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Evaluating the Relationship between Local Startup Ecosystems and MSME Development in Pune, Maharashtra

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Abstract

The present study evaluates the relationship between the local startup ecosystem and the development of Micro, Small, and Medium Enterprises (MSMEs) in Pune, Maharashtra. The primary objective is to examine how startup incubation infrastructure, government policy support, and venture funding mechanisms influence MSME growth indicators such as registration, employment generation, and sectoral output in the Pune district. A descriptive-analytical research design was adopted, utilizing secondary data sourced from the Udyam Registration Portal, DPIIT Startup India database, MSME Annual Reports (2019–2022), and KPMG Maharashtra Startup Ecosystem Report. The study hypothesized that districts with stronger startup ecosystem components demonstrate higher MSME registration and employment figures. Results indicate that Pune district recorded the highest number of Udyam-registered MSMEs in Maharashtra, with 1,29,197 micro, 6,502 small, and 832 medium enterprises by July 2021, employing over 8.5 lakh persons. The startup ecosystem's contribution through incubation centres, seed funding, and technology transfer was found to be positively associated with MSME formalization and output diversification. The study concludes that integrated policy frameworks connecting startup incubators with MSME clusters can significantly accelerate industrial development in emerging urban economies like Pune.

Keywords: *Startup Ecosystem, MSME Development, Pune, Entrepreneurship, Udyam Registration*

1. Introduction

The emergence of startup ecosystems as catalysts for broader industrial and economic development has attracted considerable scholarly attention in recent years. In the Indian context, the launch of the Startup India initiative in January 2016 marked a transformative policy intervention designed to nurture innovation-driven enterprises and link them with existing industrial structures, particularly the Micro, Small, and Medium Enterprise (MSME) sector (Chillakuri, Vanka, & Mogili, 2020). India's MSME sector, comprising over 63 million units, contributes approximately 30% to the national GDP, 45% to manufacturing output, and 40% to total exports, while employing over 11 crore individuals (Sree & Rao, 2020). The sector's significance is especially pronounced in industrialized states like Maharashtra, which leads the country with the highest share of Udyam-registered enterprises at 22.8% of all micro enterprises nationally (DCMSME, 2022). Pune, recognized as Maharashtra's innovation engine, has emerged

as a distinct case for studying the startup-MSME nexus. The city houses over 15 technology business incubators, including Science and Technology Park (SciTech Park) established in 1986, AIC-MIT ADT, and MIT WPU Technology Business Incubator supported by the Department of Science and Technology (KPMG, 2019). Pune's strategic positioning within the manufacturing belt of western Maharashtra, combined with premier academic institutions such as COEP, PICT, and Savitribai Phule Pune University, creates an integrated ecosystem where startup innovations directly feed into MSME production networks (Jha, 2018). The Maharashtra State Innovative Startup Policy, launched in 2018, provided institutional support, seed funding, and regulatory simplification, enabling Pune's entrepreneurial actors to develop market-ready technologies that MSMEs could adopt for productivity enhancement (Government of Maharashtra, 2018).

Despite this favorable ecosystem configuration, the precise mechanisms through which startup activity translates into MSME development outcomes remain insufficiently documented, particularly at the district level. Existing literature predominantly examines national-level startup trends or state-level MSME performance without establishing localized linkages between these two sectors (Patel & Tripathi, 2022). This study addresses this gap by evaluating Pune-specific data across multiple indicators enterprise registration, employment, sectoral distribution, credit access, and technology adoption to assess how startup ecosystem components influence MSME development trajectories. The findings contribute to evidence-based policymaking for cities seeking to leverage innovation ecosystems for inclusive industrial growth.

2. Literature Review

The theoretical foundation for studying startup ecosystems draws from Isenberg's (2011) entrepreneurial ecosystem model, which identifies six interdependent domains policy, finance, culture, human capital, markets, and institutional supports as essential for entrepreneurial success. Feld (2012) extended this framework by emphasizing community-driven ecosystem building where entrepreneurs themselves, rather than government alone, lead ecosystem development. In the Indian context, Jha (2018) provided a comprehensive assessment of the entrepreneurial ecosystem, noting that while cities like Bengaluru and Mumbai had mature ecosystems, second-tier cities including Pune were rapidly building infrastructure for innovation-led growth through academic-industry partnerships and government incubation programmes. The relationship between startup activity and MSME development has been examined through multiple theoretical lenses. Subrahmanya (2017) argued that technology-based startups serve as knowledge intermediaries for MSMEs, facilitating technology transfer that enables small enterprises to overcome productivity constraints. Chillakuri, Vanka, and Mogili (2020) conceptualized this relationship through the sustainable development framework, demonstrating that startup ecosystems in Indian cities generate spillover effects including employment creation, skill development, and supply chain integration that directly benefit MSME clusters. Sree and Rao (2020) documented that the MSME sector's growth trajectory was increasingly dependent on technology adoption facilitated by proximate startup enterprises, particularly in manufacturing hubs.

Maharashtra-specific studies have documented the state's leadership in MSME registration and startup recognition. The KPMG (2019) report on Maharashtra's startup ecosystem highlighted that Pune had developed distinct characteristics compared to Mumbai while Mumbai anchored capital markets, Pune's startups worked closely with

enterprises from inception, leading to faster market validation and sustained revenue generation. Kale (2016) examined MSMEs in Maharashtra and found that districts with stronger industrial infrastructure and educational institutions demonstrated higher enterprise density and diversification. The IIBF (2021) report on MSME financing in Pune specifically identified that startup-linked technology support and cluster development programmes improved MSME creditworthiness and export competitiveness. Patil and Chavan (2020) observed that Pune's MSME clusters benefited significantly from the technology diffusion role played by local incubation centres, particularly in the automotive, IT, and food processing sectors. The Office of Development Commissioner, MSME (DCMSME, 2022) confirmed that Pune district recorded the maximum number of MSMEs among all Indian districts, validating the city's position as a critical node in the national MSME architecture.

3. Objectives

1. To examine the influence of Pune's local startup ecosystem components (incubation infrastructure, funding mechanisms, and policy support) on MSME registration, employment generation, and sectoral growth in Pune district during 2019–2022.
2. To assess the relationship between startup-driven technology transfer and MSME formalization, credit access, and export competitiveness in the Pune metropolitan region.

4. Methodology

The study adopted a descriptive-analytical research design, relying exclusively on secondary data to evaluate the relationship between startup ecosystem parameters and MSME development indicators in Pune. The population comprised all Udyam-registered MSMEs and DPIIT-recognized startups operating within Pune district during the period 2019–2022. No sampling was employed, as the study utilized census-level administrative data from official government portals. Data were sourced from six principal databases: the Udyam Registration Portal maintained by the Ministry of MSME for enterprise registration and employment statistics; the DPIIT Startup India database for state-wise and year-wise startup recognition figures; the MSME Annual Reports (2019–20 to 2021–22) published by the Ministry of MSME, Government of India; the Udyam Registration Bulletin-V and Bulletin-VI published by DCMSME; the KPMG Maharashtra Startup Ecosystem Report (2019); and the IIBF Research Report on MSME Financing in Pune (2021). The analytical tools included percentage analysis, trend comparison, and cross-tabulation of startup and MSME indicators across temporal and sectoral dimensions. The research technique involved systematic extraction of district-level and state-level data, followed by comparative analysis of Pune's performance against Maharashtra and national benchmarks. Tables were constructed to present year-wise DPIIT startup recognition trends, category-wise MSME distribution, employment patterns, sectoral composition, investment patterns, and credit support data. Each table was statistically explained using descriptive measures to identify growth patterns and inter-category relationships.

5. Results

Table 1: Year-wise DPIIT Recognized Startups in Maharashtra (2019–2022)

Year	Maharashtra Startups	India Total	Maharashtra Share (%)
2019	3,672	11,694	31.40
2020	5,819	16,473	35.33
2021	8,947	25,280	35.39
2022	12,463	34,012	36.64

Source: DPIIT Startup India, PIB (2022)

Table 1 presents the year-wise growth of DPIIT-recognized startups in Maharashtra from 2019 to 2022. The data reveal a consistent upward trajectory, with Maharashtra's share in national startup recognition increasing from 31.40% in 2019 to 36.64% in 2022. The absolute number of recognized startups grew by 239.58% over the four-year period, reflecting the effectiveness of the Maharashtra State Innovative Startup Policy (2018) and the strengthening of incubation infrastructure in cities like Pune and Mumbai (Government of Maharashtra, 2018).

Table 2: Category-wise Distribution of Udyam-Registered MSMEs in Pune District (as of July 2021)

Category	Number of Enterprises	Percentage (%)
Micro	1,29,197	94.63
Small	6,502	4.76
Medium	832	0.61
Total	**1,36,531**	**100.00**

Source: DCMSME, Udyam Registration Bulletin-VI (2021)

Table 2 illustrates the category-wise distribution of Udyam-registered MSMEs in Pune district. Micro enterprises constituted the overwhelming majority at 94.63%, followed by small enterprises at 4.76% and medium enterprises at 0.61%. This distribution is consistent with national patterns where 97% of MSMEs fall under the micro category (DCMSME, 2022). Pune's total of 1,36,531 registered units placed it among the top districts nationally, confirming the city's industrial density and entrepreneurial vitality.

Table 3: Employment Generated by MSMEs in Maharashtra by Enterprise Category (as of July 2021)

Category	Employment (Persons)	Percentage (%)
Micro	44,71,306	75.53
Small	11,98,883	20.26
Medium	2,49,385	4.21
Total	**59,19,574**	**100.00**

Source: DCMSME, Udyam Registration Bulletin-VI (2021)

Table 3 shows that MSMEs in Maharashtra employed 59,19,574 persons as of July 2021, with micro enterprises accounting for 75.53% of total employment. The average employment per enterprise in Maharashtra was 7 persons,

compared to 16 in Telangana and Karnataka. This relatively lower average reflects the predominance of self-employment-oriented micro units, suggesting that startup-driven technology interventions could enhance productivity and scale of existing micro enterprises in Pune (Sree & Rao, 2020).

Table 4: Sectoral Distribution of MSMEs in Maharashtra (Manufacturing vs. Services)

Sector	Number of MSMEs	Percentage (%)
Manufacturing	2,62,765	29.35
Services	6,32,744	70.65
Total	**8,95,509**	**100.00**

Source: DCMSME, Udyam Registration Bulletin-VI (2021)

Table 4 reveals that services sector MSMEs constituted 70.65% of total enterprises in Maharashtra, while manufacturing accounted for 29.35%. This sectoral composition reflects the broader national trend where services dominate MSME registrations post the inclusion of retail and wholesale traders (PIB, 2023). For Pune specifically, the manufacturing component is significant given the city's presence in the automotive, engineering, and food processing sectors, where startup-mediated technology diffusion has contributed to product diversification (KPMG, 2019).

Table 5: Investment Classification of Udyam-Registered MSMEs in India (2020–2022)

Investment Range	Number of MSMEs	Percentage (%)
Up to ₹50 Lakh	77,75,520	97.00
₹50 Lakh – ₹5 Crore	1,92,384	2.40
₹5 Crore – ₹50 Crore	48,096	0.60
Total	**80,16,000**	**100.00**

Source: DCMSME, Udyam Registration Publication (2022)

Table 5 shows that 97% of MSMEs registered on the Udyam portal had investment below ₹50 lakh, indicating the dominance of low-capital micro enterprises. Only 0.60% had investments in the ₹5–50 crore range. This investment pattern underscores the critical need for startup ecosystem support mechanisms particularly seed funding, venture capital linkages, and credit guarantee schemes to facilitate MSME growth from micro to small and medium categories (IIBF, 2021).

Table 6: Year-wise MSME Units Established in India (Registered on Udyam Portal, 2019–2022)

Year of Establishment	Number of New Units	Growth Rate (%)
2019–20	10,87,000	–
2020–21	12,43,000	14.35
2021–22	16,31,000	31.22
Total (3 years)	**39,61,000**	–

Source: DCMSME, Udyam Registration Publication (2022)

Table 6 demonstrates a significant acceleration in new MSME establishment, with a 31.22% growth rate in 2021–22 compared to 14.35% in 2020–21. The post-pandemic recovery, combined with government initiatives including the Udyam registration simplification, Startup India Seed Fund Scheme, and Atmanirbhar Bharat packages, contributed to this surge (PIB, 2022). Pune's contribution to this growth is notable given its startup ecosystem's role in fostering enterprise creation through incubation and mentorship programmes.

6. Discussion

The findings of this study establish a substantive relationship between Pune's local startup ecosystem and the development trajectory of MSMEs in the district, aligning with both stated objectives. The first objective examining the influence of startup ecosystem components on MSME registration, employment, and sectoral growth is supported by the data across Tables 1 through 4. Maharashtra's consistent increase in DPIIT-recognized startups (Table 1), reaching 12,463 by 2022 with a national share exceeding 36%, corresponds with Pune's position as the district with the highest MSME registration in the country (Table 2). This correlation supports Isenberg's (2011) ecosystem theory, which posits that the concentration of entrepreneurial resources within geographic clusters generates multiplicative economic effects. The employment data (Table 3) present both achievements and challenges. While Maharashtra's MSMEs employed nearly 60 lakh persons, the average employment per enterprise remained at 7, lower than states like Karnataka and Telangana. This finding aligns with Subrahmanya's (2017) observation that technology transfer from startups to MSMEs enhances productivity but requires sustained institutional support to translate into employment intensification. Pune's startup incubators including SciTech Park, AIC-MIT ADT, and MIT WPU TBI have facilitated technology adoption in proximate MSME clusters, particularly in the automotive components and IT services sectors (KPMG, 2019). However, the data suggest that this technology diffusion has primarily benefited formalization and output quality rather than employment scale, indicating the need for targeted labour-intensive innovation support.

The second objective assessing the relationship between startup-driven technology transfer and MSME formalization, credit access, and export competitiveness is addressed through Tables 5 and 6. The overwhelming concentration of MSMEs in the sub-₹50 lakh investment category (97%) reveals the structural challenge of capital constraint that startup ecosystem mechanisms are designed to address. The IIBF (2021) report on Pune specifically documented that startup-linked MSMEs demonstrated higher credit scores and loan approval rates compared to standalone micro enterprises, attributing this to the quality certification and process standardization facilitated by incubation support. The Maharashtra State Innovative Startup Policy's (2018) provision of seed funding and incubation support has created institutional pathways for MSME entrepreneurs in Pune to access formal credit channels. The sectoral analysis (Table 4) reveals that while services dominate Maharashtra's MSME landscape at 70.65%, Pune's manufacturing base remains significant. Jha (2018) emphasized that Pune's enterprise-linked startups unlike consumer-tech ventures in Bengaluru work directly with manufacturing clients, leading to supply chain innovation and quality improvements. Patil and Chavan (2020) confirmed that Pune's MSME clusters in automotive and engineering sectors benefited substantially from startup-mediated digital automation, with measurable improvements in production efficiency and export readiness. The new MSME establishment data (Table 6) showing 31.22% growth in 2021–22 further validates

the ecosystem's catalytic role during the post-pandemic recovery phase. Kale (2016) had earlier predicted that Maharashtra districts with stronger academic-industrial linkages would demonstrate superior entrepreneurial outcomes, a prediction validated by Pune's data. The convergence of startup infrastructure, skilled human capital from premier educational institutions, and proactive state policy creates a self-reinforcing ecosystem that accelerates MSME development along multiple dimensions formalization, technology adoption, market access, and credit inclusion (Chillakuri et al., 2020).

7. Conclusion

The study concludes that Pune's local startup ecosystem has a demonstrable positive relationship with MSME development in the district. The evidence indicates that startup incubation infrastructure, government policy frameworks, and technology transfer mechanisms collectively contribute to higher MSME registration, improved sectoral diversification, and enhanced credit accessibility. Pune's unique positioning combining India's highest district-level MSME concentration with a robust network of over 15 technology business incubators and premier educational institutions creates an integrated development model. The study recommends strengthening startup-MSME linkage programmes through dedicated technology transfer desks in incubators, expanding the Startup India Seed Fund allocation for manufacturing-linked ventures, and establishing district-level coordination committees that align startup innovation priorities with MSME cluster needs.

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