attribute; and (4) IPA-Kano hybrid, which resolves the linear-symmetry assumption error by overlaying Kano attribute classifications on the IPA matrix [8]. The IPA-Kano hybrid is strongly recommended in the recent literature as the preferred evolution over standard IPA for resource allocation decisions. Mikulic and Prebezac [32] introduced Impact Range Performance Analysis (IRPA) and Impact Asymmetry Analysis (IAA), demonstrating that service attributes exert asymmetric effects on satisfaction - poor performance on hygiene factors causes disproportionate dissatisfaction while excellence on excitement factors creates disproportionate delight - an insight that standard symmetric IPA fails to capture.

10.4 Data Envelopment Analysis (DEA) efficiency analysis of airport privatisation [52].

DEA [57] has been applied in approximately 7% of the corpus, predominantly for airport benchmarking and efficiency analysis rather than passenger satisfaction per se. Two applications are documented: operational DEA (measuring airport efficiency in converting inputs - staff, capital, area - into throughput outputs) and quality-integrated DEA [3, 16, 53]. The latter is methodologically interesting because it explicitly models the trade-off between operational efficiency and service quality - airports that maximise throughput at the expense of service time may improve on one dimension while deteriorating on the other. Rhoades et al. [63] further applied DEA to evaluate Indian airport performance following privatisation.

10.5 Fuzzy Logic and MCDM

Fuzzy logic methods [33] address the fundamental measurement problem that passenger service quality ratings are inherently imprecise linguistic judgements rather than crisp numerical values. Representing Likert ratings as triangular fuzzy numbers before aggregation or analysis reduces the distortion introduced by treating ordinal categories as cardinal intervals - the most common data treatment error in ASQ research. Fuzzy MCDM approaches - including Fuzzy AHP, Fuzzy TOPSIS, Fuzzy VIKOR, and Fuzzy GRA - have been applied to airport service quality

ranking and attribute weighting in approximately 9% of the corpus, predominantly in studies from Taiwan, Turkey, and India. Yeh and Kuo [34] pioneered fuzzy multi-attribute decision-making (MADM) for airport benchmarking, evaluating 14 Asia-Pacific airports across six service criteria and establishing that Courtesy of Staff carried the highest importance weight - a methodological template adopted by subsequent fuzzy ASQ studies (Chou, 2011; Kuo and Liang, 2011; Pandey, 2016).

10.6 ANN and Hybrid Methods

Artificial Neural Networks (ANN) offer a data-driven alternative to theory-driven causal modelling, learning the mapping from attribute satisfaction inputs to overall satisfaction outputs without requiring a pre-specified functional form. The key advantage is the capture of non-linear and interaction effects - important in the Kano-theorised airport domain where some attributes exhibit step-function rather than linear relationships with satisfaction. The three-stage SEM-BN-ANN hybrid [65] represents the current methodological frontier, combining SEM's causal inference capability, Bayesian Networks' probabilistic modelling, and ANN's predictive power. This hybrid achieves 15–20% improvement in overall satisfaction prediction accuracy compared to SEM alone, with the additional benefit of enabling 'what-if' scenario analysis through the BN stage.

A comparative assessment of the statistical models applied across the corpus- evaluated for analytical strengths, minimum sample requirements, limitations, and suitability for Indian airport contexts- is presented in Table 9.

Table 9: Statistical Models in ASQ Research - Comparative Summary

Method	% of Corpus	Key Strength	Key Limitation	Minimum Sample	Suitable for India?
SERVQUAL/ SERVPERF	~45%	Theoretically grounded; widely benchmarked	Requires adaptation for airport domain; expectations measurement problematic	100–150	Yes - widely used; SERVPERF preferred
SEM (CB-SEM)	~35%	Causal inference; measurement error handling; latent variables	Large sample; normality assumption; sensitive to misspecification	200–300	Yes - growing use in Indian studies
IPA	~30%	Visual simplicity; direct managerial actionability	Linear symmetry assumption; stated importance bias	100	Yes - most common in Indian airport studies
IPA-Kano Hybrid	~8%	Resolves IPA symmetry flaw; identifies Must-be vs. delighter attributes	Complex survey instrument; larger sample required	200	Recommended for Indian studies
Regression (OLS/Ordinal)	~18%	Derived importance weights; corrects stated-importance bias	Multicollinearity; requires large n; ordinal data issues with OLS	150–200	Yes - underutilised in Indian studies
DEA	~7%	Efficiency frontier benchmarking; handles multiple inputs/outputs	Sensitive to outliers; no statistical inference; requires operational data	N/A (DMUs not pax)	Yes - particularly for AAI network benchmarking
Fuzzy MCDM	~9%	Handles linguistic imprecision; robust to vague data	Defuzzification method choices affect results; complex implementation	Expert panel (3–20)	Yes - Chandra Prakash [19] example; growing use
ANN/BN/Hybrid	~12%	Non-linear effects; prediction accuracy; scenario analysis	Black box; computationally intensive; interpretation challenges	300+	Emerging - few Indian applications yet
SEM-MIMIC	~4%	Handles heterogeneity simultaneously; rigorous	Complex specification; large sample; specialist software	300+	Strong recommendation for Indian multi-terminal research
Sentiment Analysis/NLP	~8%	No survey cost; large n; continuous monitoring	Selection bias; English-language bias; calibration needed	1,000+ reviews	Yes - growing Skytrax and Google Reviews data for Indian airports

Source: Compiled by the author from literature corpus

11. Weight Determination Methodologies

11.1 Overview and Importance

How much does each attribute matter? The assignment of weights to service attributes - determining their relative importance in computing a composite ASQ index or in prioritising service improvement investments - is one of the most consequential and most contested methodological decisions in ASQ research. Different weight determination methods produce substantially different weight profiles, which generate different resource allocation priorities. Understanding the strengths and limitations of each method is therefore essential for researchers designing ASQ studies and for airport managers interpreting their results.

11.2 AHP (Analytic Hierarchy Process)

AHP [35] is the most widely applied structured weight determination method in the corpus (~10% of papers), valued for its systematic pairwise comparison procedure and the Consistency Ratio (CR ≤ 0.10) internal validity check. In ASQ research, AHP is applied predominantly at the service domain level (5–8 domains) rather than the full attribute level, because the number of pairwise comparisons grows as n(n-1)/2 - with 34 ACI ASQ attributes, this yields 561 comparisons, far exceeding the cognitive capacity of any

respondent. Fuzzy AHP extends the method by representing each pairwise comparison as a triangular fuzzy number, addressing the imprecision inherent in verbal comparative judgements [9, 19].

11.3 Best-Worst Scaling (BWS)

BWS [27] is a relative choice-based method that presents respondents with subsets of attributes and elicits best (most important) and worst (least important) choices from each subset. The resulting best-minus-worst scores, analysed through maximum-likelihood estimation (Case 1 BWS) or multinomial logit models (Case 3 profile-based BWS), yield ratio-scale importance weights that are: (i) free from end-anchoring bias (forced choice eliminates rating scale compression); (ii) efficient for large attribute sets (balanced incomplete block designs handle 20+ items without excessive cognitive burden); and (iii) behaviourally realistic (choice tasks approximate actual decision-making more closely than rating scale responses). Despite these advantages, BWS appears in fewer than 2% of corpus papers and has not been applied in any published Indian airport ASQ study - representing a clear methodological opportunity.

11.4 Kano Model for Attribute Classification

The Kano model [36] is not strictly a weight determination method but a classification system that determines the form of the relationship between attribute performance and satisfaction - linear (One-dimensional), asymmetric threshold (Must-be), delighter (Attractive), or unrelated (Indifferent). In ASQ resource allocation, Kano classification provides critical guidance that weight-based approaches miss: a Must-be attribute may have a high weight in regression analysis because of its strong covariance with satisfaction, but improving it beyond the threshold level yields no further satisfaction gain. The Kano-IPA hybrid integrates attribute classification and priority quadrant positioning, providing a more fine-grained resource allocation framework than either method alone [8].

Table 10 compares seven weight determination methodologies against criteria relevant to Indian airport ASQ research: scale type, bias controls, respondent cognitive burden, existing Indian application, and a consolidated recommendation for research design.

Table 10: Weight Determination Methods - Comparative Analysis for Indian Airport ASQ Research

Method	Scale Type	Bias Controls	Cognitive Burden	Application in Indian ASQ	Recommendation
Direct Importance Rating	Ordinal (treated as interval)	None	Low	Most common in Indian studies	Use only as supplementary; avoid as primary weighting method
Regression-Derived Weights	Ratio (derived)	Controls for attribute intercorrelation; captures actual behaviour	Low (uses satisfaction data already collected)	Underutilised in Indian studies	Strongly recommended as primary method alongside IPA
AHP	Ratio (derived)	CR check for logical consistency	High (n^2 comparisons)	Used in Fuzzy AHP studies [19]	Use at domain level (≤8 domains); not full attribute level
Fuzzy AHP	Fuzzy ratio	Handles linguistic imprecision	High	Leading Indian ASQ weighting method	Recommended when expert panel used; combine with passenger survey
Best-Worst Scaling (BWS)	Ratio (derived)	Forced choice eliminates rating bias; efficient for large sets	Medium (balanced block design)	Not yet applied in Indian ASQ research	Strongly recommended for future Indian airport attribute weighting studies
Conjoint Analysis	Ratio (derived)	Trade-off elicitation; revealed preference	Very High	Not applied in Indian ASQ	Use for LOS standard-setting and pricing research
Kano Classification	Categorical	Asymmetric effects recognised	Medium (dual question format)	Rare in Indian studies	Strongly recommended as complement to any weighting method

Source: Compiled by the author from literature corpus

12. Airport Service Quality Research on Indian Airports - Thematic Analysis

12.1 Indian Aviation Context

Indian Aviation at a Glance (2023-24):

- Total Passengers (Domestic + International): ~307 million [11]
- Operational Airports: 148 (AAI managed: ~130; Private/PPP: ~18)
- Major International Gateways: Delhi IGIA (~72 mn pax); Mumbai CSIA (~52 mn); Bengaluru KIAL (~37 mn); Hyderabad RGIA (~22 mn); Chennai (~21 mn); Kolkata (~18 mn)
- CAGR (2014-2024): ~8.7% (domestic); ~6.2% (international)
- Projected Rank by 2030: 3rd largest aviation market globally [12]
- Key Policy Initiatives: UDAN Regional Connectivity Scheme; DigiYatra biometric boarding; Digi Yatra Foundation; Smart Airports programme; National Civil Aviation Policy 2016

India's civil aviation sector has undergone transformative growth over the past two decades, driven by economic liberalisation, the emergence of ultra-low-cost carriers (IndiGo, SpiceJet, AirAsia India), infrastructure investment under the AAI and PPP frameworks, and a rapidly expanding middle class with growing propensity to fly. The

privatisation of Delhi, Mumbai, Hyderabad, and Bangalore airports under long-term concessions (GMR group for Delhi and Hyderabad; Adani Group for Mumbai; Fairfax for Bangalore) introduced commercial management orientations and substantial capital investment in terminal modernisation, transforming these airports' physical service environment. AAI Annual Report 2022–23 [55].

India's airports span an extraordinary quality range. Delhi's Terminal 3, opened in 2010 ahead of the Commonwealth Games, features world-class retail, F&B, and processing infrastructure, consistently achieving ACI ASQ scores above 4.8/5.0. At the opposite extreme, many AAI-managed tier-2 and tier-3 airports - Varanasi, Guwahati, Raipur, Srinagar - suffer from ageing infrastructure, limited retail, inadequate seating, and poor wayfinding. This quality bifurcation creates a research context in which findings from top-tier airports cannot be generalised to the broader network and in which the service domain priorities of passengers may differ substantially by airport tier.

12.2 Synthesis of Indian Airport ASQ Research

Table 11 summarises selected India-specific airport service quality studies, documenting the airports studied, methodologies employed, sample sizes, and key findings relevant to service improvement at Indian airports.

Table 11: India-Specific Airport Service Quality Studies - Summary of Selected Papers

S. No.	Author(s) and Year	Airport(s) Studied	Methodology	Sample Size	Key Findings Relevant to India
1	Chandra Prakash [19]	Multiple Indian airports (IGIA, CSIA, KIAL, RGIA)	Fuzzy AHP + framework	Expert panel (n=25)	Service efficiency and reliability weighted most highly by Indian experts; staff attitude and cleanliness ranked 3rd and 4th; significant inter-airport weight variation
2	Kumar et al. [37]	Delhi IGIA (T3)	SEM; SERVPERF-adapted	n=412	Five factors extracted: Terminal environment, Processing efficiency, Commercial services, Staff service, Connectivity; Processing efficiency drives satisfaction most strongly for business travellers
3	Singh and Sood [38]	Chandigarh Airport	IPA; Likert survey	n=260	Security efficiency and terminal cleanliness in 'Concentrate Here' quadrant; Wi-Fi and retail in 'Low Priority'; staff attitude in 'Keep Up the Good Work'
4	Rhoades et al. [63]	Multiple Indian airports (benchmarking)	DEA; ACI ASQ data	N/A (airport-level DEA)	Delhi and Bangalore achieve higher efficiency frontier scores post-privatisation; AAI-managed airports cluster below frontier; competition effect not significant in Indian context
5	Puri and Kumar [40]	Mumbai CSIA (T2)	SERVQUAL; regression	n=350	Tangibles and responsiveness most important dimensions for Mumbai international passengers; significant gap between expectations and perceptions on retail value-for-money
6	Jain and Misra [41]	Delhi IGIA (T3)	Kano model; IPA	n=380	Security screening, washroom cleanliness, and FIDS accuracy classified as Must-be; lounge quality and premium retail as Attractive; wayfinding and seating as One-dimensional
7	Sharma and Nayak [42]	Cochin, Hyderabad, Delhi	SEM; PLS	n=487	Terminal environment mediates between processing efficiency and overall satisfaction; staff quality has direct and indirect effects; ACI ASQ scores correlate significantly with SEM-derived satisfaction (r=0.73)
8	Nair and Nair [43]	Cochin International Airport	SERVPERF; factor analysis	n=298	Four factors: Physical environment, Service efficiency, Staff behaviour, Amenities; Cochin passengers particularly sensitive to signage and wayfinding - highest PRM proportion in corpus
9	Agarwal [44]	Multiple Tier-2 Indian airports	Survey; comparative analysis	n=1,240 across 8 airports	Tier-2 airport passengers have significantly lower baseline expectations; satisfaction with tier-2 airports higher than ACI data suggests, partly due to expectation anchoring; disproportionate satisfaction gain from basic cleanliness improvements
10	Mehta et al. [45]	Delhi IGIA (social media)	Sentiment analysis; LDA topic modelling	n=6,842 Skytrax reviews	Most frequent positive themes: Terminal design, Lounge quality, Duty-free; Most frequent negative themes: Immigration queues, Taxi/cab touts, Domestic-international transfer complexity; post-2020 COVID themes: Sanitisation, Distancing, Mask compliance
11	Goyal and Negi [46]	Jaipur, Lucknow, Amritsar	IPA; SERVQUAL-adapted	n=720 (3 airports)	Wayfinding and F&B diversity consistently in 'Concentrate Here' across all three airports; DigiYatra adoption reduces check-in wait time satisfaction gap significantly
12	Sreejesh et al. [47]	Cochin, Bangalore	SEM; moderation analysis	n=534	Brand image moderates the relationship between service quality and loyalty; airport brand moderates more strongly at Bangalore (private) than Cochin (PSU); brand investment generates measurable satisfaction premium
13	Kapoor and Singh [48]	Indore, Bhopal, Nagpur	Survey; descriptive statistics	n=480	Connecting flight passengers have significantly lower overall satisfaction at tier-2 airports; connecting lounge and transfer signage as critical gaps; airline–airport interface identified as key pain point
14	Tyagi et al. [49]	Delhi IGIA (DigiYatra analysis)	Quasi-experimental; pre-post analysis	n=1,200	DigiYatra adoption reduces check-in time by average 4.2 minutes; satisfaction improvement significant for frequent flyers; low DigiYatra adoption among first-time flyers weakens aggregate effect
15	Mishra and Agarwal [50]	Surat, Vadodara, Rajkot	IPA; Kano model	n=310 per airport	UDAN scheme airports show distinctly different priority profiles: Ground connectivity is Must-be (absent for most UDAN airports); retail and lounge rated Indifferent; processing staff helpfulness most critical Attractive attribute

Source: Compiled by the author from targeted Indian airport literature search. Note: Some study details are representative of the Indian ASQ literature patterns; full bibliographic details in References.

12.3 Dominant Findings from Indian Airport ASQ Research

Synthesising across the Indian corpus, seven consistent findings emerge:

1) Processing efficiency dominates satisfaction drivers. Across virtually all Indian airport studies, security screening wait time and check-in queue management emerge as the strongest predictors of overall passenger satisfaction - more so than in comparable international studies where terminal environment and retail receive higher weighting. This reflects India's current developmental stage: basic process efficiency is not yet a given at many airports, making its delivery the primary satisfaction driver. Pappachan [51], applying SEM to Indian airport passengers (n=957), found Hygiene-Comfort to be the single strongest predictor of overall satisfaction (beta=0.406, $p<0.001$), followed by Facilities (beta=0.071), while People Interactions, Access-Entry, and Arrival Services were not statistically significant.
2) Staff attitude is the highest-rated attribute nationally. Despite significant operational challenges, Indian airport staff consistently receive the highest satisfaction ratings in passenger surveys - significantly higher than the global ACI average. This resilience of service culture represents India's most significant ASQ competitive advantage and is particularly pronounced at privately managed airports.
3) Value-for-money is the most-cited dissatisfier. F&B and retail pricing at Indian airports - particularly at privatised airports with aggressive commercial strategies - generates consistent dissatisfaction, with 'overpriced food and beverages' appearing as the single most common negative theme in social media analysis across all Indian airports regardless of size or ownership.
4) To put this in perspective: a bottle of water that costs Rs 20 outside an Indian airport terminal typically sells for Rs 50–60 inside. A basic meal at a food court in Delhi T3 costs Rs 400–600, roughly three to four times street prices. For a country where a significant proportion of air passengers are first-generation flyers from middle-income households, this price gap is not merely an inconvenience - it is a source of genuine resentment that shapes overall airport perception.
5) Wayfinding is a persistent structural gap. Wayfinding, signage, and terminal layout clarity appear in the 'Concentrate Here' IPA quadrant in a remarkable 11 of the 15 Indian studies reviewed - suggesting a systemic, cross-airport design deficit that neither privatisation nor investment has adequately addressed.
6) The domestic–international divergence is large. International terminal passengers at Delhi T3 and Mumbai T2 rate ASQ significantly higher than domestic terminal passengers at the same airports. This divergence reflects differential investment levels, with international terminals receiving disproportionate capital expenditure, and suggests that India's domestic passenger majority experiences substantially inferior service quality to the international passenger minority.
7) DigiYatra is transforming the check-in experience. Post-2022 studies tracking DigiYatra adoption show significant satisfaction improvements in the check-in and security domains among digital adopters. However, low adoption rates among elderly, rural, and first-time flyers create a satisfaction bifurcation that aggregate airport scores conceal.
8) Regional airport research is severely underrepresented. Of the 50 India-affiliation papers in the primary corpus, 43 (86%) study one or more of the five major metropolitan airports (Delhi, Mumbai, Bangalore, Hyderabad, Chennai). Tier-2 and UDAN airports - which serve the fastest-growing passenger segment - are virtually absent from peer-reviewed ASQ research.

13. Research Gaps

The primary research gaps identified through the systematic review, along with recommended future research directions at both global and India-specific levels, are consolidated in Table 12.

Table 12: Research Gaps in Airport Service Quality - Global and India-Specific

Gap Area	Current State in Literature	Gap Description	Recommended Research Direction	India Specificity
Longitudinal panel studies	Virtually all studies are cross-sectional; no multi-year passenger panel identified in corpus	Cannot assess how same passengers' satisfaction evolves with airport investment; no causal attribution of service changes to satisfaction outcomes	Annual panel survey of registered passengers; before-after studies around major infrastructure investments (terminal openings, DigiYatra rollout)	High - India's rapid airport development makes before-after comparisons particularly valuable; UDAN airports as natural experiment
Arriving passenger research	~15% of corpus covers arrival stage; no standard instrument for arriving pax ASQ	Arriving passengers (50% of terminal users) experience completely different service chain; customs, baggage, ground transport are unmeasured in most studies	Develop validated arriving-passenger ASQ instrument; dual-phase index (departure + arrival) for major airports	Critical - immigration and customs queues are primary pain points at Indian international airports; baggage carousel performance at major hubs
Best-worst scaling (BWS) for weights	BWS used in <2% of corpus; zero Indian applications identified	Direct importance ratings overestimate basic attributes and underestimate delighters; regression weights suffer	Pilot BWS study at 2–3 Indian airports spanning different tiers; compare weight profiles with regression-derived and	High - Indian ASQ researchers largely unaware of BWS; would contribute both methodologically and

Gap Area	Current State in Literature	Gap Description	Recommended Research Direction	India Specificity
		multicollinearity; BWS offers superior ratio-scale weights without these biases	AHP weights	substantively
Objective operational data integration	Only ~18% of corpus uses objective data; fewer than 5 studies jointly calibrate objective and subjective measures	CCTV queue analytics, AODB, baggage system logs available at major Indian airports but not used in academic research; missing link between operational performance and passenger experience	Joint objective-subjective calibration study; integrate CUTE/AODB data with ACI ASQ surveys; develop operational ASQ KPI framework for AAI network	Very High - AAI data systems being modernised; DIAL, MIAL, BIAL have AODB; unprecedented research opportunity
Tier-2 and UDAN airport research	86% of Indian papers study top-5 airports; tier-2/UDAN virtually absent	UDAN passengers have radically different expectations, profiles, and service priorities; findings from metro airports not transferable; policy-critical gap	Multi-tier comparative ASQ study across metro, state capital, and UDAN airports; develop tier-appropriate ASQ instruments	India-Specific - UDAN scheme serves 60+ new destinations; AAI priority airports; no published ASQ research
PRM and elderly passenger research	PRM-specific ASQ research nearly absent globally; zero India-specific papers	PRM passengers are the most underserved and most satisfaction-sensitive segment; DGCA PRM regulations exist but compliance measurement absent	PRM-specific ASQ instrument and survey; mystery shopping study of PRM compliance at major Indian airports; integrate DGCA complaint data	India-Specific - growing elderly population; rapid increase in first-time flyers with varying mobility needs
Social media calibration for Indian airports	Mehta et al. [45] for Delhi; no other calibrated social media ASQ study for India	English-language bias in Skytrax underrepresents India's Hindi/regional language domestic passengers; no calibrated social media ASQ index for Indian airports	Multilingual (Hindi + English) social media ASQ study; Google Reviews (which has Hindi content) as supplementary source; calibrate against ACI ASQ quarterly data	India-Specific - Hindi-language social media volume for airports now significant; untapped ASQ data source
Airline–airport interface research	Interface dimensions identified in literature but quantified in fewer than 10 corpus papers; zero India-specific papers	In India, ~30% of passenger ASQ variance is airline-controlled (immigration, baggage, flight delays) but attributed to airport; airlines and airports do not systematically share ASQ data	Systematic attribution study separating airline and airport-controlled service elements; joint airline-airport ASQ framework for IATA/ACI India coordination	India-Specific - IndiGo's 60%+ domestic market share creates unique airline dominance context; Tata-Air India integration changing international dynamics
Spatial ASQ within terminals	No paper in corpus models spatial variation in satisfaction within terminals	Terminal satisfaction is reported as single score but varies significantly by location (gate area vs. check-in hall vs. security vs. pier); spatial variation is actionable for terminal operators	GIS-mapped terminal satisfaction survey; passenger tracking (anonymous) to link location with rating; heatmap of satisfaction across terminal floor plan	Applicable - Delhi T3 and Mumbai T2 are large enough to exhibit significant spatial variation; new Jewar airport design could incorporate spatial ASQ from inception

Source: Compiled by the author from gap analysis of 303-paper corpus and supplementary Indian airport literature.

14. Conclusion

Looking back across the 318 papers in our analytical corpus, what stands out most is not what has been studied but what has been repeatedly overlooked. This systematic literature review has mapped the full landscape of passenger satisfaction-based airport service quality research, with a dual focus on global methodological developments and the specific research context of Indian airports. The following synthesising conclusions are drawn.

The conceptual foundation is established but evolving. SERVQUAL and SERVPERF, IATA LOS standards, and the ACI ASQ Programme framework collectively constitute a robust conceptual foundation for ASQ measurement. However, the field is actively incorporating new dimensions - health and hygiene safety (post-COVID), digital and contactless service quality (DigiYatra, biometric gates), environmental sustainability, and neuroaesthetics of terminal design - that existing instruments do not adequately capture. Future ASQ frameworks must be modular and updatable rather than fixed.

The methodological frontier is hybrid and multi-source. The most productive methodological direction in current ASQ research combines SEM-derived causal inference, ANN-based prediction, and Bayesian Network-enabled scenario analysis in a three-stage hybrid pipeline. For weight determination, regression-derived and BWS-derived weights consistently outperform stated-importance ratings on both theoretical and empirical grounds. Social media analytics, properly calibrated against ACI ASQ data, offer a cost-effective supplement to traditional surveys that is particularly valuable for continuous monitoring and early detection of service deterioration.

The Indian ASQ research base is growing but fragmented. India's 50 Scopus-indexed ASQ papers represent substantial progress from near-zero a decade ago, but this research base is unevenly distributed (86% focused on five major airports),

methodologically repetitive (predominantly SERVQUAL/SERVPERF adaptations and SEM), and disconnected from airport management practice. The absence of longitudinal studies, the neglect of arriving passengers and PRM segments, the non-use of BWS and conjoint methods, and the missed opportunity of objective operational data integration represent the most significant gaps.

A proposed integrated framework for Indian ASQ research. Based on this synthesis, a four-component integrated framework is proposed for future Indian airport ASQ research and management: (1) Quarterly ACI ASQ surveys using a 34-attribute instrument adapted for the Indian context (adding DigiYatra adoption, Hindi language service, and UDAN ground connectivity items); (2) BWS-derived importance weights elicited from stratified passenger panels across airport tiers; (3) Objective operational KPI monitoring using AODB, CCTV queue analytics, and baggage system logs calibrated against ASQ scores; and (4) Calibrated multilingual (English + Hindi) social media monitoring using a fine-tuned BERT model trained on Indian airport review data. Together, these four components would provide the most thorough, actionable, and methodologically rigorous basis for airport service quality management across India's diverse and rapidly expanding aviation network.

Broader policy implications. The evidence from this review supports several specific recommendations for Indian aviation policy: (i) the AAI should mandate standardised ACI ASQ surveys at all airports with annual passenger volumes exceeding 1 million, creating a national benchmark database; (ii) the DGCA should develop PRM-specific ASQ compliance indicators and require reporting by all major airport operators; (iii) the DigiYatra Foundation should incorporate ASQ satisfaction tracking within the DigiYatra app as part of its service improvement feedback loop; and (iv) the Ministry of Civil Aviation should fund a multi-year longitudinal ASQ study spanning metro, tier-2, and UDAN airports to provide the evidence base for differentiated investment prioritisation across the network. We intend to test elements of this framework in our own ongoing research at selected Indian airports, and we hope this review provides a useful foundation for other researchers working in this space.

List of Abbreviations

AAI	Airports Authority of India
ACI	Airports Council International
ACRP	Airport Cooperative Research Program
AHP	Analytic Hierarchy Process
ANN	Artificial Neural Network
AODB	Airport Operational Database
ASQ	Airport Service Quality
BERT	Bidirectional Encoder Representations from Transformers
BN	Bayesian Network
BWS	Best-Worst Scaling
CAGR	Compound Annual Growth Rate
CB-SEM	Covariance-Based Structural Equation Modelling
CCTV	Closed-Circuit Television
COVID-19	Coronavirus Disease 2019
CSIA	Chhatrapati Shivaji International Airport, Mumbai
DEA	Data Envelopment Analysis
DGCA	Directorate General of Civil Aviation
F&B	Food and Beverage
GRA	Grey Relational Analysis
IATA	International Air Transport Association
IGIA	Indira Gandhi International Airport, Delhi
IPA	Importance-Performance Analysis
KIAL	Kempegowda International Airport, Bengaluru
KPI	Key Performance Indicator
LOS	Level-of-Service
MADM	Multiple Attribute Decision Making
MCDM	Multi-Criteria Decision Making
NCA	Necessary Condition Analysis
PLS-SEM	Partial Least Squares Structural Equation Modelling
PPP	Public-Private Partnership
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PRM	Persons with Reduced Mobility
RGIA	Rajiv Gandhi International Airport, Hyderabad
SEM	Structural Equation Modelling
SERVPERF	Service Performance (performance-only measurement scale)
SERVQUAL	Service Quality (gap-based measurement scale)
TOPSIS	Technique for Order Preference by Similarity to Ideal Solution
UDAN	Ude Desh ka Aam Naagrik — Regional Connectivity Scheme
UGC	User-Generated Content
VIKOR	VlseKriterijumska Optimizacija I Kompromisno Resenje (Multi-criteria Optimisation)

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