Mapping the Start-up Ecosystem in India

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Abstract

This article examines the major trends in the Indian startup ecosystem based on three key parameters: new venture creation & fundraising, characteristics of the founding teams, and modes of entrepreneurial exit, especially exit via acquisitions, over the past decade (2010–2020) by collating data from leading databases and industry reports. The data sources used in this study are Tracxn, Crunchbase, and Global Entrepreneurship Monitor. Four key findings emerge from the analysis: First, despite dedicated policy interventions, the startup activity in India remains concentrated in three prominent clusters - Delhi NCR, Bengaluru, and Mumbai. Second, the data suggest that the startups outside these clusters create disproportionately more jobs vis-a-vis their share in the total entrepreneurial activity. Third, a handful of universities dominate the founder pool, and women entrepreneurs remain severely underrepresented in the founding teams. Finally, acquisitions are a popular exit route for Indian startups, with a higher proportion of acquired startups coming from outside the three prominent clusters. This article recommends increased targeted policy support towards female founders and entrepreneurial activity outside the three clusters.

1 Introduction

Over the past decade, India has witnessed exponential growth in entrepreneurial activity, transforming it into one of the leading startup ecosystems globally. Three Indian cities - Bengaluru (22), Delhi (26) and Mumbai (36), featured in the top 40 list of the global startup ecosystem ranking in 2022[1]. The rankings evaluated startup ecosystems based on six parameters – performance, funding, market reach, connectedness, talent & experience, and knowledge. In terms of the number of unicorns (startups with a valuation of $1 billion or more) produced, India is the third-largest startup ecosystem in the world behind China and the USA[2]. To strengthen the ecosystem further, the Government of India launched the "Startup India" initiative in 2016. Startup India, which celebrated its fifth

[1] Startup Genome, Global Startup Ecosystem Ranking 2022
[2] John Sarkar, India becomes third largest startup ecosystem in the world, *The Times of India*, Sep 23, 2021

anniversary in January 2021, intends to catalyse the startup culture and build a strong and inclusive ecosystem for innovation and entrepreneurship[3].

Despite the pandemic-related economic downturn[4], the Indian startup ecosystem showcased remarkable resilience and recorded a stellar performance in 2021. As of September 2021, 24 new unicorns had been added to the Indian startup ecosystem [5], a 100% growth from 2020 (Figure 1). Additionally, Indian startups raised $13.05 billion in the first half of 2021 (January to June 2021), an increase of 160% compared to the $5.2 billion raised in the first half of 2020. Given the importance of startups in the Indian economy, this brief uses the available data to highlight the key trends in the Indian startup ecosystem. It examines the ecosystem on three parameters - Firstly, the geographic distribution of startups and the funding activity; Secondly, the composition of founding teams; and finally, modes of exit, especially exit via acquisitions. Based on the trends that emerge from the analysis, the article offers policy interventions.

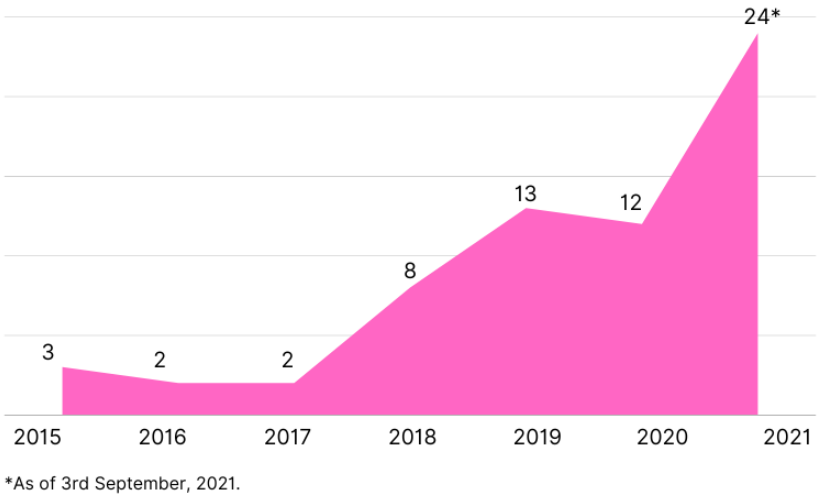


Figure 1: Total Unicorns added each year (2015 - 2021)

2 Mapping the Startup Activity

A high rate of startup activity is often associated with clusters. Such clusters exist globally, with the Bay area in San Francisco, California, being one of the most prominent startup clusters in the world. Similarly, India, too, has three main startup clusters—Bengaluru, Delhi National Capital Region (NCR), and Mumbai. As of 13 September 2021, India had 75 unicorns[6], 83% of which (62)

[3]Startup India , Startup India Action Plan, *Ministry of Commerce & Industry, Government of India*, Jan 16, 2016
[4]Vivek Kaul, India's GDP contracted by 7.3% in 2020-21, with revival postponed to 2022-23, *Mint*, May 31, 2021
[5]Inc42, Here Are The 42 Indian Startups That Entered The Unicorn Club In 2021, *Inc42*, Sep 23, 2021
[6]The database returned a list of 77 unicorns, of which Zomato and SBI Card were left out. Zomato was left out as it is now a publicly listed entity, and SBI card was left out as it is an offshoot of the State Bank of India (SBI).

were from these three clusters (Figure 2). Delhi NCR topped the list with the highest number of unicorns (35%; 26), followed by Bengaluru (33%; 25) and Mumbai (15%; 11). Four unicorns each (5%) were from Chennai and Pune. The remaining five unicorns (7%) were from Hyderabad (2), Ahmedabad (1), Thane (1), and Kota (1).

The share of other cities progressively increased upon examining the geographic distribution of startups with lower valuations. However, the dominance of the three main clusters - Delhi NCR, Bengaluru, and Mumbai, remained. The three clusters combined accounted for 78% (108) of all Indian startups valued at/over $500 million (135). Bengaluru and Delhi NCR accounted for 30% (42) each, followed by Mumbai (17%; 24). Notably, the share of other cities registered an increase of 57%. From a 7% share in unicorns to an 11% share in startups valued at/over $500 million (Figure 2).

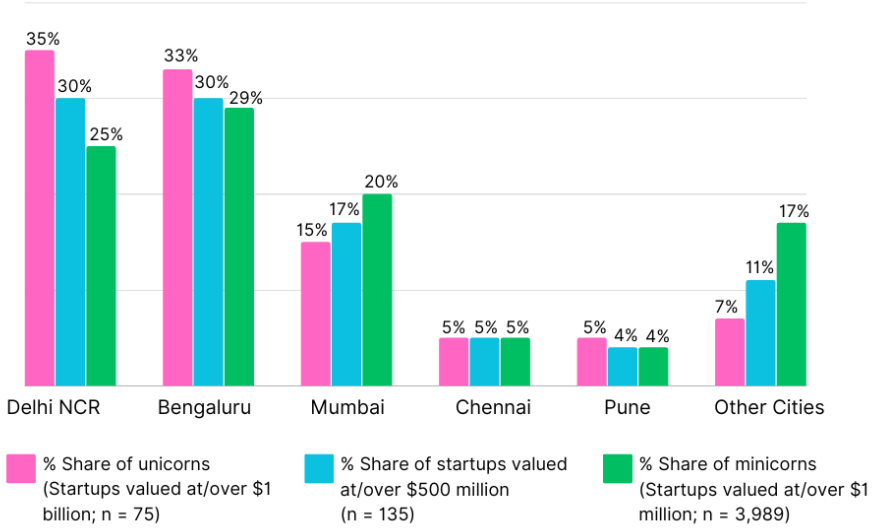
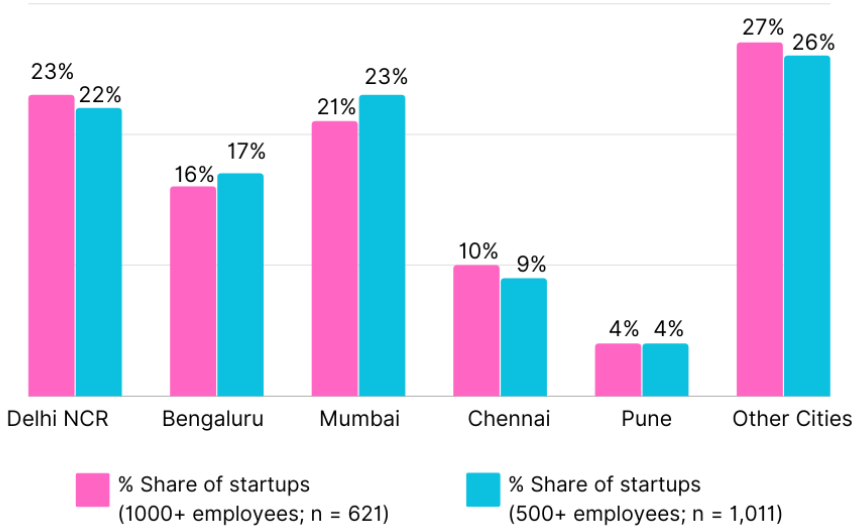


Figure 2: City-wise distribution of unicorns, startups valued $500+ million, and minicorns.

The share of other cities improved further upon examining the geographic distribution of minicorns (startups valued at/over $1 million) (Figure 2). As of September 2021, India had 3,989 minicorns. The trio of Bengaluru, Delhi NCR, and Mumbai accounted for 74% of the minicorns, with Bengaluru accounting for the highest 29% (1154), followed by Delhi NCR (25%; 995) and Mumbai (20%; 794). Chennai accounted for 5% (200) and Pune 4% (167) of the minicorns. The other cities accounted for 17% of all minicorns (679), 6% higher than their share in startups valued at/over $500 million (11%). As per the 2011 census, India had 465 Class I cities (cities with a population of over 1,00,000)[7]. The data suggest that, as of 2021, Mumbai alone (794) had more minicorns than the rest of the 458 class I cities in India combined, thus underlining the high degree of concentration of

[7]Abdul Shaban, Karima Kourtit, and Peter Nijkamp. "India's urban system: Sustainability and imbalanced growth of cities." Sustainability 12, no. 7 (2020): 2941.

startup activity in India.



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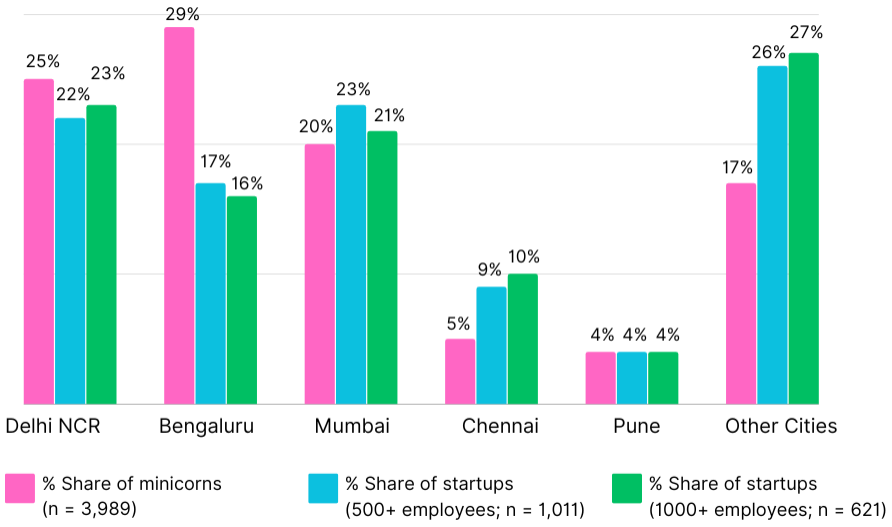


(b)

Figure 3: (a) City-wise distribution of startups with large workforces.
(b) City-wise distribution of minicorns and startups with large workforces.

Despite the low representation of other cities in unicorns and minicorns, their share in startups with large workforces was disproportionately higher. For instance, Bengaluru, Delhi NCR, and Mumbai combined had a share of 83% of the unicorns and 74% of minicorns but accounted for only 62% of startups with over 500 employees. Their share was even lower in startups with over a

thousand employees (60%) (Figure 3a). Chennai performed exceedingly well on this metric. It had a share of 5% each in unicorns and minicorns but accounted for 10% of the startups with over a thousand employees and 9% with over 500 employees.

Whereas, other cities had a share of only 7% in unicorns and 17% in minicorns, but they accounted for 26% of startups with over 500 employees. Their share was marginally higher in startups with over a thousand employees (27%) (Figure 3a). These data points further indicate that, on average, startups outside the three major Indian startup clusters seem to be creating more employment opportunities. The proportionate share of other cities is 9% higher in startups with over 500 employees and 10% higher in startups with over a thousand employees vis-à-vis their share in minicorns (Figure 3b). However, the proportionate share of notable clusters like Bengaluru is 12% lower in startups with over 500 employees and 13% in startups with over a thousand employees vis-à-vis its share in minicorns. As discussed in the following section, this is despite the continued concentration of funding activity, which remains concentrated in the three clusters. Alleviating the concerns related to the geographic concentration of the startup activity in India was one of the key objectives of the Startup India initiative. Page 2 of the Startup India action plan reads:

> *"With this Action Plan, the Government hopes to accelerate spreading of the Startup movement from existing tier 1 cities to tier 2 and tier 3 cities including semi-urban and rural areas."*

As of 2021, five years after the launch of Startup India, the Department for Promotion of Industry and Internal Trade (DPIIT)[8] had recognised startups from 623 of the 766 districts in India. The dominance of the top three clusters, however, could still be observed. The share of other cities in the overall startups founded and funding raised was constant between 2015–17 and 2018–20 (Figure 4). Bengaluru, Delhi NCR, and Mumbai combined accounted for 83% of all the startups founded in India during the three years from 2018 to 2020. Their share was even higher in the total funding raised in the same period. The three clusters accounted for 92% of all the funds raised between 2018 and 2020 (Figure 5), 1% higher than their share in 2015–18, highlighting the extreme concentration of funding activity in the Indian startup ecosystem.

Overall, the trends highlighted above suggest that despite the active policy interventions by the government, startup activity in India, to date, continues to be clustered. The data also indicates that startups outside the main clusters are creating more employment opportunities (an apt proxy for growth) despite raising less capital, thus signalling better quality. This aspect of the Indian startup ecosystem demands further exploration from researchers, venture capitalists and policymakers alike.

[8] DPIIT falls under the purview of the Ministry of Commerce & Industry and is responsible for the implementation of the Startup India initiative

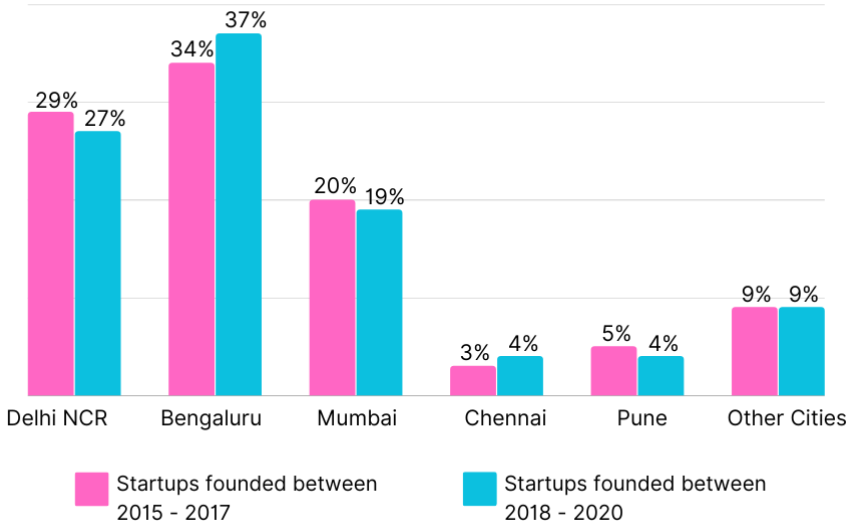


Figure 4: City-wise distribution of startups founded in India between 2015 - 2017 and 2018 - 2020.

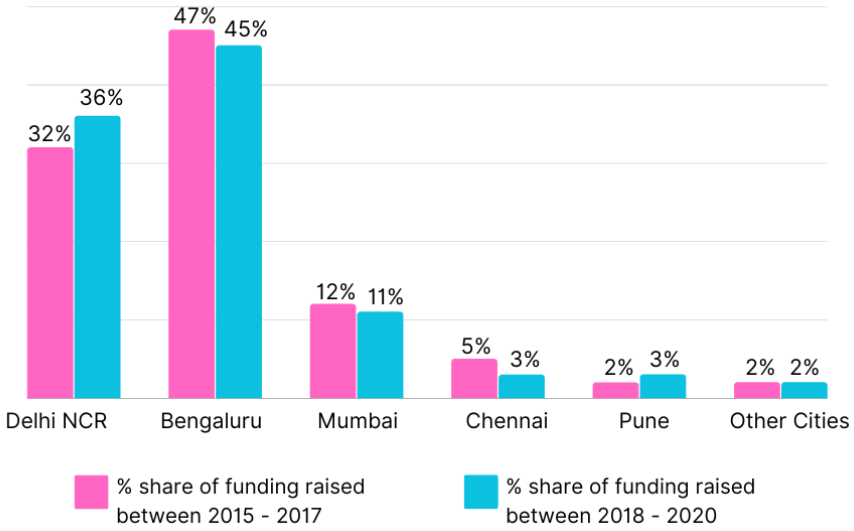


Figure 5: City-wise distribution of total funding raised between 2015 - 2017 and 2018 - 2020.

3 Mapping the Startup Teams

The success of a startup is often attributed to its founding team[9]. The composition and characteristics of the founding team is a crucial determinant of a startup's performance. The higher the heterogeneity of experience within the members of the founding team, the higher the chances of

[9]Adi Gaskell, Why Your Team Is Crucial To Startup Success, *Forbes*, Nov 4, 2015

success[10]. The alma mater of the founding team also plays an important role in determining startup success. For instance, in the US, founders from a handful of universities account for a disproportionately higher share of founders[11]. Ten universities in the US produced 2,109 startup founders (who raised at least $1 million in funding) between January 2020 and March 2021 (Figure 6). 73% of these founders came from just the top five universities: Stanford University, Massachusetts Institute of Technology, Harvard University, University of California (UC), Berkeley, and Cornell University. Stanford University is the world leader in this area and has produced 170 unicorn executives, higher than any other university[12].

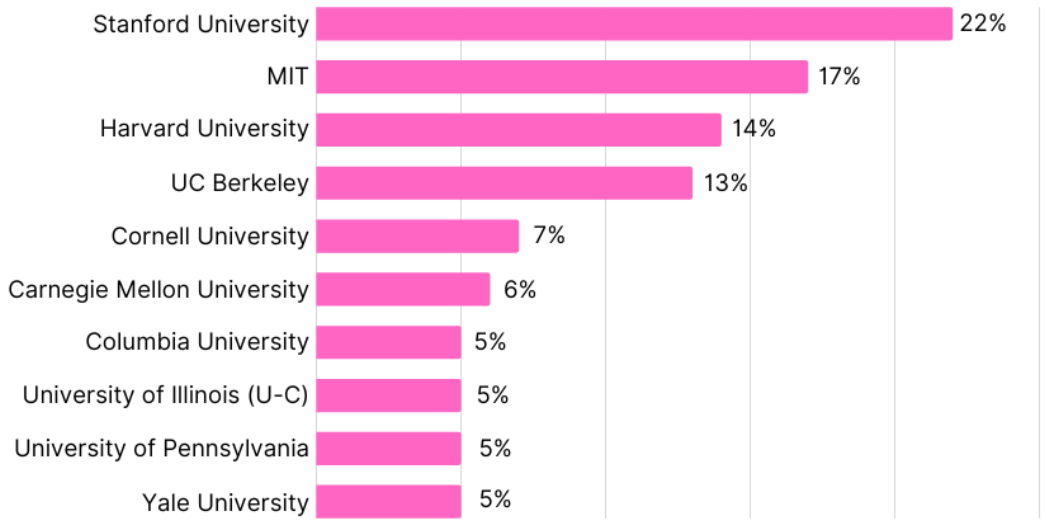


Figure 6: University affiliation of US founders who raised $1 million+ (Jan 2020 - March 2021)

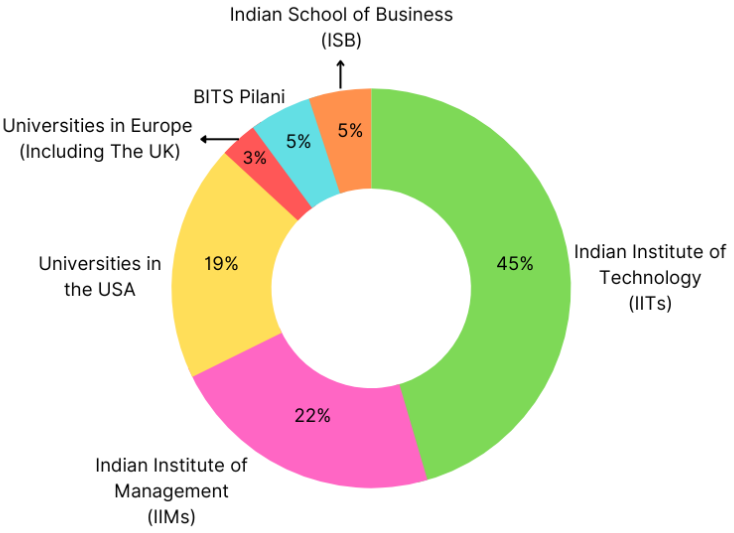
The dominance of a handful of universities can also be observed in the Indian startup ecosystem[13]. As of 13 September 2021, India had 465 startups valued at/over $100 million. The founding team data were available for 201 of these startups. Out of the 374 founding members, 45% (169) were graduates of the Indian Institutes of Technology (IITs), followed by the Indian Institutes of Management ([IIMs] 22%; 83) (Figure 7a). Universities based in the US accounted for 19% of all founders. These three cohorts collectively accounted for 86% (323) of all the founders for whom the data was available.

[10]Fernando Muñoz-Bullon, Maria J. Sanchez-Bueno, and Antonio Vos-Saz. "Startup team contributions and new firm creation: The role of founding team experience." Entrepreneurship & Regional Development 27, no. 1-2 (2015): 80-105.

[11]Lydia Belanger, You're More Likely to Get Startup Funding If You Went to One of These Schools, *Entrepreneur*, Sep 9, 2016

[12]See Oli Ballard, Which global university has produced the most unicorn executives?, *Business Leader*, Jun 7, 2021; and Illya Strebulaev, US Business Schools and Unicorn Founders, Mar 25, 2022

[13]Yves-Marie Rault, and Shawn Mathew."An imbalanced ecosystem." Economic and Political Weekly 54, no. 45 (2019): 45.



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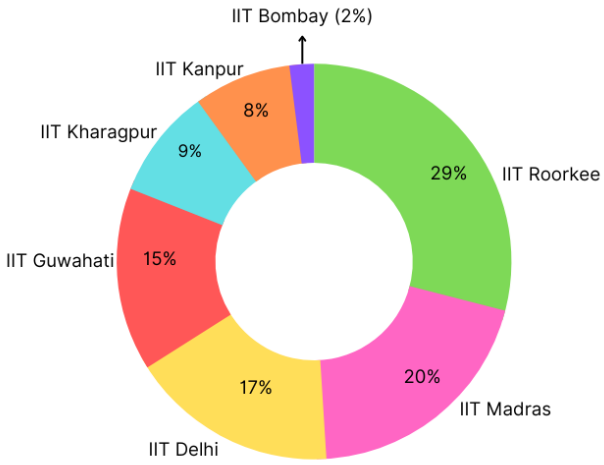


(b)

Figure 7: (a) University affiliation of Indian founders (Startups valued $100+ million; n = 374). (b) Share of Individual IITs in founders from the IIT cohort (n = 169).

Interesting patterns emerged upon further examination of these cohorts. As of December 2020, there were 23 IITs in India. However, all 169 founders from the IIT cohort came from just seven IITs (Figure 7b). IIT Roorkee alone accounted for 29% (49) of the founders from this cohort, followed by IIT Madras (20%; 33), IIT Delhi (17%; 28), IIT Guwahati (15%; 25), and IIT Kharagpur (9%; 16). The top five IITs collectively accounted for 90% (151) of all founders from IITs and 40% of all founders of Indian startups valued at/over $100 million for which the founding team data was available.

Similarly, although there were 20 IIMs in India, as of 2021, all 83 IIM-based founders came from just three IIMs. IIM Ahmedabad alone accounted for 48% (40) of all founders from the IIM cohort, followed by IIM Calcutta (28%; 23) and IIM Bangalore (24%; 20). Two other notable Indian academic institutions with a significant share in the overall founder pool of startups valued at/over $100 million were the Indian School of Business ([ISB] 5%; 19) and the Birla Institute of Technology and Science, Pilani ([BITS Pilani] 5%; 19). These data points highlight that all Indian founders of startups valued at/over $100 million (for which the data was available) who completed their most recent education in India (290) came from just 12 institutions (seven IITs, three IIMs, ISB, and BITS Pilani). That is an average of approximately 24 founders per institute.

A small set of universities dominated the pool of founders from the US and European universities cohort. Twelve US-based universities produced 71 Indian founders of startups valued at/over $100 million (Figure 8). Sixty-eight per cent of these founders (48) came from just five universities. Stanford University was the leader and accounted for 23% (16) of the cohort, followed by Harvard University (14%;10), The University of Pennsylvania (13%; 9), UC Berkeley (10%; 7), and Columbia University (8%; 6). The same universities also dominated the founder pool of US-based startups (Figure 6).

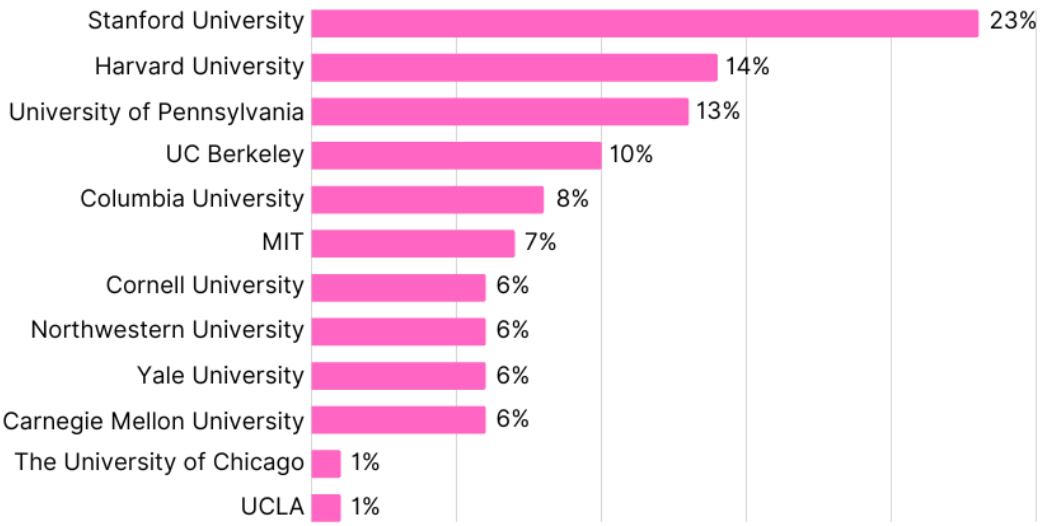


Figure 8: University affiliation of US-educated founders (startups valued $100+ million; n = 71)

Similarly, 12 Indian founders studied at European universities, 75% (9) of which came from only one institution - INSEAD. The other universities were Cambridge University (17%; 2) and London Business School (8%; 1). One founder studied at the National University of Singapore. All the data points taken together indicate that all the 374 founders of the Indian startups valued at/over $100

million, for which data was available (201) studied in just 28 universities, an average of approximately 13 founders per institute.

Women's representation in the founding teams and the overall startup ecosystem is another area that has received increased attention both from researchers and policymakers in the past few years. A recent article in the Harvard Business Review highlighted that women-led startups raised just 2.3% of the overall venture capital funding in 2020[14]. The article also highlighted that only 12% of the decision-makers in venture capital firms were women[15]. The lack of representation of women in venture capital firms is also a reality in India. Only three of the top 20 Indian venture capital firms had a woman partner as of February 2020. The three venture capital firms were India Quotient, Lightspeed India, and Kalaari Capital. In addition, a pilot survey of Indian startups by the Reserve Bank of India found that 55.5% of the surveyed startups had no women representation in the founding team[16].

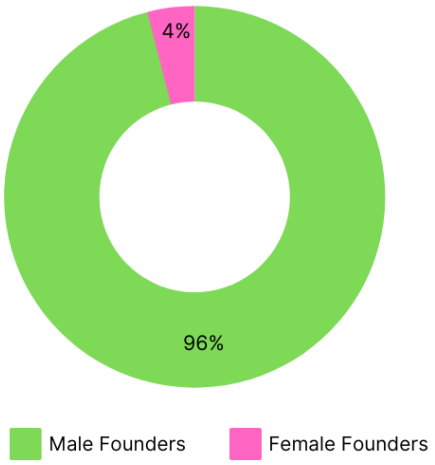
Encouraging women entrepreneurship is a stated objective of the Startup India policy. Page 30 of the "Startup India: The Way Ahead"[17] report reads:

> *"Startup India is committed to strengthening the women entrepreneurship ecosystem, through policies and initiatives, and creation of enabling networks."*

As a result of this focus, 45% of startups recognised by the DPIIT (48,903) under Startup India, as of June 2021, had at least one woman member in the founding team[18]. However, the representation of women is still very low in the overall Indian startup ecosystem. Women founders accounted for less than 4% (7) of the total founder pool of Indian unicorns (182) (Figure 9a). Similarly, 92% of the unicorns (69) had no woman member in the founding team (Figure 9b). As per a recent report by Innoven Capital, less than 50% of the surveyed startups had more than 10% women in leadership positions[19].

The lack of representation of women in the Indian startup ecosystem reflects in the international rankings. India was ranked 49th out of the 58 surveyed countries in the Mastercard Index for Women Entrepreneurs, 2020[20]. Lower than its other Asian counterparts such as Thailand (11), Chinese Taipei (12), Hong Kong Special Administrative Region (15), Philippines (16), Indonesia (17), Mainland China (21), Singapore (24), Vietnam (25), Malaysia (26), South Korea (38), and Japan (47). Similarly, India was ranked 41st out of the 50 surveyed countries on female Total

[14] Ashley Bittner, and Brigette Lau."Women-led startups received just 2.3% of VC funding in 2020." Harvard Business Review 25 (2021).
[15] Mihir Dalal and M. Sriram, Why India's women VCs get a raw deal, *mint*, Feb 4, 2020
[16] Reserve Bank of India, Pilot Survey on Indian Startup Sector - Major Findings, Dec 31, 2019
[17] Startup India, Startup India The Way Ahead, *Ministry of Commerce & Industry, Government of India*, Jan 2, 2021
[18] Ministry of Commerce & Industry, Number of startups recognized by DPIIT goes up to Fifty Thousand, Jun 3, 2021
[19] Innoven Capital, InnoVen Capital India: Startup Outlook Report - 2020, Mar 2020
[20] Mastercard, The Mastercard Index of Women Entrepreneurs 2020 ReportApr 20, 2020



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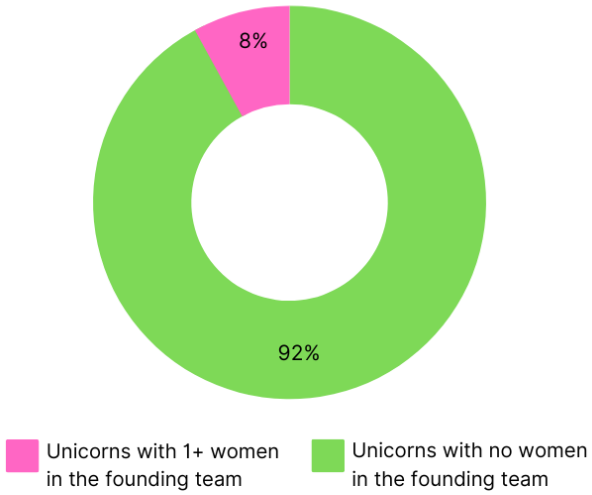

(b)

Figure 9: (a) Gender-split of Indian unicorn founders (n = 182).
(b) Women representation in the founding teams of Indian unicorns (n = 75).

early-stage Entrepreneurial Activity by the Global Entrepreneurship Monitor[21]. These data points highlight the need for increased policy support targeted towards women entrepreneurs.

[21] Global Entrepreneurship Monitor, GEM 2020/2021 GLOBAL REPORT, May 3, 2021

4 Mapping the Startup Exits

Entrepreneurial exits broadly refer to the phenomenon through which founders part ways from their respective startups. DeTienne (2010)[22] defines it as:

The process by which the founders of privately held firms leave the firm they helped to create; thereby removing themselves, in varying degree, from the primary ownership and decision-making structure of the firm.

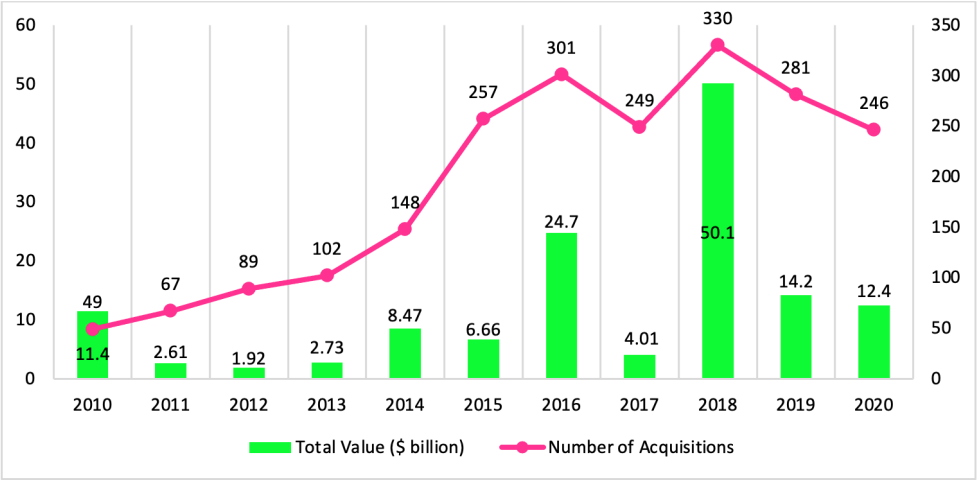

Figure 10: Acquisition trends in the Indian startup ecosystem

Entrepreneurial exits can take different forms, the most prominent being initial public offerings (IPO), acquisitions, and liquidation[23]. This article emphasises exit through trade sales as acquisitions have emerged as one of the most popular exit routes for Indian startups. Fifty-seven per cent of the Indian founders indicated that acquisitions would be their most likely exit route in 2020[24]. In the last ten years, exits through acquisition have increased by over 500% in India, from 49 in 2010 to 246 in 2020 (Figure 10). The activity peaked in 2018 with 330 acquisitions with a total deal value of $50 billion. In May 2018, Walmart announced the acquisition of a majority stake (77%) in Flipkart for $16 billion[25], thus contributing to the all-time high deal value.

Delhi NCR, Bengaluru, and Mumbai emerged as the major acquisition hubs, collectively accounting for 69% of all acquisitions (Figure 11), 5% lower than their share of minicorns (74%). However, the share of other cities was 3% higher than their share of minicorns (see Figure 2). This data point

[22] Dawn R. DeTienne, "Entrepreneurial exit as a critical component of the entrepreneurial process: Theoretical development." Journal of business venturing 25, no. 2 (2010): 203-215.

[23] Wennberg, Karl, Johan Wiklund, Dawn R. DeTienne, and Melissa S. Cardon. "Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers." Journal of business venturing 25, no. 4 (2010): 361-375.

[24] Please refer to footnote 19

[25] Ingrid Lunden, Walmart confirms $16B Flipkart investment, giving it 77% in India's e-commerce leader, *Techcrunch*, May 9, 2018

indicates that a proportionately higher number of startups based outside the three main clusters are getting acquired.

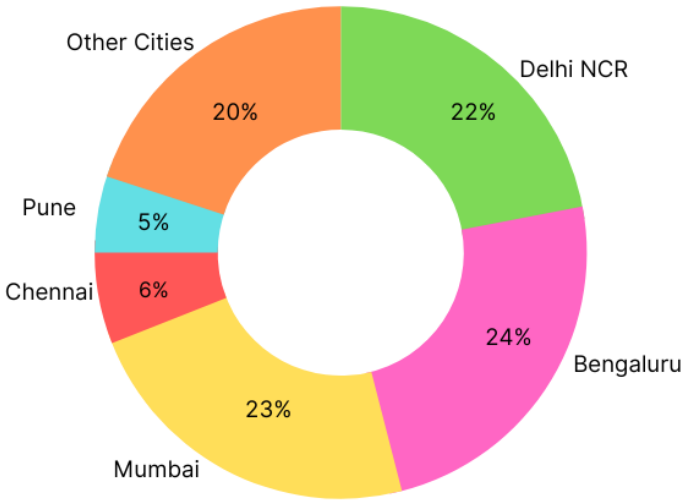

Figure 11: City-wise distribution of acquired Indian startups between 2010 - 2020 (n = 2119)

Examining the geographic distribution of acquisitions over a ten year period from 2010 to 2020, we learn that the number of acquisitions in other cities increased by 30% in the last decade (Figure 12), from 20% in 2010 to 26% in 2020. The most noticeable decline was in the share of Bengaluru. In 2010 Bengaluru accounted for 37% of all acquisitions, which reduced to 23% by 2020, a 38% decline over a decade. Delhi NCR, on the other hand, registered an increase of 163% in its share of acquisitions, from 8% in 2010 to 21% in 2020.

A variety of factors are known to drive startup exits. The lack of availability of funds is often the leading factor[26]. Seventeen per cent of the startups surveyed by Innoven Capital in 2020 reported fundraising as their top business challenge, 2% higher than in 2019[27] (15%). Similarly, 27% of the startups indicated that fundraising was their top immediate priority, 4% higher than in 2019 (23%). We know from Figure (5) that 92% of the funding raised in India till 2020 focused on startups in the Delhi NCR, Mumbai and Bengaluru. Taken together, it is possible that lack of access to capital is resulting in the acquisition of a proportionately higher number of startups outside the three prominent clusters.

If true, this is concerning, as these startups seem to create more employment opportunities (Figure 3a). Alternatively, the acquisition of these startups could also be motivated by the growth

[26]Melissa E. Graebner, Kathleen M. Eisenhardt, and Philip T. Roundy. "Success and failure in technology acquisitions: Lessons for buyers and sellers." Academy of management perspectives 24, no. 3 (2010): 73-92.
[27]Please refer to footnote 19

objectives of the acquirer[28]. We know from extant acquisition literature, that acquirers target high-performing firms with significant growth potential[29], which reaffirms the presence of high-quality startups outside the main clusters, going unnoticed by investors and policymakers alike. These findings necessitate a renewed focus on entrepreneurship in these "other cities".

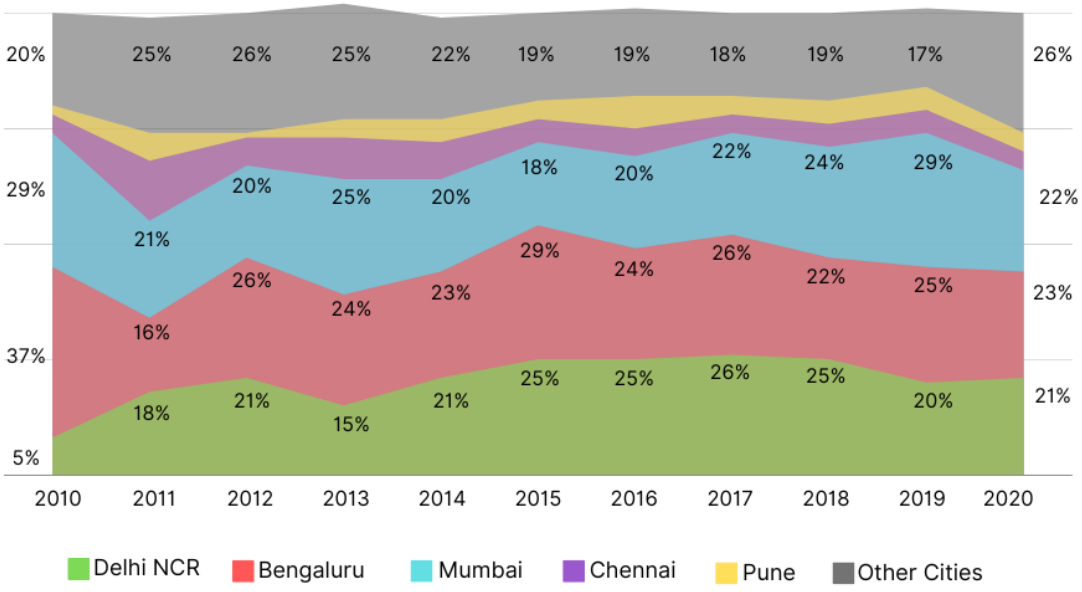

Figure 12: Yearly change in distribution of acquired Indian startups across cities (2010 - 2020)

5 Conclusions

The Indian startup ecosystem has emerged as one of the most prominent startup ecosystems in the world. Its potential to contribute to the Indian economy has attracted the attention of policymakers, which, in turn, has led to crucial policy interventions. However, despite the interventions, startup activity in India remains concentrated in the three prominent clusters of Delhi NCR, Bengaluru, and Mumbai. Women entrepreneurs remain severely underrepresented in the Indian startup ecosystem and a handful of leading academic institutions continue to produce most of the successful founders.

Though more startups have started emerging from other parts of the country, they continue to face fundraising challenges, given the geographic concentration of venture capital firms and funding activity in India. The lack of funds is causing the startups outside the clusters to exit via an acquisition, which is undesirable in the Indian context as these startups create greater employment

[28] Mawson, Suzanne, and Ross Brown. "Entrepreneurial acquisitions, open innovation and UK high growth SMEs." Industry and innovation 24, no. 4 (2017): 382-402.

[29] Jože Damian, Črt Kostevc, and Matija Rojec. "Growing lemons or cherries? Pre and post-acquisition performance of foreign-acquired firms in new EU Member States." The world economy 38, no. 4 (2015): 751-772.

opportunities.

Therefore, there must be increased policy support targeting this cohort. Special policy provisions to encourage and support women entrepreneurs must be introduced at the union and the state government level while also attempting to replicate the entrepreneurial success of the select Indian institutions. Most importantly, startups and entrepreneurs outside the three main clusters must be actively examined, researched, and supported.

Acknowledgments

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