A Study on Strategies of Aerocity Development A Case of Navi Mumbai

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***Abstract*—The upcoming Navi Mumbai International Airport (NMIA) presents a major opportunity for airport-led urban development within the Mumbai Metropolitan Region (MMR). The proposed 270-hectare Aerocity by CIDCO is expected to transform the surrounding region through improved connectivity, economic growth, and infrastructure development. Major projects such as the Mumbai Trans Harbour Link, NH-348A, JNPT Road, Nerul–Uran Railway, and proposed metro corridors are accelerating land-use change and urban expansion in the influence zone. However, environmental sensitivity, fragmented development, and socio-economic disparities remain significant challenges. This study develops a strategic planning framework for sustainable Aerocity development using a GIS-based Spatial Multi-Criteria Evaluation (SMCE) approach. Spatial and environmental parameters related to accessibility, logistics potential, environmental vulnerability, and development suitability were analysed using AHP-based weighting techniques. The study proposes a phased and cluster-based Aerocity development model that supports balanced regional growth, efficient infrastructure integration, and environmentally sustainable urban development.**

***Index Terms*—Aerocity, Aerotropolis, GIS-MCDA, Navi Mumbai International Airport, Airport-led Development, Land Suitability Analysis.**

I. INTRODUCTION

Global airports have come out of the transportation hub into an economic centre that has given rise to new urban forms, ‘Aerocities’ and ‘Aerotropolises'. (Kasarda, 2000) Kasarda's Model of Aerotropolis views of the airport as a built environment in which logistics businesses, services and facilities, and hospitality and institutional businesses are concentrated around aviation-related infrastructure, with the emphasis on maximizing the airport's accessibility and competitiveness. (Kasarda, 2000). Airport-led urban development (ALUD) has become a new trend in India with the increasing development of the aviation sector and measures like the UDAN and PM Gati Shakti initiatives. (Ministry of Civil Aviation, 2016)

The Navi Mumbai International Airport (NMIA), under construction, is one of the biggest greenfield airport projects in India and will help reshape the spatial landscape of Mumbai Metropolitan Region (MMR). CIDCO has proposed an Aerocity at the airport site where it will make 270 hectares available to the polder. (CIDCO, n.d.) (Government of India, n.d.). The region, which has a strategic connectivity advantage, has Mumbai Trans Harbour Link (MTHL), JNPT Port corridor, NH-348A, metro and suburban rail networks. (Mumbai Metropolitan Region Development Authority, n.d.). Yet the environment proves more sensitive, the land is being transformed quite rapidly, there is an issue with the diversification of governance and there is speculative growth in the real estate market, and these all pose a challenge to planning. (Government of Maharashtra, n.d.)

According to Nasution (2017) in Mebidangro Aerotropolis study, the urban development linked to the spread of an airport is known as “Urban Pipe”, which is induced by construction of transportation networks with high mobility between the airport and the economic centers of the surrounding cities. It assumes a general understanding that regional economic activity, investment and urban development gravitate towards transportation rivers, and is not just geographical proximity to the airport. (Nasution, Harisdani, & Napitupulu, 2017) These high speed

corridors serve as corridors of flow for goods, people, services and capital and so new commercial and logistic clusters are emerging along the airports-linked highways. The Mebidangro case had evolved as a result of primary and secondary urban centres having grown along the connector highways, resting on a structured airport oriented urban form. This is a very relevant idea in Navi Mumbai and NMIA is strategically linked to it via Metropolitan, Mumbai Trans Harbour Link (MTHL), NH-348A and the JNPT Corridor. These transport systems, as a whole, provide a multimodal "Urban Pipe" and offer a strong impact for the positioning and development of logistics hubs, hospitality zones, commercial centers, or innovation districts, as the result of connectivity between the airport, port infrastructure, industrial areas and financial districts. (Kasarda, 2000)

Aim - To study the concept and development strategies of Aerocities and evaluate their applicability by formulating a strategy framework of the proposed Aerocity near NMIA.

Objectives-

1. To review the evolution, theory, and planning models of aerocity and its development
2. To analyze existing aerocity development strategies and compare their frameworks, components, governance models.
3. To assess the current spatial, environmental, and socio-economic conditions of the Navi Mumbai Aerocity influence zone using GIS-based and field-based approaches.
4. To identify key indicators relevant for aerocity planning and evaluate the suitability and development potential of the Aerocity area.
5. To propose planning guidelines, phased development strategies, and policy recommendations for Aerocity around NMIA.

Scope -

1. The study focuses on the 270-ha NMIA Aerocity and its surrounding 0–10 km influence zone to evaluate airport-led spatial, economic, and environmental dynamics.
2. It examines Aerocity development through aerotropolis theory, GIS–MCDA analysis, composite indices, and stakeholder-driven assessments.
3. The research formulates a strategic Aerocity development framework covering zoning, mobility integration, sustainability, and phased implementation.

Limitations

1. The study relies on available secondary data and satellite imagery, which may not fully capture rapid on-ground land-use changes around NMIA.
2. Primary surveys cover sampled settlements and stakeholders, limiting the representativeness of socio-economic and perception-based findings.
3. Modelling outputs such as suitability maps and land-use projections are indicative and depend on assumed weights, expert judgment, and data resolution.

II. LITERATURE REVIEW

Today's metropolitan regions sees an increasing trend of airport driven urban development, in which airports may serve as a key pillar of urban development beyond transportation, including as an accelerator of the economy, logistics, tourism and urban transformation. The Aerotropolis is the term coined by John Kasarda and it is a common phenomenon where airports serve as important hubs for economic activity, and surrounding areas grow business districts, logistics and transport parks, hospitality, and other commercial enterprises because of the presence of an airport and the need for speed, accessibility, and global connections. This paradigm puts stress on modern urban development increasingly being influenced by time-based accessibility rather than spatial proximity. (Kasarda, About the Aerotropolis, 2011)

A number of international case studies show that the principles of the Aerotropolis planning have been successfully used. (Kasarda, Aerotropolis: Airport-Driven Urban Development, 2011). Incheon Aerotropolis is an example in South Korea, which demonstrates integrated governance, multimodal connectivity and cluster-based development. ((IIAC), n.d.). Zhengzhou Airport Economy Zone (ZHEZ), China, shows the contribution of the logistics and export-oriented industrial sectors to airport-led development. (Committee, n.d.). Schiphol Airport City (荷) and Western Sydney Aerotropolis (the planning approach) feature the focus on integration of

environmental sustainability and on airport-based commercial development respectively and innovation districts and planning for climate resilient approaches. (Group, n.d.). Together, the examples illustrate the value of taking a corridor approach to development, environmental integration and phased implementation. (Government, 2018).

Airport-centric development like Delhi Aerocity (Group G. , n.d.), Hyderabad Aerotropolis (Ltd., n.d.), Bengaluru Airport City ((BIAL), n.d.), and Jewar Aerocity ((NIAL), n.d.) are a good example of aviation-led urbanization in Indian context Delhi experiences commercial development in the spirit of hospitality while other cities such as Hyderabad and Bengaluru are enjoying diversity in the form of logistics, IT parks and mixed use business districts. Yet issues of governance fragmentation, strong environmental restraints and speculative land development are still huge hurdles for Indian aerocity projects. (CIDCO, n.d.) (Ministry of Environment, 2019).

Recent studies also highlight the need of the use of spatial analysis using GIS and Multi-Criteria Decision-Making (MCDM) techniques in aerocity planning (Malczewski, 2006). GIS overlay analysis, Remote Sensing, Analytic Hierarchy Process (AHP), Spatial Multi-Criteria Evaluation (SMCE) and land suitability analysis are some of the common analytical tools employed to assess accessibility, environmental sensitivity, infrastructure preparedness, and potential for development (Saaty, 2008). Developers often combine land-use and transport connection with flood risk and environmental sensitivity and social-economic status to distinguish development areas. (Rahman & Saha, 2010) (Saha & Roy, 2021)

The results reveal that while there is good theory and planning on global aerotropolis, the literature shows that there is very little analysis about integrated aerocity planning in the greenfield airport regions of India, particularly in both the environmental sensitive areas as well as social-economic transformation areas. (Kasarda, Aerotropolis: Airport-Driven Urban Development, 2000), the literature indicates very limited studies of aerocity planning in airport regions of India (Ministry of Civil Aviation, n.d.), Therefore, in the present study, an attempt has been made to develop a strategic plan for sustainable Airport, Aerocity development around the Navi Mumbai International Airport (NMIAP) through the use of GIS based spatial analysis techniques and multi-criteria evaluation. (Saaty, Decision Making with the Analytic Hierarchy Process, 2008)

Table 2. 1 Table for derived indicators

Indicator Category	Derived Indicators	Method Used	Role in Analysis
Accessibility	Travel time, Corridor distance, Network centrality	GIS Network Analysis	Identifies zones most connected with NMIA and logistics corridors
Land Transformation	LUCR, NDVI loss, NDBI, Patch density	RS–GIS, GEE	Detects airport-induced conversion pressures
Market Potential	Land price growth, Transaction density, REPI	Secondary market data + developer surveys	Quantifies economic readiness for Aerocity
Environmental	Flood zone, CRZ, wetland buffers	GIS constraints	Ensures sustainable & legal Aerocity planning
Regulatory	Zoning compatibility, NDZ buffers	DP maps + GIS overlay	Determines feasible development parcels
Socio-economic	Willingness-to-sell, Infrastructure perception	Household surveys	Captures local acceptance and potential disruptions

III. STUDY AREA PROFILE

The study area is confined to the Navi Mumbai International Airport (NMIA) influence zone in Raigad district of Mumbai Metropolitan Region (MMR) in Maharashtra. The landscape of the area is rapidly changing with the development of NMIA and also the proposed 270 ha for Aerocity by CIDCO (Aviation, n.d.) The study area is about 0 – 10 Km away from the airport site and includes a portion of Ulwe/Dronagiri/Panvel/Karanjade/Jui-Kamothe/Wahal etc. NAINA influence areas. (Corporation, n.d.)

Figure 3. 1 Site Location

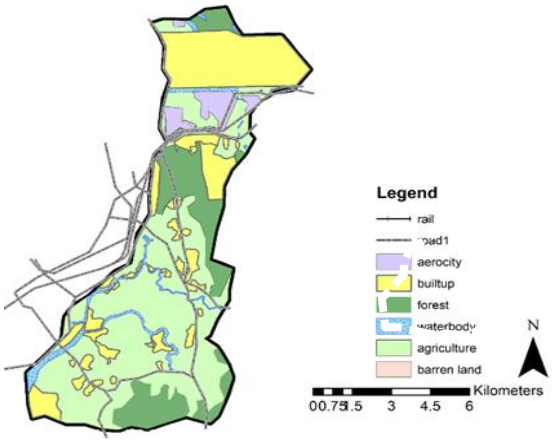

Figure 3. 2 Study Area

Strategically, the region is linked by the major transport linkages including NH-348A, JNPT Road, Mumbai Trans Harbour Link (MTHL), suburban rail lines and the planned metros making it one of the most important emerging airport-led development zones in India. (India, n.d.) (Corporation M. R., n.d.). In addition to this, the area has access to Jawaharlal Nehru Port Trust (JNPT), which translates into great logistics and economic opportunities. (Authority, n.d.) The study area is a mixture of land-use types, such as residential settlements, agricultural land, logistics activities, industrial areas, wetlands, mangroves, and creek systems (Authority M. C., n.d.). The peri-urban region around the airport is undergoing significant changes in its land use due to the pressure of speculative development and the speed of the change (Aviation, Greenfield Airports & Urban Development Impact, n.d.). Concurrently, areas that are sensitive to the environment like mangroves, CRZ, wetlands and low lands in flood zone, impose significant planning constraints that need sustainable approaches. (Programme, n.d.)

For purpose of analysis, the study area is divided into various airport influence zone which includes core airport impact zone (0-3km), Aerocity development zone (3-5 km) and outer influence zone (5-10km). (Organization, 2018). The purpose of these zones is to evaluate the accessibility, suitability for development, environmental sensitivity and infrastructure potential for future layout of the Aerocity around NMIA. (Aviation, Greenfield Airport Planning Guidelines, n.d.)

IV. RESEARCH METHODOLOGY

Study methodology is based on "mixed-methods" which includes the application of spatial analysis, field surveys and multi-criteria decision making (MCDM) techniques for devising the strategic approach of "Aerocity" around Navi Mumbai International Airport (NMIT) development (Creswell, 2014). The approach involves theoretical knowledge, GIS analysis, socio-economic evaluation, and environmental analysis, aimed at determining appropriate development areas and planning strategies. (Bank, n.d.)

This research starts by conducting a detailed literature review of the concept of Aerotropolis, Airport-led urban development and also the national and international Aerocity case studies (Kasarda, Aerotropolis: Airport-Driven Urban Development, 2011) (Organization, Airport Planning and Development Manuals, 2018). The study area was determined as 0-10km zone of influence of NMIA, based on conceptual understanding. (Kasarda, About

the Aerotropolis, 2011) (Aviation, Greenfield Airport Projects in India, n.d.)

Both primary and secondary data sources were used for analysis . (Creswell, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 2014). Secondary data consisted of satellite images, land usage maps, the transport system, environmental data, census data, CIDCO plans, NAINA plans, and infrastructure plans for the region. (Survey, n.d.) (Organization F. a., n.d.) (Highways, n.d.). The stakeholder interaction, land-use verification and socio-economic questionnaires were the source of the primary data obtained through field surveys. (Bank, Social Impact Assessment and Stakeholder Engagement Tools, n.d.)

Land-use change and accessibility analysis was carried out using GIS and Remote Sensing techniques, as well as spatial development pattern and environmental sensitivity analysis. (Survey, Earth Resources Observation and Science (EROS Center) – Remote Sensing Data, n.d.) Through Spatial Multi-Criteria Evaluation (SMCE) was performed the parameters of proximity to transport corridors, slope, existing land use, flood-prone areas, wetland, mangroves and available infrastructures were evaluated. (Organization F. a., Geo-Spatial Data for Land and Water Resources, n.d.). The Analytic Hierarchy Process (AHP) was used to weight the various planning criteria depending on the experts' opinion and field observations. (Bank, Spatial Decision Support Systems and MCDA Applications, n.d.) (Saaty T. L., 2008)

Further analysis of composite indicators on 'Accessibility', 'Environmental sensitivity', 'Investment attractiveness', 'Logistics potential' and 'Development suitability' yielded the 'potential Aerocity clusters' and 'growth corridors' (Bank, Spatial Development Indicators and Urban Analysis Tools, n.d.). The results were compiled to develop a phased and sustainable framework of "Aerocity" development for the NMIA influence zone. (Programme, Sustainable Cities and Spatial Planning Frameworks, n.d.) (Kasarda, Aerotropolis: Airport-Driven Urban Development, 2000)

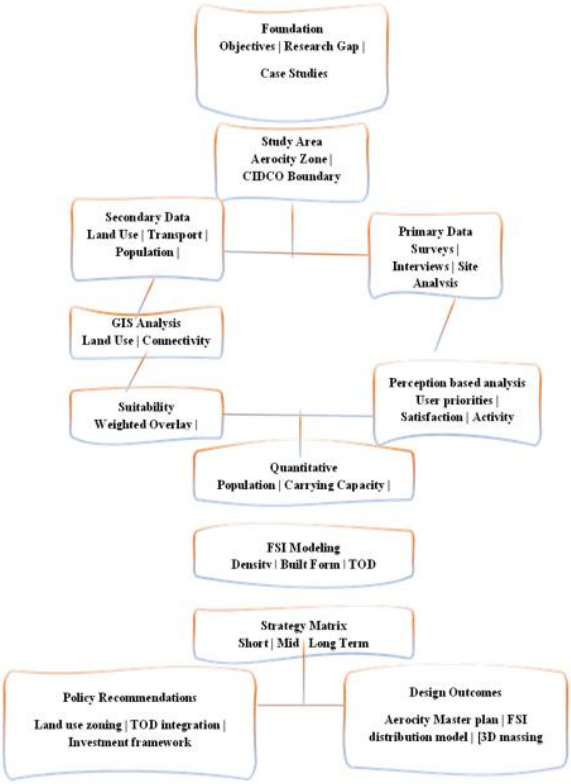

Figure 4. 1 Research methodology flowchart

V. RESULTS AND ANALYSIS

The analysis reveals that the Navi Mumbai International Airport (NMIA) influence zone is experiencing rapid spatial transformation driven by airport development, regional connectivity projects, and increasing investment pressure. GIS-based land use analysis indicates significant conversion of agricultural and open land into built-up and infrastructure-related uses, particularly along NH-348A, SH-54, and the JNPT corridor. The highest development intensity is observed within the 0–5 km airport influence zone due to improved accessibility and proximity to proposed Aerocity parcels.

Spatial Multi-Criteria Evaluation (SMCE) and AHP-based suitability analysis identified highly suitable zones for commercial, hospitality, logistics, and mixed-use development around the Aerocity core. Areas near major transport corridors and metro connectivity networks demonstrated high Accessibility Index (ACI) and Investment Attractiveness Index (IAI) values, indicating strong potential for airport-oriented economic activities.

Environmental analysis revealed that mangrove belts, wetlands, CRZ zones, and flood-prone lowlands exhibit high Environmental Sensitivity Index (ESI) values and require strict regulatory protection. The study also identified increasing real estate pressure and speculative land conversion in peri-urban villages surrounding the airport site. Socio-economic analysis indicates a gradual transition from agrarian livelihoods toward service, logistics, and infrastructure-based employment opportunities.

Based on the integrated analysis, the study proposes a cluster-based Aerocity development framework comprising hospitality-commercial districts, logistics hubs, innovation corridors, and mobility-oriented mixed-use zones supported through phased implementation and environmentally sensitive planning strategies.

Fig. 5 1Weighted Overlay Criteria

Criteria	Elevation	Slope	Distance from Urban Agglomeration	Distance from Industrial and Commercial Areas	Distance from Major Roads	Land Cover
Weight	0.34	0.36	0.12	0.09	0.06	0.03

Fig. 5 2 AHP table -Pairwise Comparison Matrix

Criteria	Elevation	Slope	Distance from Urban Agglomeration	Distance from Industrial and Commercial Areas	Distance from Major Roads	Land Cover
Elevation	1	1	5	6	6	7
Slope	1	1	5	7	7	7
Distance from Urban agglomeration	0.2	0.2	1	3	3	6
Distance from Industrial and commercial areas	0.17	0.14	0.33	1	3	6
Distance from major roads	0.17	0.14	0.33	0.33	1	4
Land cover	0.14	0.14	0.17	0.17	0.25	1

Table 5. 1 Suitability class value

Factor	Class	Suitability Value
Physical Factors		
Slope (%)	0–5	5 (Highest)
	5–10	4 (High)
	10–15	3 (Moderate)
	15–20	2 (Low)
	>20	1 (Lowest)
Elevation (m)	<400	5 (Highest)
	400–600	4 (High)
	600–800	3 (Moderate)
	800–900	2 (Low)
	>900	1 (Lowest)
2.Socio-economic Factors		
Distance from urban agglomeration (m)	100–300	5 (Highest)
	300–500	4 (High)
	<100	3 (Moderate)
	500–700	2 (Low)
	>700	1 (Lowest)
Distance from industrial and commercial areas (m)	300–500	5 (Highest)
	500–700	4 (High)
	<300	3 (Moderate)
	700–900	2 (Low)
	>900	1 (Lowest)
3.Utilities Factors		
Distance from major roads (m)	<200	5 (Highest)
	200–400	4 (High)
	400–600	3 (Moderate)
	600–800	2 (Low)
	>800	1 (Lowest)
4.Environment Factors		
Land cover	• Bare soil and grass areas	5 (High)
	• Agriculture areas	3 (Moderate)
	• Wooded and built-up areas	1 (Low)

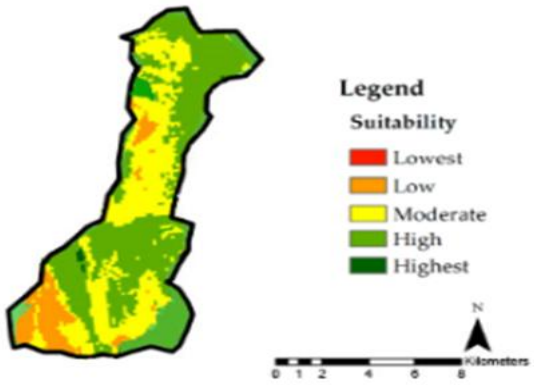

Fig. 5 3 Land suitatbility map

Table 5. 2 Suitability value percentage

Suitability value	Area	Percentage
highest degree	18.9 km^2	21.1%
high	49.67 km^2	55.19%
moderate	6.75 km^2	7.50%
low	5.76 km^2	6.40%
lowest degree	0.99 km^2	1.19%

VI. PLANNING STRATEGIES AND RECOMMENDATIONS

Based on the spatial, environmental, and socio-economic analysis, the study proposes a cluster-based and phased Aerocity development framework for the Navi Mumbai International Airport (NMIA) influence zone. The proposed strategy focuses on creating a sustainable, economically competitive, and mobility-oriented airport urban region integrated with regional infrastructure networks.

The Aerocity core surrounding NMIA is recommended for hospitality, commercial, convention, and corporate office development due to its high accessibility and investment potential. Logistics and warehousing clusters are proposed along the NH-348A and JNPT connectivity corridor to strengthen freight movement and airport-linked industrial activities. Mixed-use development zones integrating residential, retail, and service functions are recommended within the outer influence areas to support workforce accommodation and balanced urban growth.

Environmental protection forms a critical component of the strategy. Mangroves, wetlands, CRZ areas, and flood-prone zones should be preserved through ecological buffer zones, regulated development controls, and green-blue infrastructure planning. Transit-oriented development (TOD) principles are recommended around metro corridors and multimodal transport nodes to improve accessibility and reduce congestion.

The study further recommends integrated governance coordination among CIDCO, NAINA, MMRDA, and airport authorities to ensure efficient implementation and policy alignment. A phased development approach focusing on infrastructure readiness, investment prioritization, and environmental sustainability is essential for achieving long-term Aerocity growth around NMIA.

1. Develop a cluster-based Aerocity framework consisting of hospitality, logistics, commercial, and mixed-use development zones.
2. Promote Transit-Oriented Development (TOD) around metro stations and multimodal transport corridors to improve accessibility and reduce traffic congestion.
3. Strengthen connectivity between NMIA, JNPT, MTHL, NH-348A, and metro corridors to support airport-led economic growth.
4. Protect environmentally sensitive areas such as mangroves, wetlands, CRZ zones, and flood-prone regions through strict development regulations and ecological buffer zones.
5. Introduce green infrastructure strategies including urban green belts, sustainable drainage systems, and blue-green networks to improve environmental resilience.
6. Encourage logistics and warehousing development along freight corridors to enhance regional trade and supply chain efficiency.
7. Promote mixed-income residential development and workforce housing to support inclusive urban growth around the Aerocity.
8. Establish integrated governance coordination among CIDCO, NAINA, MMRDA, airport authorities, and private stakeholders for efficient implementation and monitoring.

9. Implement phased development strategies based on infrastructure readiness, market demand, and environmental carrying capacity.
10. Utilize GIS-based planning tools and periodic land-use monitoring systems to manage rapid urban expansion and speculative development.
11. Encourage public-private partnerships (PPP) for investment in commercial, infrastructure, and mobility-related projects within the Aerocity zone.
12. Develop innovation and business districts to attract IT, aviation-support services, finance, hospitality, and global investment activities.
13. Improve social infrastructure such as healthcare, education, public spaces, and utilities to support future population growth in the airport influence zone.
14. Introduce sustainable mobility measures including pedestrian-friendly streets, cycling infrastructure, and electric public transport systems.
15. Formulate a long-term Aerocity development policy integrating economic competitiveness, environmental sustainability, and resilient urban planning principles.

VII. CONCLUSION

The development of Navi Mumbai International Airport (NMIA) presents a significant opportunity to establish a sustainable and strategically planned Aerocity within the Mumbai Metropolitan Region (MMR). The study demonstrates that airport-led urban development can function as a major catalyst for regional economic growth, infrastructure expansion, logistics development, and employment generation when supported through integrated planning approaches.

Using GIS-based Spatial Multi-Criteria Evaluation (SMCE), AHP techniques, land-use analysis, and socio-economic assessment, the research identified highly suitable zones for commercial, logistics, hospitality, and mixed-use development within the NMIA influence area. The findings reveal strong development potential along major connectivity corridors such as NH-348A, MTHL, and JNPT Road, while also highlighting the importance of protecting environmentally sensitive areas including mangroves, wetlands, CRZ zones, and flood-prone regions.

The proposed cluster-based Aerocity framework supports balanced regional growth through phased development, multimodal integration, environmental sustainability, and coordinated governance. The study concludes that a context-specific and environmentally responsive planning strategy is essential to transform Navi Mumbai into a globally competitive and resilient airport-oriented urban region.

ACKNOWLEDGMENT

The author expresses sincere gratitude to Ms. Srushti Mendhe, Adjunct Faculty, Department of Planning, COEP Technological University Pune, for her valuable guidance, continuous support, and insightful suggestions throughout the course of this research work.

The author is also thankful to the Department of Planning, COEP Technological University Pune, for providing the necessary academic support and resources required for the completion of this study.

Special thanks are extended to CIDCO, NAINA authorities, and all stakeholders and respondents who contributed valuable information during surveys, field visits, and data collection. The support received from various government reports, planning documents, satellite imagery sources, and research publications has greatly contributed to the successful completion of this study.

Finally, the author acknowledges the encouragement and support provided by family members and friends throughout the research process.

REFERENCES

[1] Chen, W. K. (1993). Linear networks and systems. Wadsworth Publishing Company.
[2] Cravens, D. W. (2008). Strategic marketing (9th ed.). McGraw-Hill Higher Education.
[3] David, F. R. (2009). Strategic management: Concepts and cases (12th ed.). Pearson Prentice Hall.
[4] Freestone, R. (2009). Planning, sustainability and airport-led urban development. International Planning Studies, 14(2), 161–176.
[5] Hertati, L. (2015). Total quality management as technics on strategic management accounting. International Journal of Recent Advances in Multidisciplinary Research, 2(11), 942–949.

[6] Hertati, L. (2015). Internal control and ethics of quality management systems accounting information. International Journal of Economics, Commerce and Management, 3(6), 902–910.
[7] Hertati, L., & Sumantri, R. (2016). Just in time, value chain, total quality management, part of technical strategic management accounting. International Journal of Scientific and Technology Research, 5(4), 180–191.
[8] Jay, B. B. (2007). Gaining and sustaining competitive advantage (3rd ed.). Pearson Prentice Hall.
[9] Kasarda, J. D. (2006). Airport cities and the aerotropolis. Insight Media.
[10] Kasarda, J. D. (2008). The evolution of airport cities and the aerotropolis. Insight Media.
[11] Kasarda, J. D. (2010). Global airport cities. Insight Media.
[12] Kasarda, J. D. (2011). Aerotropolis: The way we'll live next. Farrar, Straus and Giroux.
[13] Krul, J. (2009). The airport city: An economic engine for growth and prosperity. Qlair Publications.
[14] Lindsay, G. (2009). Aerotropolis: Airport-driven urban development. Urban Land Magazine, 68(8), 56–60.
[15] Michael, A. H., Ireland, R. D., & Hoskisson, R. E. (2001). Strategic management: Competitiveness and globalization (4th ed.). Thomson Learning.
[16] Nasution, A. D. (2017). Urban pipe concept in aerotropolis development. International Journal of Urban Planning Studies, 5(2), 45–58.
[17] Peneda, M., Reis, V., & Macário, R. (2011). Critical factors for the development of airport cities. Transportation Research Record, 2214(1), 1–9.
[18] Rangkuti, F. (2008). SWOT analysis techniques in business case studies. PT Gramedia.
[19] Rickerson, D. (2009). Airport cities, commercial development and land use compatibility. Global Airport Cities.
[20] Sugiyono. (2013). Business research methods. Alfabeta.
[21] Syafarudin, A. (2016). Strategy of leadership and innovation in improving company performance against competitive advantage. International Journal of Economics, Commerce and Management, 4(6), 471–480.
[22] Syafarudin, A., & Sudiarditha, K. R. (2018). Competency analysis of human resource strategies in creative industry entrepreneurs. Jurnal Ecodemica, 2(2), 312–320.
[23] Weisbrod, E. (1993). Airport area economic development model. Manchester University Press.
[24] Wheelen, T. L., & Hunger, J. D. (2001). Strategic management and business policy (5th ed.). Addison-Wesley Publishing Company.