The Role of Small Airports in the Distribution and Logistics of Local Produce in India: A Proposal for Business Efficiency

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Abstract

Purpose: Small airports are social and economic enablers and facilitate businesses and individuals. They contribute significantly to the distribution and logistics of the local produce – be it goods or services, thereby impacting the economy but have limited access to funds and poor management restricts their development. Despite the importance, small airports in small cities struggle financially as they are unable to earn profits and have higher operating costs. In other words, this is a paradoxical situation for small airports wherein, despite losses, the regional or national public authorities still finance such airports under socio-economic obligations. Therefore, this study aims to identify the critical success factors for improving small airports' performance and propose a business model. **Research design, data and methodology:** Using the qualitative research, interviews with 16 stakeholders from Guwahati, Tirupati, Bhubaneswar and Dehradun airports in india were examined. **Results:** The analysis reveals strategic planning and low cost, non-passenger services, and development of airport economic region as the main factors contributing towards small airports' success. Additionally, providing logistics to the local businesses and creating niche markets are suggested. **Conclusions:** Small airports, based on their services and the means of targeting customers, could select the relevant approach to improve their overall performance and improve profitability.

Keywords : Airport Business Model, Small Regional Airports, Success Factors, Performance, Qualitative Research, Distributions of material, Logistics

JEL Classification Code: M21, O14, R11, R41.

1. Introduction

Due to liberalization, Indian airports have faced unprecedented growth in recent years with an increase in air traffic, a wider network of airline presence, and competitive efforts to improve the travel experience (Rikhy et al., 2014). India has various airports, from large international hubs to smaller regional airfields. Large airports are defined as airports handling higher traffic volumes (including major carriers and freight hubs) and supporting these flights by the presence of complicated ground transportation systems while small airports are the ones supporting majorly propeller-driven planes and serving smaller traffic and aircraft. Large airports have exemplified success through efficient management, robust infrastructure, and strategic planning (Kumar et al., 2017). These airports have played a pivotal role in driving economic activities, tourism, logistics, distribution of goods and services and global connectivity. Their success is underscored by well-defined Key

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Performance Indicators (KPIs), ranging from passenger satisfaction metrics to operational efficiency benchmarks (Barde et al., 2016). The picture was different for small airports as 92% of the world's small airports reported a net loss in 2015. The reasons may be different for each small airport to report such losses: oversupply of small airports concerning traffic growth, underutilization of the airport assets, suboptimal marketing to airlines, or ballooning operational costs. According to a European Commission view, airports with a passenger capacity of 1 million or fewer have difficulty in covering their operating costs. Whereas airports with 3 to 5 million passenger capacity should be able to cover the costs and at a size of over 5 million, airports should be profitable. However, Starkie (2008), argues that even small airports can make reasonable profits as they also have an enormous impact on a country's economic development. The goal is to optimize the value of assets and minimize the costs associated with building, operating, and maintaining such small airports. In other words, it is imperative that such projects are executed successfully and in an effective way. According to Marinelli et al. (2015) implementing relevant tools and identifying factors affecting the success of small airports is imperative to achieve value for money. Therefore, the current study aims to identify the success factors for developing small regional airports, particularly in India.

In the aviation industry, identifying the success factors is critical as it will help the existing small regional airports to develop strategic plans for improving their efficiency. This is required as there has been a significant rise in the number of air travellers since the advent of the Regional Connectivity Scheme (RCS) in 2016. Small airports account for almost 25% of all passenger flow in the nation. In addition, they play a crucial role in the economic development of local communities by providing distribution and logistics of goods and services. They serve as vital connectors, linking remote regions with broader markets and enabling the flow of products to consumers. Small airports also serve as catalysts for local economic growth by providing essential logistics support to small and medium enterprises (SMEs). Despite their importance, small airports often face financial constraints and operational challenges, hindering their ability to thrive.

Moreover, the persistence of issues in the form of lack of financial resources and manpower restricts the development of small airports. However, despite these challenges and lower traffic flow as compared to large airports, small airports serve as an important medium for connecting nearby places and provide the benefit of regional connectivity to people. Therefore, there is a need for intervention to identify success factors for improving small airports' performance.

1.1. Significance of Small Airports in India

The major airports in India are experiencing congestion in accommodating gradually increasing passenger numbers and aircraft operations on their existing runways and taxiways. According to CAPA's Airport Saturation Capacity Index, if the annual passenger traffic grows at 10%, Mumbai will soon run out of space for new flyers followed by Chennai, New Delhi, and Kolkata. Zhang et al. (2019) suggested that congestion can be mitigated by diverting some traffic to small and suburban airports by providing intermodal connectivity services such as high-speed rail (HSR), helicopter connectivity, and dedicated bus corridors. Apart from relieving congestion at large airports, the development of small airports will provide the following:

[1]. Access to remote areas thus opening contact with far-flung communities and providing essential services like hospitals, education, and posts among others.

[2]. A significant contribution to the sustainable development of the city, state, and country by supporting and promoting tourism.

[3]. Viable means of transport to/from products and services thereby helping access markets for local produce. This contributes to consumer welfare.

[4]. Will support industrial activity and help in the growth of commerce.

[5]. Will support the economic development of the region.

Thus, small airports are social and economic enablers. They facilitate businesses and individuals to transport themselves and goods globally and nationally, thereby supporting logistics, distribution of goods, trade, production, tourism, exports, and internal investment (Beifert et al., 2015). Governmental efforts have also grown in recent years with the initiation of schemes like UDAN, for the development of many smaller airports around India for connecting small cities and towns. Small airports' growth is spreading beyond large urban areas to tier-II and tier-III cities as well, thereby decentralizing air traffic hubs. These smaller airports are essential for providing easy connectivity to outlying areas, ensuring efficient distribution of resources which constitute a huge part of Indian geography. They facilitate necessary air travel between remote locations and large cities and provide accessibility for locals, companies, and visitors. Consequently, this draws in investments, strengthens regional economies, and creates job possibilities. The success factors for structural and financial efficiency for small airports may differ from large airports, requiring a separate framework that verifies the applicability of identified critical success factors.

1.2. Status of Small Airports in India

Based on the Airports Authority of India's (AAI) 24th Annual Report 2018–2019, India has 137 airports, comprising 23 international airports, 10 customs airports, 81 domestic airports, and 23 civil enclaves at defense airfields (AAI, 2019). Further, according to the Regional Connectivity Scheme (RCS), the Ministry of Tourism, proposed airlines to connect unserved routes or underserved airports (as per the definition of RCS routes under the scheme). As per the data available on the AAI website, the domestic passenger share of airports other than the six metros has increased by over 3% points between the financial years 2014 and 2019 (AAI, 2019). The government under this scheme is trying to make more airports operational. According to the list of RCS airports available on the AAI website, 44 airports have been operationalized and all these airports shall fall in the category of small airports, as they can handle air passenger traffic of less than 3.5 million per year.

Despite the commendable growth of small airports, problems exist which hamper their overall performance. Small airports are not performing well in terms of financial performance, growth and operational efficiency (Iyer & Jain, 2020).They are facing several obstacles to their expansion and long-term viability, including restricted infrastructure, high-cost structure, a lack of skilled labour, regulatory compliance, security issues, insufficient airport capacity and environmental effects (Subhashini, 2023). Moreover, poor connectivity, inadequate transportation and logistics services, links or insufficient access to major transportation and distribution networks; inefficient operations leading to delays, poor management practices, or suboptimal use of resources; and limited infrastructure in terms of inadequate facilities, runways, terminals, or support services for effective airport functioning make success difficult.

Industry experts opine that the failure of small airports has occurred due to a lack of well-structured demand-driven strategies for the upliftment of small airport development). Furthermore, Subhashini (2023) reported that the losses are the outcome of a lack of functional success factors such as expenditure exceeding earnings, shortage of qualified air traffic control officers, non-functional airstrips due to the absence of airlines, unwillingness to pay higher parking charges, and low demand from flyers and poor logistics. Decline/shutdown of airlines' operations like Kingfisher, and Jet Airways, low passenger load factor (PLF not exceeding 90%), unregulated fuel taxation, lack of airport connectivity, and inadequate cargo infrastructure among others further added to the nonviability of these airports. According to the Airport Cooperative Research study, the sustainability of the airports is not limited to new facilities and construction but also includes maintenance, operations,

and renewal costs and suggested that airports should consider a business model for giving an approach to managing an airport It is imperative to examine these difficulties to address their needs and promote the overall growth of small airports. Therefore, the current study examines the critical success factors and suggests a sustainable business model for the development of small airports. The current study addresses the below mentioned research questions:

RQ1. What are the critical success factors for small airports in India ?

RQ2. What framework can be recommended for successful small airports in India?

This framework is built on the success factors identified via empirical thematic analysis of the interviews conducted from various airport stakeholders.

2. Literature Review

2.1. Efficiency of small airports

Regional airport efficiency is evaluated by its structural efficiency (Thomas & Jha, 2022), operational efficiency (Sarkis, 2000) and economic or financial efficiency (Vasigh & Hamzaee, 1998). The structural efficiency of an airport determines whether or not its immovable assets, such as runways and terminal buildings, are utilized effectively. Operational data refers to several annual movements and passenger and cargo statistics. Data used in this analysis include airport gates, number of annual passengers (PAX) travelling, the purchase price of the airport (PP), the purchase price per enplaned passenger per year (PPAX), and runway capacity (RWY). Whereas financial efficiency is focused on the factors of production or inputs, including capital and labour, determines the financial efficiency of an airport. Technical efficiency is a part of cost efficiency obtained when minimal inputs or least costs are utilized to generate maximum output.

Further, among the performance demanded by passengers some include, regional connectivity of the area, logistics infrastructure for distribution of goods and services, technological advancements, focus on the local community, and availability of talent. Few authors (Baltazar & Silva, 2020; Červinka, 2017) have pointed out the need for bringing together the needs of the consumers and also help in the assessment of the performance of airports.

Frank (2011) his study suggests that each airport is different and must take into account various factors specific to its location and administration; however, all business models can fall into two segments, namely, aeronautical and non-aeronautical. Further, the theory of business models at airports defines how to design and establish relationships

between different elements of a business model. In the context of small airports, efficient distribution systems are pivotal for optimizing material flow and trade, which are essential components of corporate logistics movement. These systems streamline the movement of goods and services but also enhance the operational agility of the airports. Thus, by integrating advanced logistics practices, smal airports can improve their performance metrics. Thereby reflecting a corporate strategy that prioritizes efficiency and elements are are interlocked to create and deliver value (Frank, 2011). It is, therefore, important to identify all constituent parts of a model that can help understand value propositions using key processes and resources (Johnson et al., 2008). The key elements that can evaluate the airport business model (see Table 1) as mentioned in the literature are as follows:

[1]. Customer Value Proposition,
[2]. Airport Regulators,
[3]. Breakthrough
[4]. Rule Changing,
[5]. Governance Mix,
[6]. Key Differentiating Activities,
[7]. Key Resources,
[8]. Customer Segments,
[9]. Key Partners,
[10]. Revenue Streams,
[11]. Cost Structures,
[12]. Customer relationships

Table 1: Elements of Business Model for Small Airports

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
Number of airline partnership	Real estate activities	Accessibility	Long-term contracts with airlines	Annual passenger traffic
	Differentiating key activities	Punctuality	Free wifi	total number of airlines
	Commercial activities inside the airport	Number of destinations covered	Dedicated offices	Number of commercial agents
	Advance Logistics Practices		Social networks	
			Blog	
			events	
	Key Resources	**Channels**	**Cost Structure**	**Revenue Streams**
	Number of runaways	Publications		Aeronautical revenues
	Number of gates			Non-aeronautical revenues
	Capacity of terminal			
	Governance		**Regulators**	
	Public-private partnership		Regulatory bodies	
	BOT contract			
	Joint venture			

Source: Adapted from Johnson et al. (2008)

In developing a successful business model for particularly small airports, Feldman (2009) suggested following a three-pillar approach, i.e. "diversify, differentiate, and innovate." Airports whether they are hubs, small airports, or large airports are still evolving and facing tough challenges. However, it is more challenging for small airports as they are under losses, therefore, it is of high significance to propose a compelling business model that caters to the requirements of all stakeholders at the airport.

Airports need to act beyond their daily operations by collaborating with different stakeholders who are part of the airport ecosystem and thus influence its efficiency. The different stakeholders involved in delivering a commercially viable airport are airlines, ground handlers, the airport commercial team (Halpern & Mwesiumo, 2021); the airport operations team (Paraschi et al., 2019; Eshtaiwi et al., 2018); customers and the local community.

3. Research Methods and Materials

3.1. Research Design and Sampling

This research uses a qualitative paradigm to identify the success factors and develop a business model for the small airports in the Indian aviation sector. The qualitative research design has been adopted based on the review of the business models conducted by Haas (2019) which reveals that all models are, in the main, developed conceptually. Since the study is conducted within the ambit of the commercial Indian small airports, all the small airports technically form an integral part of the sample frame where the different stakeholders of these airports constitute the sample unit. The study uses a sample of four small commercial airports based on passenger traffic of less than 3.5 million. Data has been collected from multiple stakeholders (airlines, ground handlers, airport commercial

team, airport operations team, customers, and local community) and 4 small airports, viz Guwahati, Tirupati, Bhubaneswar, and Dehradun. The purposive sampling technique has been applied as it generates rich textual data on a small sample size (Onwuegbuzie & Collins, 2007). Lincoln and Guba (1985) suggested that sample size in qualitative studies should be guided by data saturation; that is, sampling can be stopped when no new information is collected by adding more sample units or respondents. The data was collected in person by fixing the prior appointment with the respondents. Data saturation was obtained at the 16th interview and thus the sample size was also restricted to 16. All the interviews conducted were recorded and transcribed.

3.2. Research Instrument

The research instrument employed in this study is a semi-structured interview questionnaire specifically crafted to investigate several facets of a successful and viable small airport in India. The content is divided into nine categories, based on a typical business model canvas: key partners, key activities, key resources, value propositions, customer segments, channels, customer connections, cost structures, and revenue streams related to their functional teams.

The first segment examines key partners, analyzing the impact of government, financial institutions, and raw material suppliers on the firm. The questionnaire further investigates the degree of satisfaction and commitment among various partners in carrying out initiatives. Regarding 'key activities', the attention is directed towards the expenses associated with project execution and the strict adherence to timelines. 'Key resources' section explores the company's innovation environment, the capacity of employees to adjust to new technology and the company's training initiatives.

Further on, the focus is on the 'value propositions', which pertains to the analysis of the effectiveness and durability of newly created goods or services, as well as the cost factors involved in their implementation. The sections on 'customer segments', 'channels', and 'customer relationships' go into the process of identifying client segments, assessing satisfaction levels, and fostering customer base expansion. The 'channels' section aims to analyze the kind of services offered, promotional tactics, quality control, and income creation for each channel. 'Cost structures' analyses the complex relationship between costs and revenues associated with the creation of a product or service, encompassing the proportion of fixed and variable expenses as well as research and development expenditures. The concluding segment 'revenue streams' focuses on understanding the primary sources of income, revenue per client, and revenue per channel.

This extensive questionnaire functions as a powerful instrument to get detailed qualitative insights into the company's operations, strategy, and other aspects. The interview consisted of 28 questions as indicated in Appendix.

3.3. Data Analysis

The audio recorded during the interview was transcribed manually for thematic analysis to allow us to draw an understanding of the patterns in the interviewees' perceptions. It also enabled the extraction of actual information about airports instead of relying on aspects identified in the literature. Thematic analysis was performed using MAXQDA 24 software. The software allow consistent and systematic data coding and analysis, leading to the derivation of more accuracy in outcomes and providing more reliable data (Wong, 2008). It enabled a systematic examination of airport employees' perceptions by identifying relevant themes and the key focus areas defining the approach which was used for building the strategic model for enhancing the small airport's performance and supporting the regional demand of India and economic growth. The current study analyzed the narrative interviews using concepts derived from the Grounded Theory of thematic analysis (Glaser et al.,1968). The data collected during interviews can generate enough information required to achieve the objectives of the study. The notes taken during the narrations were converted into a transcript by following a GT procedure as illustrated in figure 1 below.
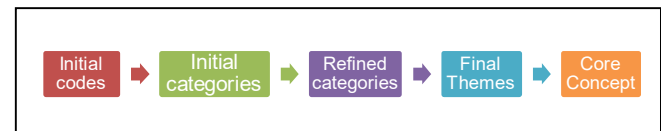
Source: Smith & Firth (2011)

Figure 1: Deriving Core Concept Through Establishing Links Between Codes, Categories, and Themes

To ensure the validity of the data, the interviewees' backgrounds were examined before they were approached for participation in the study. Cresswell and Miller (2000) established a two-dimensional framework for locating nine different types of validity procedures. From those procedures, the current for establishing the validity of the themes generated for each research question (Malik et al., 2021).In this validity procedure, the expert opinion on the themes generated were cross-checked- whether these themes convey the same meaning as extracted, thus ensuring complementarity (Greene et al., 1989).The findings of the study were also supported with secondary literature resulting in adding more validity and reliability to the outcomes, further enhancing the credibility of the study's empirical findings.

4. Data analysis

The representatives having at least 1 year of association with existing airports and a total working experience of at least 5 years in small airports were selected. The demographic profile of the participants of the interview is presented in Table 2 below.

Table 2: Profile of the Participants

Interviewee	Stakeholder	Designation	Location	Small airports Experience	Total working experience
1.	Airline - Indigo	Sr Manager	Gurgaon	3 yrs	13 yrs
2.	Airline - Vistara	Sr Manager	Gurgaon	4 yrs	12 yrs
3.	Airline - Spicejet	DGM	Gurgaon	6 yrs	16 yrs
4.	Airport	GM	Mangalore	14 yrs	29 yrs
5.	Airport	Manager	Bhubneswar	3 yrs	9 yrs
6.	Airport	Manager	Tirupati	4 yrs	10 yrs
7.	Airport	Sr Manager	Dehradun	4 yrs	12 yrs
8.	Ground Handler	CEO	Mangalore	16 yrs	25 yrs
9.	Ground Handler	CEO	Bhubneswar	14 yrs	25 yrs
10.	Ground Handler	CEO	Chandigarh	14 yrs	24 yrs
11.	Ground Handler	CEO	Dehradun	10 yrs	25 yrs
12.	Concessionnaire	GM	Dehradun	3 yrs	20 yrs
13.	Concessionaire	Manager	Bhubneswar	4 yrs	14 yrs
14.	Community	Executive Director	New Delhi	25 yrs	33 yrs
15.	Community	Professor	Patna	5 yrs	24 yrs
16.	Community	Member SSC	Bhubneswar	8 yrs	35 yrs

Source: Authors'own

We adopted a qualitative approach, in order to allow the perspective of the interviewee to emerge. The process of generating visualization patterns used word cloud based on the frequency of the keywords associated with the data. Visual data mining techniques have high value in exploratory data analysis, as well as great potential in terms of exploring large amount of data, especially when little is known about the data or the exploration goals are vague (Keim, 2002). Further, code matrix was generated for the emerging themes to indicate the importance of strategic planning in airports.

4.1. Key Factors for Small Airports

The study is conducted as a thorough examination of the perspectives held by all five stakeholders. The initial insights gleaned from the data were derived through a meticulous examination of the text, devoid of any pre-existing analytical bias (Glaser, 1978; Wolcott, 1994). The words 'decongestion', 'maintenance', 'passenger', 'service', 'connectivity', 'baggage', 'facility', 'time', 'quick', 'remote', 'runway', 'security', 'space', 'logistics', 'trade' and 'distribution' were heightened in the frequency analysis (Table 3) while analyzing the responses. The interview data was coded using both inductive and deductive process of coding and the factors were analyzed. The main themes that emerged are illustrated in Table 3 for the success factors for small airports in India are: Airport, Strategic Planning, Low-cost carriers, Development of airport economic region, and non-passenger service as shown in the code matrix (refer to Figure 2).

Table 3: Code Frequency Table

Themes	Categories	Codes	Frequency	Percentage	Percentage (valid)
Airport Strategic Planning			40	85.71	85.71
	Passenger Traffic handling conditions	Facilitation of passengers, operationalization of facilities, safety, and security, reducing the communication gap	10	71.43	71.43
	Ramp operations	Waiting time, quick turnaround, runway maintenance, baggage	8	57.14	57.14
	Physical infrastructure	Providing premium spaces,area planning , navigation services, equipment handling, Handling logistic services	7	50.00	50.00

Themes	Categories	Codes	Frequency	Percentage	Percentage (valid)
	Number of Flights	Frequency, airlines connectivity	5	35.71	35.71
	connectivity to other places	Connectivity, small tourist destination, remote connectivity	6	42.86	42.86
Non Passenger Services		Decongestion, low air fare, low cost airlines	6	42.86	42.86
Low cost carriers		Freight services, courier, medical transport, healthcare services, logistic services, business passenger services	6	42.86	42.86
Development of Airport Economic Region		Developing airport village, economic growth around airport	3	21.43	21.43
DOCUMENTS with code(s)			16	100.00	100.00

Source: Authors'own

The code matrix is presented below in Figure 2 for illustrative purposes and each factor is explained further:
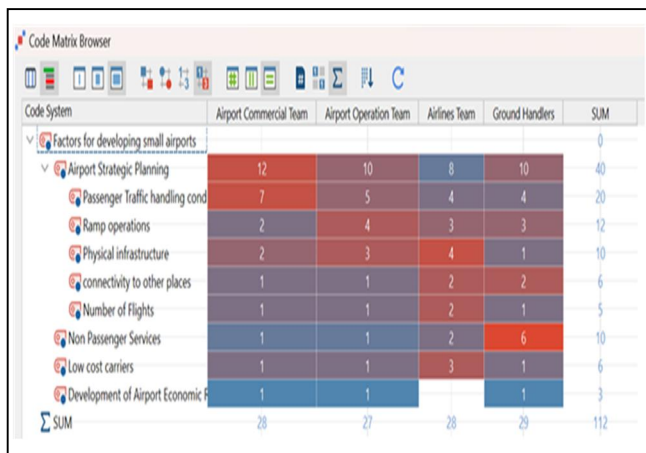
Source: Authors' own

Figure 2: Code Relation Matrix for the Factors for Developing Small Airports.

4.1.1. Airport Strategic Planning and Low-Cost Carriers

It was observed that there was a high level of consensus on the codes that referred to maintenance of runways, passenger inflight experience, how well the flights are connected to other places, query handling, check-in time, waiting time for baggage, providing logistics and transport services and number of flights. All these codes are related to airport strategic planning. However, low-cost carrier is also a part of airport strategic planning (as shown in the code map, Figure 2) but have been shown as a separate factor because low-cost carriers contribute almost 64% of the total revenue of an airport. These two factors agree with the civil aviation report that focuses on the expansion of airports through a mix of market growth strategies. Two other important factors for successful small airports as identified from the interviews are the development of 'airport economic region' and 'non passenger services'.

### 4.1.2. Development of Airport Economic Region

The majority of the respondents thought that the regional airports would have a strong impact on economic development. In India, airports and air traffic are not evenly distributed across the country. There is huge flight congestion and delays among large airports due to high demand. All stakeholders suggested that the development of concepts such as airport village, airport city, development of tourism and medical facilities in the small cities will divert the traffic and will solve the problem caused by the unexpected growth of demand. The experts emphasized that local authorities and government should focus on economic activity to sustain a regional airport. They suggested that the government should attract investment and develop infrastructure facilities such as roads, hotels, and local connectivity to boost the growth of small regional airports. This is consistent with the Regional Connectivity Scheme – UDAN, launched by the Ministry of Aviation, India.

4.1.3. Non-Passenger Services

Few respondents also emphasized the services like cargo, freight, and medical emergencies from the regional airports. These are transport services and are valuable when it comes to moving express shipments and handling the transfer of patients who need immediate care and attention.

The code frequency table and hierarchical code-subcodes model (Table 2 and Figure 2), highlight the importance of each factor through the frequencies indicated.

The Figure 3 indicates that the airport strategic planning must focus on passenger traffic handling followed by ramp operations and physical infrastructure, number of flights and connectivity to other places, physical infrastructure and ramp operations. The rate of importance of each element is presented in the Figure 3.
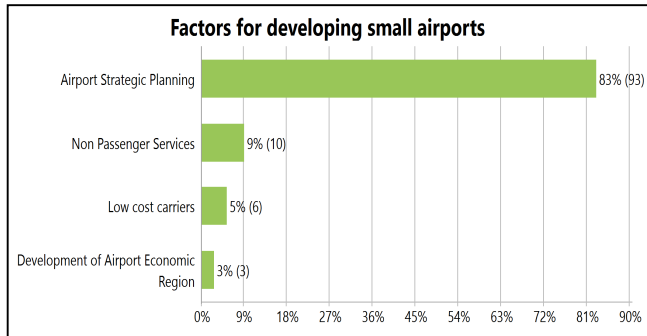
Source: Authors'own

Figure 3: Factors for Developing Small Airports

Airports can create an environment that is appealing to users, encouraging them to fly and relax. Efficient cargo services can facilitate the movement of goods, supporting local industries and businesses. Additionally, such facilities also create employment opportunities that contribute to the development of the local community. The presence of comprehensive non-passenger services at the regional airports attracts investors and businesses looking for transportation and logistics hubs.

Further, table 2 also shows that both LCC (Low-cost carrier) and airport strategic planning (hereafter ASP) fall into the same cluster and Non-passenger services and development of economic regions emerge as two separate clusters. This is also further substantiated through the code map presented above (Figure 3). Both LCC and ASP are placed under the same cluster due to thematic cohesion as they frequently co-occur in the same document. The thematic relationship between the two is attributed to the fact that LCC often requires some specific considerations in terms of infrastructure, cost management, and operational efficiency. This necessitates strategic planning by airports to accommodate and optimize services for such carriers. Further, the conceptual separation of non-passenger services and the development of the economic region as two separate clusters may arise from the fact that while non-passenger services contribute to the airport's functionality, the economic development of the region involves a more diverse set of factors that go beyond airport services.

4.2. Business Model for Small Airports

One common means of assessing the text data is the word cloud. A word cloud is a graphical presentation of the most common words in a document (Depaolo & Wilkinson, 2014). The presentation of word cloud with MAXQDA 24 enables building connections between transcripts by defining the ideas or the information which is commonly stated by all interviewees in their responses. Herein, the word cloud identifies the most relevant terms for assessing the performance of smaller airports, therefore, making the

procedure of defining the key components of the business model simpler which is presented in the following section after examining the success factors of small airports in India. It shows that the words 'customer', 'value', 'proposition', 'service' and 'relationship' were the most frequently occurring in the responses. This indicates towards the common trend of adherence to customers' expectations and favorable relationship management of airlines with customers.

Source: Authors' own

Figure 4: Word Cloud of the Transcripts

The respondents have mentioned that most of their actions revolve around airport operations, followed by passenger service and financial perspective as indicated by the width line that connects various key performance indicators (KPIs) to various KRA's as presented in the word cloud above. Further, following the same process of coding as guided by GT of Thematic analysis, transcripts were coded for various key elements that can form the the part of business model. The in-depth analysis of the transcripts revealed seven significant key result areas, viz; Airport Operations, Passenger Service, Financial perspective, Safety and Security, Social perspective, Regulatory perspective and Airside Area. This is also illustrated in the figure 5.
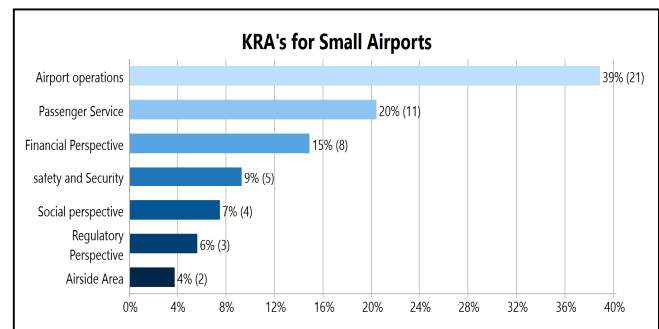
Source: Authors' own

Figure 5: Key Result Areas (KRA's) for Small Airports in India

The above KRA's identified using in-depth interviews were consistent with the literature except for the 'Social perspective'. However, the Environmental perspective was also found to be missing which could be due to several reasons. First, the small airports may not have a mandate for stringent environmental reporting. Second, due to limited financial resources, small airports focus more on immediate operational revenues and environmental considerations are implicitly considered with other regulatory or social considerations. KPIs related to each KRA are mentioned below in Table 4

**Table 4:** Elements of Business Model for Small Airports

Key Result Areas (KRA's)	Coded Segments	% Cod. seg. (all documents)	Documents	Set of KPI's
Regulatory Perspective	3	0.4	2	Liasioning with stakeholders
				Coordinating with various authorities for approvals
				achieving ASQ rating for passengers
				compliance with local and global standards
Airside Area	2	0.26	2	Turn-around process time
				Number of runways
				Length of Runway
				Taxi departure delay/ day
Financial Perspective	8	1.07	6	Income per passenge
				aeronautical income
				Non-aeronautical income per passenger
				Staff cost per passenger
				Revenue per expenditure ratio
				Commercial income per square meter of floorspace
				Expenditure per passenger
				Rental income
Passenger Service	11	1.47	8	Check-in waiting time
				Security control waiting and processing times
				Amount and duration of delays
				Quality of signage/ease to find the wa
				Baggage delivery time
				Number of boarding gates
				Number of baggage collection belts
Airport operations	21	2.81	4	Turnaround times in the apron/gate area
				Logistic Services
				Arrival Inbound efficiency
				Departure Outbound efficiency
				Temporal distribution of demand by time-of-day
				Total traffic in terms of aircraft movements
				Runway occupancy times by type of aircraft
				Taxiing times from runways to apron/gates and vice-versa
				Baggage delivery time
				Number of runways and taxiways
Safety and Security	5	0.66	5	Number of aircraft safety incidents
				Number of incidents at security checkpoints
				Time between shutdown and reopening in case of breach of security
				Time it takes to business operations to begin in case ofevacuation
				Taken time and grade of destruction when returning to normality
Social perspective	4	0.53	2	Save time in medical emergencies
				availability of medical charter
				reduced time for transferring patients

Source: Adapted from Kalakou, S., & Macário, R. (2013).

The second objective of the study is to develop the framework for small regional airports (RQ2). The airport business has a mix of a highly heterogeneous array of agents. Understanding the complex airport business model interactions requires the identification and understanding of the activities undertaken by the different stakeholders. According to Baker and Wurgler (2002) the ideal model and decision-making should include the stakeholders and the decision-makers. Given that, the framework and business model illustrated in Figure 5 encompasses five stakeholder groups: Ground handlers, airport operations team Airport commercial team, airlines, and local community around the airport.

The first two can be categorized as 'Aeronautical business' units and the commercial team can be called a 'non-aeronautical business unit'. In the current context, non-aeronautical business units are responsible for providing vital services that enhance the airport services with non-aviation activities. The concessionaires of retail shops, rentals from car parking lots, F & B, duty-free services as well as the providers of security and cleaning services, are part of these units. There exists a B2B relationship between these two units and the airport itself. Another stakeholder-Airlines a an important stakeholder that has real requirements for space, infrastructure and operations. Airlines also have a significant B2B relationship with aeronautical units as they provide essential services like traffic control, communications, baggage handling, aircraft inflight experience, economized fuel, security, firefighting services and equipment. The last stakeholder is the local community where both users and non-users of the airport co-exist. This group may include residents (users and non-users), employees (users and non-users), institutions and businesses. Local community users of the airport are likely to directly benefit from the airport services, while non-users from the local community interest is driven by the impact produced by the airport factors like noise levels, efficiency in material handling, trade facilitation, cost management, logistic services and economic growth of the area. The relationship between the airport firm and all stakeholders is a pre-requisite for understanding the business model that can work for small airports in India (refer to Figure 6)
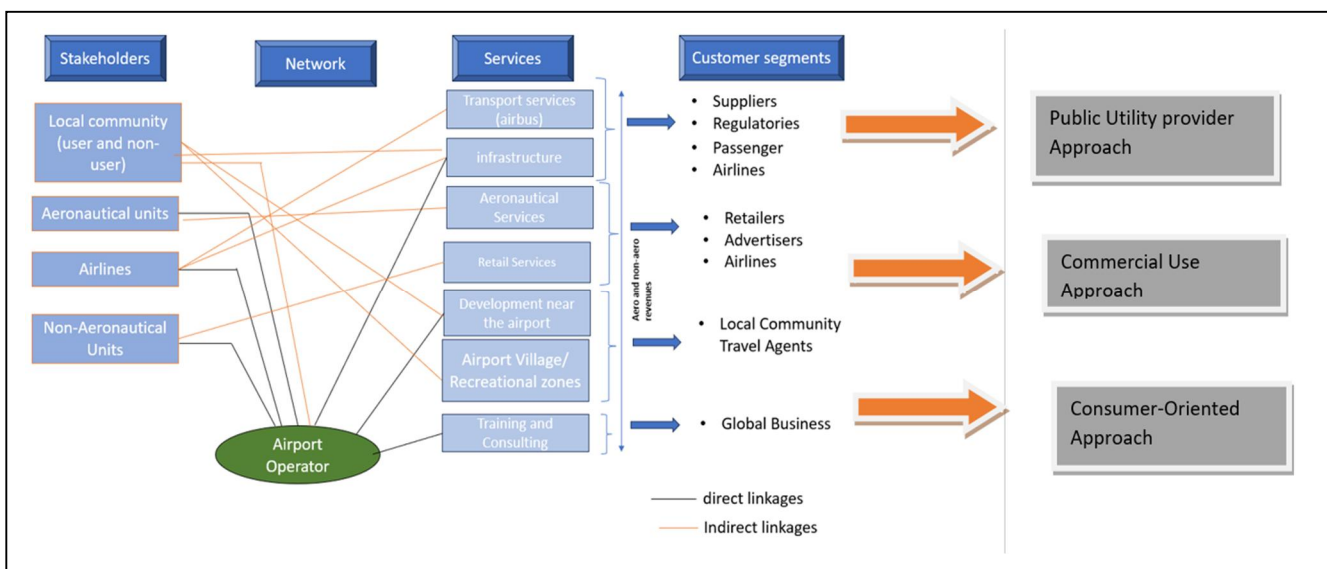
Source: Authors' own

Figure 6: Word Cloud of the Transcripts

The above figure is based on the interviews with the respondents. It shows that airports provide different services by targeting different customer segments. The business approach of any small airport depends on the extent to which each airport implements various services and targets its customers. An airport can be a public utility provider. Such type of airports lacks financial or other regulatory resources to implement additional services, therefore they provide services like pilot training, aerial services or sports activities. The airport becomes multi-modal when it provides its space for commercial usage such as cargo and passenger travel and airlines become the most significant factor for the airport's success. In this case, revenues from non-aeronautical play a significant role. Airports can also follow a consumer-oriented approach and acquire land around the airport to build facilities such as airport cities, airport villages, and recreational centres. Such airports invite other businesses to collaborate and may also start providing consulting and training to their counterparts.

5. Discussion and Conclusions

The growing competition and the changing demands of consumers resulted in the expansion of the aviation business in India. With striking diversities in terms of operational capacity, size and functionalities, the Indian airport landscape consists of large international and small regional airports. Large airports through their KPIs (operational efficiency benchmarks or passenger satisfaction), strategic planning, robust infrastructure, and efficient management have been driving the economic activities of India. However small regional airports due to underutilization of their assets, oversupply of traffic, restricted infrastructure, security issues, lack of skilled labour and high operational costs, have been majorly in problems and huge losses (Subhashini, 2023). Despite these problems, small airports hold a significant role in building regional connectivity, catalyzing economic activities, and fostering regional development . Although small airports have economic and social contributions, they face challenges in operations due to inefficiency in strategy formulation and implementation, and a lack of knowledge about the functional success factors. Therefore, it was required to promote the growth of small airports by identifying these factors and proposing a business model for better management of the airport.

With the evaluation of the selected stakeholders of small regional airports of India, the study highlighted that the critical success factors are non-passenger services, development of airport economic region, low-cost carriers, strategic planning, and airports. The first factors of strategic planning and low-cost carriers include maintenance of runways, query handling, waiting time for baggage, check-in time, and availability of low-cost carriers. These findings were supported by (Baltazar & Silva, 2020; Červinka, 2017) The researchers identified that working in areas like check-in-process, baggage handling or providing low-cost carriers will make the travel experience of consumers more comfortable. Thus, by fulfilling consumer needs, airports could generate and derive better growth. Another important factor was the development of the airport's economic region. In India the traffic is not distributed evenly, therefore, the development of an airport city, villages or other medical facilities would help in overcoming the problem of unexpected growth and also this diverted traffic would result in solving the congestion problem. These findings were in line with Zhang et al.'s (2019) research wherein the role of small regional airports in the diversion of traffic was identified. Lastly, as with moving shipments, cargo, distribution of material or while handling patients, there could be a need for other non-passenger services, thus, small airports also need to focus on providing them in the form of freight, cargo or medical emergencies. Effective integration with other transport modes can make the airport a logistics hub, potentially bringing more businesses to the area and boosting the local economy. This factor supported the existing research (Iyer & Jain, 2020; Kazda et al., 2017; Chutiphongdech & Vongsaroj, 2022) perception that non-aeronautical revenues help in attracting more investments and performing activities for airports success.

Addressing the second research goal of proposing an effective business model, the study revealed that in the presence of many important areas, the small regional airports need to focus on the regulatory perspective, airside area, financial perspective, passenger perspective, airport operations, safety and security perspective, and social perspective. This is due to limited financial resources with small airports and the absence of mandatory need for small airports to have environmental reporting. By bringing the main stakeholders i.e. local community, aeronautical units, non-aeronautical units, and airline; and services such as transport service, infrastructure, training and consulting, aeronautical services, retail services, or recreational zones, the airports can adopt a public utility approach, commercial use approach or consumer-oriented approach.

Despite the existence of studies which propose business models for small airports, there has been a lack of emphasis on developing unique approaches for airports based on the availability of services and customer segments. Moreover, they do not examine the situation from the perspective of small airports. This study drawing from a literature review and qualitative analysis filled this literature gap by identifying the essential success factors for small regional airports in India and proposing a unique business model for airports. Based on this analysis, future studies could validate the application of the proposed model and provide empirical evidence for the suitability of suggested models for small regional airports in India.

6. Implications

The findings of the study hold major significance in the field of academics, regional development, policymaking, and airport management.

As identified before, study so far has been focused on large airports. Examination of critical success factors, key result areas, and key performance indicators in the context of small airports was lacking, thus also limiting researchers' ability to propose solutions to overcome their challenges. The study's findings find far-reaching theoretical implications as they can be used to provide valuable insights for academic courses on airport planning, operations and management courses wherein using the findings, the course curriculum could be modified. Moreover, they can be used to supplement existing theories and frameworks, enriching their applicability by making it more inclusive, especially

for small airports. Therefore, this study expands the existing body of knowledge on the topic.

The study also has managerial implications. It identified the development of the economic region as an important success factor. This finding helps the airport management team to have more focus on diversifying revenue streams by creating airport cities or villages. This will attract the interest and support of regional authorities as the efforts will contribute to regional development. Also as the study identified the key aspects of success, the airport management team could design the operations to minimize loss and maximise revenues, thus improving operational efficiency. Apart from this, unique approaches for airports are also proposed, helping the management integrate services like training of staff, better baggage handling or easy check-in-process. This will further enhance the chances of customer satisfaction, operational efficiency and profitability. Once the status of airports has improved the focus could be towards enhancing capacity and making the processing more sustainable.

Lastly, the study identifies the role of the regulatory perspective on the performance of airports. Therefore, policymakers could create initiatives to provide more investment sources for aeronautical and non-aeronautical services. This will help in resolving the problem of access to funds for smaller airports and deriving better infrastructure. Thus, supporting academic authorities, airport teams and stakeholders, policymakers and regional development authorities, this study serves as a source of actionable recommendations for small airports which could contribute to shaping its future trajectory.

7. Limitations and Future Research Directions

The study has few limitations. First, the study reports an analysis of the qualitative data collected from only four small airports (Guwahati, Tirupati, Bhubaneswar, and Dehradun), consequently, the generalizability of the findings is limited. Therefore, future research studies are advised to broaden the scope by including more airports. Second, as this study is qualitative in nature and a model is proposed, follow-up studies are advised to conduct surveys to find any disclosure differences among emerging factors for deeper insights.

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Appendixes

Appendix 1: Semi-structured interview questionnaire

[1]. Key partners
a. Who are your key partners (govt, financial institutions, raw material suppliers)?
b. Can you explain in what ways each partner influenced your company or any department?
c. Were the partners keen on executing the project every time? Please elaborate.
d. Are your key partners satisfied with the operation of your new product or service?

[2]. Key Activities
a. How much have the real costs during project execution deviated from the actual estimate?
b. Did the activities go according to the schedule or how long have they deviated from the actual schedule?

[3]. Key Resources

a. How many innovations have your company done so far? And how many related patents have your company created concerning technology shift?
b. How do your employees cope with the new talent needs?
c. Are they trained with new technological skills? If so how many hours are they trained in total?
d. (applicable only if the employees were trained) How many certificates have they earned during one project period?

[4]. Value Propositions
a. How efficient are your newly designed products or services? In what ways are they superior to the previously existing ones?
b. How long will your products or services be in operation?
c. Explain to me the cost difference customers need to pay associated with adopting the new product or service.

[5]. Customer Segments
a. Who are your identified customer segments and tell me the number of existing customer segments?
b. Are they satisfied with your products or services?

[6]. Channels
a. What kind of services does your channel offer (selling a product/ service or personal assistant services for solving customer problems)
b. Can you tell me through what channels you promote your products or services?
c. How do ensure the quality of the channel you are using to sell your product or service?
d. How many products or services are sold so far through each channel and mention the revenue generated in each channel?

[7]. Customer Relationships
a. Does your customer base increase every month? If so, at what percentage?
b. Are there sufficient products or services available to meet customer demands?
c. How many old customers have repurchased your product or returned to you to purchase your new product or service?

[8]. Cost Structures
a. Could you elaborate on the costs and revenues associated with new product or service development?
b. What is the ratio of fixed costs vs variable costs?
c. How much on average do you spend on R& D?

[9]. Revenue Streams
a. Which is your mainstream of revenue?
b. Could you elaborate on the revenue generated by each customer?
c. What is your revenue per channel?