

Evaluating Opportunities for Airline Network Expansion in Emerging Tier-II and Tier-III Cities of India.

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Abstract - India's domestic aviation sector has expanded rapidly since its recovery from the COVID-19 pandemic, and an increasing share of this growth is occurring outside the six major metropolitan hubs. Airline network expansion decisions, however, continue to concentrate on established metropolitan airports, leaving many Tier-II and Tier-III airports comparatively under-evaluated despite demonstrating sustained passenger growth. This study addresses that gap by developing a composite, data-driven framework for evaluating the network expansion potential of India's emerging regional airports. Using official city-wise domestic passenger traffic statistics published by the Directorate General of Civil Aviation (DGCA) for the period 2021–2025, the study analyzed 62 Tier-II and Tier-III airports that satisfied defined data-availability and base-year traffic thresholds. Three indicators 2025 passenger traffic, Compound Annual Growth Rate (CAGR), and overall passenger traffic growth (2021–2025) were standardised through Min–Max normalisation and combined into a weighted Network Expansion Opportunity Index (NEOI), with respective weights of 0.40, 0.30 and 0.30. Airports were additionally classified into five Airport Traffic Tiers (ATT) based on 2025 traffic volume to support interpretation. The analysis shows that market size alone does not determine expansion potential: several medium-sized airports, including Shirdi, Guwahati, Jaipur, Trivandrum and Indore, achieved the highest NEOI scores because sustained growth complemented moderate but rising traffic bases, while some larger airports scored lower owing to slower recent growth. The findings offer airlines, airport operators and policymakers a transparent, replicable, evidence-based tool for prioritising regional network development in India's evolving domestic aviation market.

Key Words: Airline Network Expansion; Tier-II and Tier-III Cities; Passenger Traffic Analysis; DGCA; Network Expansion Opportunity Index (NEOI); Airport Traffic Tier (ATT); Aviation Management

1. INTRODUCTION

Air connectivity is an established driver of regional economic development, tourism, trade and business mobility. Over the past decade, India's aviation sector has grown into one of the fastest-expanding domestic markets in the world, supported by rising disposable incomes, urbanisation, infrastructure investment and government initiatives such as the Regional Connectivity Scheme (UDAN). The recovery of domestic passenger traffic after the disruption caused by the COVID-19 pandemic has further demonstrated the sector's resilience, with several regional markets now surpassing pre-pandemic traffic levels.

Historically, airline network expansion in India has concentrated around metropolitan gateways like Delhi, Mumbai, Bengaluru, Chennai, Hyderabad and Kolkata which handle the majority of domestic passenger volumes and function as established operational hubs. Yet economic development, industrial growth, tourism, healthcare and education infrastructure, and continued policy support have accelerated passenger demand in numerous Tier-II and Tier-III cities. These emerging markets are becoming increasingly material to India's domestic aviation ecosystem, and improved regional airport infrastructure has strengthened their capacity to support additional airline services.

Passenger traffic is one of the most reliable indicators of aviation market demand, reflecting travel behaviour, market size and underlying economic activity. The Directorate General of Civil Aviation (DGCA) publishes standardised city-wise passenger traffic statistics that allow objective, comparable evaluation of airport performance over time. Despite the availability of this data, network expansion decisions by airlines remain largely concentrated on metropolitan markets, and relatively little published research has systematically

evaluated emerging regional airports using multiple, integrated passenger traffic indicators.

This creates a practical and academic problem: airlines require an objective basis for identifying which of India's many Tier-II and Tier-III airports offer the most promising combination of existing demand and future growth, yet most available evaluations rely on a single indicator typically current traffic volume, which does not adequately capture growth trajectory or future commercial potential. A composite framework that integrates market size with growth performance is needed to support more rigorous, evidence-based network planning.

Accordingly, this study evaluates opportunities for airline network expansion in emerging Tier-II and Tier-III cities of India using DGCA city-wise domestic passenger traffic data for 2021–2025. The specific objectives are to: (1) analyse domestic passenger traffic trends in selected Tier-II and Tier-III cities; (2) evaluate airport performance using passenger traffic, Year-on-Year (YoY) Growth, Overall Growth and Compound Annual Growth Rate (CAGR); (3) develop a Network Expansion Opportunity Index (NEOI) integrating passenger traffic and growth indicators through Min–Max normalisation; and (4) identify and rank Tier-II and Tier-III city airports based on their potential for future airline network expansion.

The study contributes a transparent, replicable, and publicly reproducible methodology that converts routinely published DGCA statistics into a decision-support tool for airlines, airport operators and policymakers.

2. LITERATURE REVIEW

2.1 Airline Network Planning as a Data-Driven Strategic Process

Airline network planning determines where an airline operates, at what frequency, and how resources are allocated across markets to maximise operational and commercial performance. The literature is consistent that network decisions require balancing passenger demand, airport infrastructure, geographic accessibility, competition and operating costs (Airline Planning and Scheduling). Morton and Mattioli (2023) extended this understanding by modelling airport catchment areas, showing that passengers select airports based on accessibility, travel distance and regional characteristics rather than airport size alone. Together, these studies establish that network planning has moved from an experience-driven activity toward a more analytical, data-informed process but they stop short of proposing a way to compare many candidate markets on a common, quantitative basis, which is the gap this study addresses.

2.2 Passenger Demand as the Primary Driver of Airport Growth

A second stream of research treats passenger demand as the foundation of airport development. Zachariah et al. (2023) reviewed demand-forecasting approaches and concluded that reliable demand estimation underpins airline planning, fleet allocation and airport capacity decisions, while identifying economic growth, demographics, tourism and service quality as key determinants. Veerappan et al. (2020), examining Indian airports specifically, found that infrastructure, regional economic activity and passenger volumes jointly shape airport performance and that airports with sustained growth are better positioned to attract further airline investment. These studies converge on a similar conclusion to the network-planning literature: demand matters, but existing work is largely forecasting-oriented or descriptive of individual airports rather than comparative across a large set of emerging markets.

2.3 Regional Connectivity and the Limits of Policy-Led Expansion

A third theme concerns India's regional connectivity policy. Das et al. found that the UDAN scheme, introduced under the National Civil Aviation Policy (2016), has meaningfully improved access to underserved regions, but cautioned that sustained growth depends on continued assessment of demand rather than policy incentives alone. Iyer, K. C., & Thomas, N. (2020) reached a similar conclusion in a critical review of UDAN's implementation, noting persistent operational and financial challenges despite improved connectivity. Iyer, K. C., & Jain, S. (2020) went further, quantifying the breakeven passenger traffic required for regional airport viability and showing that commercial potential varies considerably across regional airports reinforcing that not every UDAN-connected or regional airport is equally investment-worthy. Collectively, this body of work shows that policy has expanded the map of served cities, but has not by itself produced an objective ranking of which of those cities are strongest candidates for further airline investment.

2.4 Synthesis and Research Gap

Across these three themes, a consistent pattern emerges. The network-planning literature identifies demand as central to route decisions but offers conceptual rather than comparative tools. The demand literature confirms passenger traffic as the most defensible indicator of market potential but is oriented toward forecasting methodology and single-airport characteristics rather than cross-airport comparison. The regional-connectivity literature evaluates policy effectiveness and financial breakeven points but does not integrate current market size with multi-year growth performance into a single, rankable measure. What is therefore missing is a framework that (a) uses recent, publicly available, standardised traffic data; (b) integrates market size and multiple growth dimensions rather than relying on a single indicator; and (c) produces a comparative ranking across a large sample of Tier-II and Tier-III airports rather than an assessment of one city or policy at a time. This study addresses that gap directly by developing the Network Expansion Opportunity Index (NEOI), which combines 2025 passenger traffic, CAGR and overall growth (2021–2025) into a single composite score for 62 regional airports.

3. THEORETICAL / CONCEPTUAL FRAMEWORK

The study's conceptual framework links the reviewed literature to the analytical approach adopted in Section 4. It proposes that an airport's network expansion potential is jointly determined by two constructs: (i) current market size, proxied by 2025 passenger traffic, which reflects existing demand and the operational base available to an entering or expanding airline; and (ii) growth momentum, proxied jointly by CAGR and overall 2021–2025 growth, which reflects the trajectory and consistency of demand expansion. Neither construct is treated as sufficient on its own; a large but stagnant market and a small but rapidly growing market both represent incomplete pictures of opportunity and the framework's central proposition is that these two constructs must be combined to identify airports genuinely well positioned for network expansion. This proposition is operationalised through the Network Expansion Opportunity Index (NEOI) described in Section 4.7. This study does not formally test relationships between these constructs using inferential statistics; the framework is therefore descriptive and exploratory rather than a hypothesis-testing model. No formal hypotheses are proposed, consistent with the exploratory nature of the design.

4. RESEARCH METHODOLOGY

4.1 Research Approach and Design

The study adopts a quantitative, descriptive and exploratory research design. The quantitative approach suits the use of numerical passenger traffic data for objective measurement and comparison; the descriptive component summarises traffic characteristics of the sampled cities over 2021–2025; and the exploratory component investigates whether traffic growth and market size jointly signal future network expansion potential, without asserting causal relationships.

4.2 Data Source and Study Period

The study relies exclusively on secondary data: official city-wise domestic passenger traffic statistics published by the Directorate General of Civil Aviation (DGCA), Government of India, for the period 2021–2025. No primary data (surveys, interviews or fieldwork) were collected. The five-year window captures both the post-pandemic recovery phase and the subsequent phase of sustained growth, providing a reasonable basis for assessing medium-term demand trends rather than short-term fluctuations.

4.3 Population, Sample and Selection Criteria

The population comprised all Indian airports for which DGCA publishes city-wise passenger traffic data. Purposive (criterion-based) sampling was used to construct the final analytical sample, applying the criteria summarised in Table 1.

Selection Criterion	Description
Data source	DGCA city-wise passenger traffic data (2021–2025)
Airport category	Tier-II and Tier-III city airports
Metropolitan airports	Excluded
Data availability	Complete passenger traffic data for all five years (2021–2025)
Base-year threshold	More than 25,000 passengers in 2021 (to avoid distortion from very small bases)
Final dataset	62 airports satisfying all criteria

Table 1. Selection Criteria for the Study

Metropolitan hubs (e.g., Delhi, Mumbai, Bengaluru, Chennai, Hyderabad, Kolkata, Ahmedabad, Pune) were excluded because they represent mature markets with established networks that fall outside the study's focus on emerging regional opportunity. Airports with 25,000 or fewer passengers in the 2021 base year were excluded to prevent very small denominators from producing artificially large percentage-growth figures that would distort comparison.

4.4 Variables

The single original variable is annual domestic passenger traffic per airport (2021–2025). Three derived variables were computed from it: Year-on-Year (YoY) Growth, Overall Growth (2021–2025) and Compound Annual Growth Rate (CAGR). These were Min–Max normalised and combined into one composite variable, the Network Expansion Opportunity Index (NEOI). A fifth, non-composite derived variable Airport Traffic Tier (ATT) classifies airports into five bands by 2025 traffic volume for interpretive purposes; it does not feed into the NEOI calculation.

4.5 Analytical Formulae

4.5.1 Year-on-Year (YoY) Growth

Year-on-Year (YoY) Growth measures the percentage change in passenger traffic from one year to the subsequent year. It is used to identify annual fluctuations and short-term changes in passenger demand.

$$YoY_t = \frac{PT_t - PT_{t-1}}{PT_{t-1}} \times 100$$

Where:

- YoY_t = Year-on-Year Growth (%) in year t
- PT_t = Passenger traffic during the current year
- PT_{t-1} = Passenger traffic during the previous year

A positive value indicates an increase in passenger traffic, whereas a negative value indicates a decline compared with the previous year.

4.5.2 Overall Growth (2021–2025)

Overall Growth measures the cumulative change in passenger traffic between the beginning and ending years of the study period. It provides an indication of the total expansion or contraction in passenger traffic over 2021–2025.

$$Overall\ Growth = \frac{PT_{2025} - PT_{2021}}{PT_{2021}} \times 100$$

Where:

- PT_{2021} = Passenger traffic in 2021
- PT_{2025} = Passenger traffic in 2025

Higher Overall Growth values indicate stronger cumulative passenger demand during the study period.

4.5.3 Compound Annual Growth Rate (CAGR)

CAGR measures the average annual rate at which passenger traffic would have grown between 2021 and 2025, assuming a constant compound growth rate. Since the study covers four annual intervals (2021–2022, 2022–2023, 2023–2024, and 2024–2025), the exponent is $(1/4)$.

$$CAGR = (PT_{2025} / PT_{2021})^{(1/4)} - 1.$$

Where:

- PT_{2021} = Passenger traffic in the base year (2021)
- PT_{2025} = Passenger traffic in the final year (2025)
- 4 = Number of annual growth intervals between 2021 and 2025

4.5.4 Min–Max Normalisation

Since Passenger Traffic, Overall Growth, and CAGR are measured on different scales, Min–Max Normalisation was applied before combining the indicators into the Network Expansion Opportunity Index (NEOI).

$$X_{norm} = \frac{X - X_{min}}{X_{max} - X_{min}}$$

After normalization, every variable assumes a value between 0 and 1. A value closer to 1 indicates relatively stronger performance, while a value closer to 0 indicates relatively weaker performance. These normalized variables form the basis for constructing the composite Network Expansion Opportunity Index.

4.6 Airport Traffic Tier (ATT) Classification

Airport Traffic Tier	Annual Passenger Traffic (2025)
ATT-I	More than 5,000,000
ATT-II	2,000,001 – 5,000,000
ATT-III	1,000,001 – 2,000,000
ATT-IV	500,001 – 1,000,000
ATT-V	Up to 500,000

Table 2. Airport Traffic Tier (ATT) Classification

4.7 Construction of the Network Expansion Opportunity Index (NEOI)

The NEOI integrates three normalised indicators using predetermined weights that reflect their relative importance to network planning: 2025 passenger traffic (weight 0.40, reflecting current market size and route-sustainability potential), CAGR (weight 0.30, reflecting consistency of long-term growth), and Overall Growth 2021–2025 (weight 0.30, reflecting cumulative market expansion). The index is computed as:

$$NEOI = 0.40 (PT_{norm}) + 0.30 (CAGR_{norm}) + 0.30 (OG_{norm})$$

Resulting scores range from 0 to 1, with higher scores indicating stronger combined evidence of current demand and sustained growth. Airports were then ranked in descending order of NEOI score. Because very high percentage growth from a small traffic base can overstate opportunity, rankings were interpreted alongside the ATT classification rather than in isolation.

4.8 Data Analysis Techniques

Descriptive statistics summarised passenger traffic across the sample; growth indicators (YoY, Overall Growth, CAGR) were computed for each airport; Min–Max normalisation standardised these onto a common scale; the NEOI combined them into a composite score; and comparative ranking identified priority airports. As the design is descriptive and exploratory rather than causal, inferential statistical tests were

not applied, and reliability/validity procedures associated with primary-data instruments are not applicable, since the study uses an official secondary dataset rather than a survey instrument.

5. DATA ANALYSIS AND RESULTS

5.1 Overview of the Final Dataset

After applying the screening criteria in Table 1, the final analytical sample comprising 62 Tier-II and Tier-III airports with complete 2021–2025 passenger traffic records, Metropolitan airports and airports below the base-year traffic threshold were excluded. For each airport, the dataset includes annual passenger traffic, CAGR, Overall Growth, ATT classification and the composite NEOI score.

5.2 Passenger Traffic Trends (2021–2025)

Aggregate passenger traffic across the 62 sampled airports rose from 17.75 million in 2021 to 46.51 million in 2025, a more than two-and-a-half-fold increase over the study period (Figure 1). The sharpest increase occurred between 2021 and 2023, consistent with post-pandemic recovery, while growth continued at a more moderate pace through 2024 and 2025, suggesting a transition from recovery toward sustained market expansion. This confirms that regional aviation demand strengthened materially over the period, supporting the premise that Tier-II and Tier-III markets merit closer evaluation for network planning.

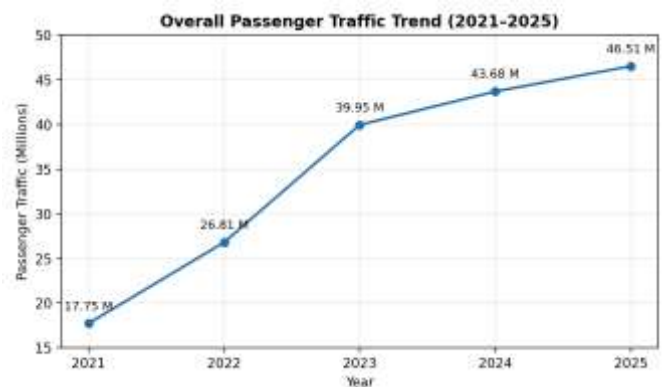


Figure 1. Overall Passenger Traffic Trend of the Selected Regional Airports (2021–2025)

5.3 Airport Traffic Tier (ATT) Distribution

Classifying the 62 airports by 2025 traffic volume shows a distribution skewed toward smaller markets (Figure 2): no airport fell into ATT-I (traffic exceeding 5 million, consistent with the exclusion of metropolitan hubs); 5 airports fell into ATT-II (2–5 million); 12 into ATT-III (1–2 million); 13 into ATT-IV (500,001–1,000,000); and 32 — over half the sample — into ATT-V (up to 500,000). This confirmed that the study captures primarily small- and medium-sized regional markets, consistent with its objective of evaluating emerging rather than already-mature airports.

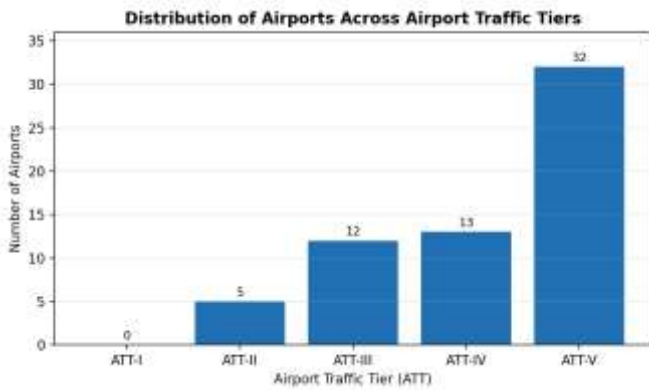


Figure 2. Distribution of Airports Across Airport Traffic Tiers (ATT)

5.4 Network Expansion Opportunity Index (NEOI) Rankings

Table 3 and Figure 3 present the top 25 airports ranked by NEOI score. Shirdi (0.646) and Guwahati (0.645) lead the ranking, followed closely by Jaipur (0.626), Trivandrum (0.625), Indore (0.609) and Lucknow (0.598). Several ATT-III/ATT-IV airports—including Bhubaneswar (0.541), Aizawl (0.535) and Coimbatore (0.523) also rank highly, indicating that moderate-sized markets with strong growth can outrank larger but slower-growing airports. The lowest-ranked airports within the top 25 are Visakhapatnam (0.416), Bhopal (0.408) and Jodhpur (0.398) still substantially outscore the bottom of the full 62-airport sample, underlining meaningful separation between higher- and lower-opportunity regional markets.

Rank	Airport	NEOI Score
1	Shirdi	0.646
2	Guwahati	0.645
3	Jaipur	0.626
4	Trivandrum	0.625
5	Indore	0.609
6	Lucknow	0.598
7	Bhubaneswar	0.541
8	Aizawl	0.535
9	Coimbatore	0.523
10	Chandigarh	0.508

Table 3. Top 10 Airports Ranked by NEOI Score (full top-25 shown in Figure 3)

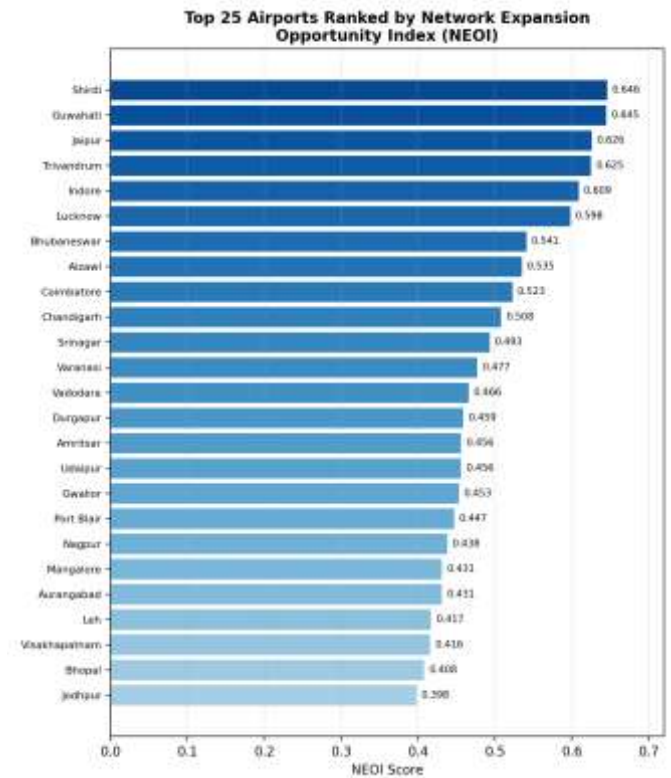


Figure 3. Top 25 Airports Ranked by the Network Expansion Opportunity Index (NEOI)

5.5 Relationship Between Pax traffic and NEOI

Figure 4 illustrates the relationship between 2025 passenger traffic and the Network Expansion Opportunity Index (NEOI) for the 62 regional airports included in the study. The upward trendline indicates a generally positive relationship, with airports having higher passenger traffic tending to achieve higher NEOI scores. However, the dispersion of observations around the trendline shows that passenger traffic alone does not determine an airport's expansion potential. Several airports with relatively moderate passenger traffic also record higher NEOI scores, reflecting the contribution of growth-related indicators incorporated into the index. Similarly, some airports with higher passenger traffic do not necessarily achieve the highest NEOI scores. Overall, the pattern supports the use of a composite evaluation approach that considers both existing market size and growth performance when assessing regional airport network expansion opportunities.

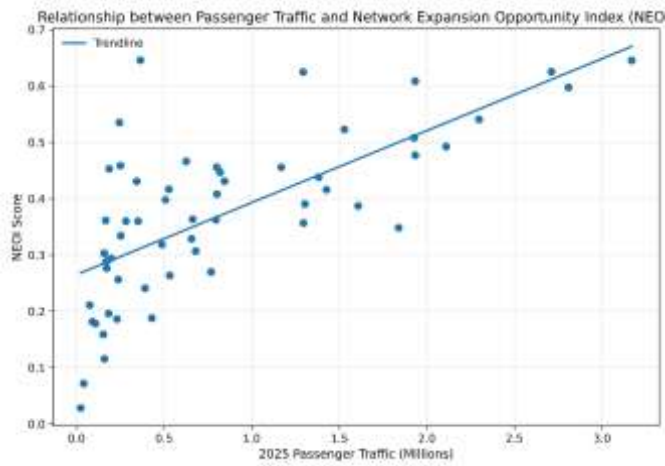


Figure 3. Relationship between 2025 Passenger Traffic and the Network Expansion Opportunity Index (NEOI)

6. DISCUSSION

6.1 The Primacy of Growth Momentum Over Current Scale

The central finding of this study is that high current passenger traffic does not automatically translate into the highest NEOI ranking. Several of the largest airports in the sample recorded comparatively moderate growth, a pattern consistent with markets that have already absorbed the bulk of post-pandemic recovery and entered a more mature phase of development. By contrast, several medium-sized airports, including Shirdi, Guwahati, Aizawl and Coimbatore, achieved leading NEOI scores precisely because sustained Compound Annual Growth Rate (CAGR) and overall growth complemented an already-respectable traffic base. This divergence between size and momentum is the empirical basis for the study's broader argument that expansion potential must be assessed on more than one dimension.

6.2 Relationship to Prior Literature

This pattern is consistent with, and extends, Morton and Mattioli's (2023) observation that airport attractiveness is not reducible to size alone, as well as Veerappan et al.'s (2020) finding that infrastructure and regional economic activity, rather than traffic volume in isolation, drive airport development. It also refines the regional-connectivity literature represented by Das et al., Iyer and Thomas, and Iyer and Jain. Whereas that body of work evaluated whether UDAN-supported connectivity was financially sustainable in the aggregate, the present analysis identifies which specific regional airports currently combine sufficient scale with sustained momentum, offering a more granular and comparative complement to policy-level assessments of regional connectivity.

6.3 Commercial and Industry Implications

The distinction between size and momentum carries direct commercial significance. An airline entering a market with high current traffic but flattening growth accepts lower long-term upside in exchange for lower initial demand risk, whereas entering a market with strong growth but modest current traffic accepts the reverse trade-off. The NEOI's weighting scheme,

which assigns 0.40 to current market size and a combined 0.60 to the two growth measures, is designed to surface airports that offer a favourable balance of both characteristics rather than airports that are simply large or simply growing quickly from a very small base. The latter risk is further mitigated by the 25,000-passenger base-year threshold applied during sample selection and by the moderate, rather than dominant, weight placed on any single growth measure.

6.4 Theoretical Contribution

The principal theoretical contribution of this study is methodological rather than causal. It demonstrates that a transparent, weighted composite of standardised secondary indicators can meaningfully differentiate emerging airports in situations where single-indicator approaches would either over-reward scale, as in a traffic-only ranking, or over-reward volatility, as in a growth-only ranking derived from a small base. This composite approach complements, rather than replaces, the demand-forecasting and catchment-based approaches identified in the literature, and could plausibly be combined with them in future research.

7. MANAGERIAL IMPLICATIONS

Because this is an MBA-oriented study, the findings carry practical relevance for the principal stakeholders in India's regional aviation market: airlines, airport operators and policymakers. For airlines, the NEOI offers a strategic screening tool that can be used to shortlist candidate cities for detailed route feasibility studies rather than relying solely on current traffic league tables. At the operational level, airports occupying the higher NEOI tiers with rising CAGR, such as Shirdi, Guwahati and Jaipur, represent plausible candidates for incremental frequency additions or new point-to-point routes ahead of competitors entering the same market. The framework also supports portfolio-level risk management, since distinguishing high-traffic, low-growth airports from moderate-traffic, high-growth airports allows an airline to balance markets with proven demand against markets offering earlier-mover upside.

For airport operators, the ranking provides supporting evidence for infrastructure and capacity planning. Airports in high-NEOI but lower-ATT tiers, particularly ATT-III and ATT-IV, may use the results to justify terminal, apron or ground-handling investment ahead of anticipated airline interest, rather than waiting for demand to materialise before committing capital. For policymakers responsible for extending or renewing regional connectivity support, the NEOI and ATT classifications can be used jointly to distinguish airports where passenger demand is already self-sustaining from those that remain dependent on subsidy, thereby helping to target public investment toward markets with the clearest evidence of organic growth.

8. KEY FINDINGS

The findings are organised below in relation to the four research objectives stated in Section 1.

In relation to the first objective, concerning passenger traffic trends, aggregate traffic across the 62-airport sample rose from 17.75 million in 2021 to 46.51 million in 2025. This confirms

that regional Tier-II and Tier-III demand has not merely recovered from the pandemic but has entered a sustained growth phase, indicating that the timing is favourable for airlines to reassess their regional network coverage.

In relation to the second objective, concerning airport performance evaluation, growth rates measured through Year-on-Year Growth, Overall Growth and CAGR varied considerably even among airports of similar size. This shows that current scale and growth trajectory are not strongly coupled at the level of the individual airport, and that evaluations relying on a single indicator risk both overvaluing and undervaluing specific airports.

In relation to the third objective, concerning construction of the composite index, Min–Max normalisation combined with the 0.40/0.30/0.30 weighting scheme produced NEOI scores ranging from 0 to 1 across the 62 sampled airports. The index differentiates airports meaningfully rather than marginally: top scores of approximately 0.6 to 0.65 are roughly 60 percent higher than scores at the bottom of the top-25 list, which cluster around 0.40. This confirms that the NEOI provides genuine separation for prioritisation purposes rather than a superficial re-ordering of a traffic-based list.

In relation to the fourth objective, concerning the ranking of airports, Shirdi, Guwahati, Jaipur, Trivandrum, Indore and Lucknow constitute the top six. These leading airports represent a mix of city types — a pilgrimage and tourism-linked destination (Shirdi), state capitals (Jaipur, Trivandrum, Lucknow) and established regional hubs (Guwahati, Indore) — rather than a single category. This indicates that network expansion opportunity in India's regional aviation market is not confined to one type of city, and that evaluation frameworks intended for this purpose should remain city-type agnostic.

9. RECOMMENDATIONS

Five recommendations follow directly from the findings. First, airlines' network-planning teams should adopt the NEOI, or an internally adapted version using the same three components and weighting logic, as an early-stage screening filter before committing resources to detailed route feasibility studies for Tier-II and Tier-III markets not already served.

Second, the airports identified as top-tier candidates in this study — Shirdi, Guwahati, Jaipur, Trivandrum, Indore and Lucknow — should be treated as first-priority candidates for deeper route and demand studies, given their combination of adequate scale and sustained growth. This recommendation is deliberately specific rather than generic: naming the markets the data support is more actionable than a general instruction to expand into Tier-II cities.

Third, airports that combine moderate scale (ATT-III or ATT-IV) with strong growth, such as Bhubaneswar, Aizawl and Coimbatore, are better suited to staged expansion, for example through reduced-frequency or seasonal service, than to full network entry. This allows an airline to establish an early market presence while containing initial capacity risk.

Fourth, because NEOI rankings depend on a rolling five-year traffic window and are therefore time-sensitive, airlines and airport authorities should recompute the index annually as new

DGCA data are published, rather than treating a single year's ranking as a static long-term plan.

Fifth, because the NEOI deliberately excludes fare levels, airline competition, aircraft economics and airport infrastructure constraints, any airport shortlisted through the index should still undergo conventional route-feasibility and competitive analysis before a final network decision is made. The index is best understood as a preliminary screening instrument rather than a substitute for full commercial due diligence.

10. LIMITATIONS

Several limitations should be acknowledged when interpreting the findings. With respect to data source, the analysis relies solely on DGCA passenger traffic statistics and does not incorporate airline frequency, seat capacity, fare levels, airport infrastructure constraints or socio-economic indicators, each of which also influences route viability. With respect to sample and geography, the 62-airport sample reflects a defined screening process restricted to Tier-II and Tier-III airports with complete 2021–2025 data and more than 25,000 base-year passengers; airports failing these criteria, including newly opened or very small regional airports, are not represented in the analysis.

With respect to the time period, the five-year window from 2021 to 2025 spans an atypical pandemic-recovery phase, which may inflate growth indicators relative to a more typical multi-year baseline. With respect to methodology, the NEOI's weighting scheme of 0.40, 0.30 and 0.30 reflects a reasoned but subjective judgement of relative importance rather than an empirically derived or validated weighting, and alternative weightings could shift specific rankings. Finally, with respect to generalisability, because the framework is descriptive and exploratory rather than causal, NEOI rankings should be read as indicative of relative opportunity rather than as a guarantee of route profitability.

11. FUTURE RESEARCH

Building on the limitations and the research gap identified in Section 2.4, four directions for future research are proposed. Future studies could extend the NEOI with operational and commercial variables such as air cargo traffic, aircraft movements, average fares and airline competitive intensity; empirically test or optimise the index's component weights against realised route performance once such outcome data become available; apply the methodology at state or regional level to examine sub-national variation in aviation development; and construct a multi-year panel of NEOI scores to study how rankings evolve as the post-pandemic recovery phase matures into steady-state growth.

12. CONCLUSION

This study set out to evaluate opportunities for airline network expansion in India's emerging Tier-II and Tier-III cities using DGCA passenger traffic data for the period 2021–2025. Rather than relying on passenger traffic volume alone, the study developed and applied a composite Network Expansion Opportunity Index (NEOI) that integrates current market size

with two complementary growth measures, CAGR and overall growth, standardised through Min–Max normalisation. Applied to a sample of 62 airports meeting defined screening criteria, the index identified Shirdi, Guwahati, Jaipur, Trivandrum, Indore and Lucknow as the strongest current candidates for network expansion, and showed more broadly that market size and growth momentum are only loosely coupled across India's regional airports. This finding has direct relevance to how airlines, airport operators and policymakers prioritise limited network-planning and investment resources. The NEOI offers a transparent, replicable and readily updatable methodology built entirely on publicly available official statistics, and represents a practical contribution to aviation management research on India's rapidly evolving domestic market.

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