A Budding Indian Startup Ecosystem: The 2016 Startup India Initiative

Introduction

In 2015, Indian Prime Minister Narendra Modi spoke in San Jose, California to address the growing startup industry in India. During this conference, titled "Indo-US Start-up Konnect 2015," Modi sought to build excitement for a newly revealed government program, the Startup India Initiative. As PM Modi explained to the crowd:

> "We are a nation of 800 million youth below the age of 35 years. They are eager for change; have the energy and drive to pursue it; and, the confidence to achieve it. When each of the five hundred odd towns produces ten Startups and each of our six hundred thousand villages produce six small businesses, on a regular basis, we will create an enormous economic momentum and generate a huge number of jobs in our country."[1]

The message was clear: India would commit to a startup ecosystem to build out an innovative vision for the future of India's Economy. The new initiative which launched on January 16th, 2016, had the overarching goal of "supporting entrepreneurs, building a robust startup ecosystem, and transforming India into a country of job creators instead of job seekers."[2] To accomplish this, the multifaceted policy focused on three core elements: 1) Simplicity for entrepreneurs via easier legal compliance, streamlined exit processes for failed startups, legal support, fast-tracked patents, and an informational website; 2) Funding support via

---

[1] "PM Modi Reaches Indo-US Start-up Konnect 2015." India.com, September 27, 2015. https://www.india.com/news/india/narendra-modi-addresses-indo-us-start-up-konnect-2015-describes-articulation-of-ideas-as-social-innovation-582128/.

[2] "Startup India Scheme." Accessed April 20, 2023. https://www.startupindia.gov.in/content/sih/en/startup-scheme.html.

income/capital gains tax exemptions, a fund of funds for startups, and a credit guarantee scheme; and 3) Incubation programs in the form of startup incubators, innovation labs, events, competitions, and grants.

Of course, entrepreneurship in India did not begin with the 2016 Startup India Initiative. As researcher Ravindra Abhyankar explains, the roots of Indian "The foundations of today's legal, financial, educational, bureaucratic governance systems were inherited from the colonial period. Even the roots of publicly funded research structures, which have grown large today, date back to the colonial days."[3] Similar to Modi's framing, Abhyankar also highlights the large, young, rural population in India and paints entrepreneurship as a path to increased job opportunity. However, he explains that, by 2014, the innovation ecosystem was largely dependent on publicly funded R&D rather than the massive Venture Capital systems in the United States. According to the Global Innovation Index India ranked 76th among the 143 countries in 2014. By 2022, however, India was ranked 40th out of 132 countries.

So what changed in that period. Well, in 2014, Abhyankar suggested several key challenges faced by Indian innovation. At the top of his list was "Fragmented policy and policy implementation." Additionally, he pointed to small funding amounts, explaining that, "despite 100 angel networks operating in India only tens of deals are made each year."[4] Under this framing, PM Modi's Startup India Initiative seems to have arrived at a perfect time, and given the large upward jump by India in the Global Innovation Index, it seems to have contributed to real effects.

---

[3] Abhyankar, Ravindra. "The Government of India's Role in Promoting Innovation through Policy Initiatives for Entrepreneurship Development." *Technology Innovation Management Review* 4, no. 8 (2014): 11–17. https://doi.org/10.22215/timreview/818.

[4] Abhyankar, 2014

Legal scholar Singh, in his 2021 paper exploring the "Startup Revolution" in India, looks critically at this shift and seeks to understand how government policies might have contributed. He explores how initiatives such as the 2016 plan have propelled Indian startups through their life cycles (Figure 1). As Singh explains, "after the [Startup India Initiative], state governments started a huge push on startup initiatives, which is evident from the fact that 11 states adopted

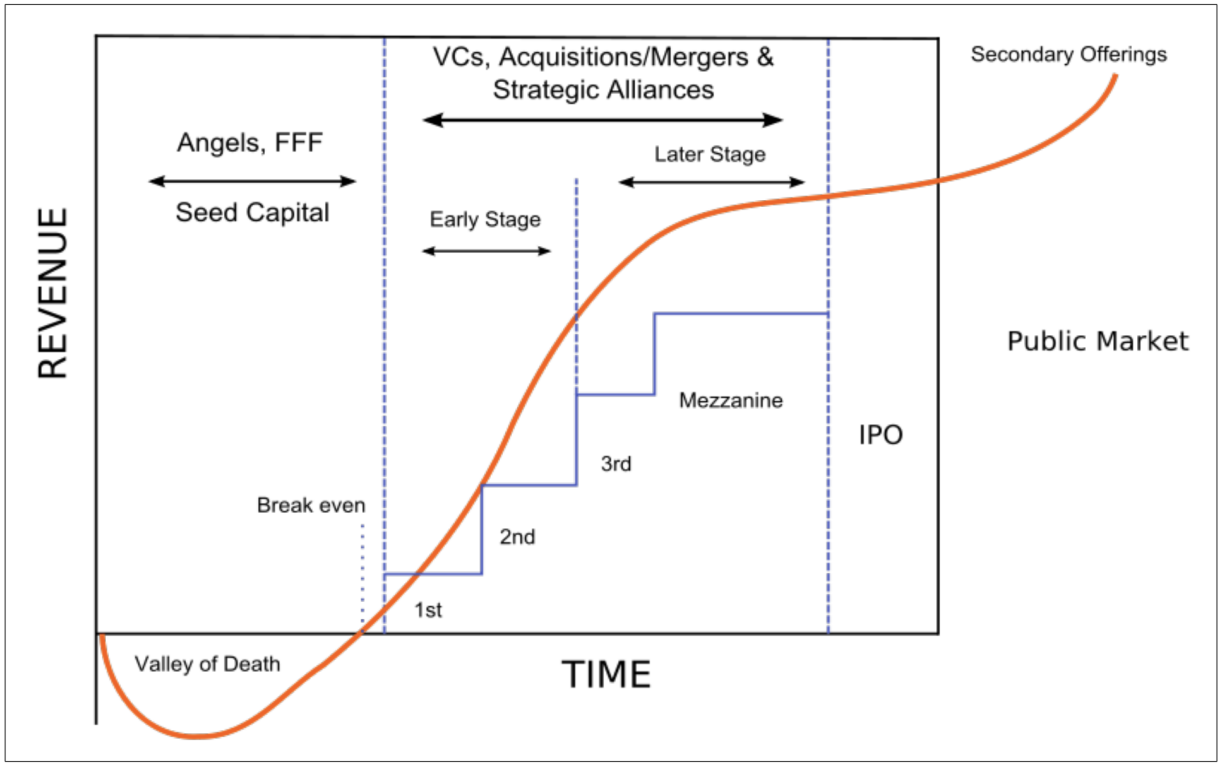


Figure 1: The Startup Financing Cycle[5]

the policy in 2016 itself, four more did so in 2017, and three followed in 2018. Now, except the few union territories and northeastern states, all the states (25 in total) have their own policy to promote startups."[6] In Singh's opinion, one of the greatest factors that contributed to this

[5] Singh, Vijay Kumar. "Policy and Regulatory Changes for a Successful Startup Revolution: Experiences from the Startup Action Plan in India." *World Scientific Series in Finance*, 2021, 33–67. https://doi.org/10.1142/9789811235825_0002.

[6] Singh, 2021

growth is the availability of early stage funding to get startups through the "valley of death" (Figure 1) and the early traction stage of innovation.

This drastic change in the Indian startup ecosystem begs the question: what did the startup ecosystem actually look like during this time? What industries did Indian startups and investors in India care about? Who are those investors? In what cities are these startups located in? And what types of investments contributed to this growth in innovation?

In this paper, I use a dataset of 3024 Indian startups, funded between 2015 and 2020 to examine these questions. I hypothesize that, like many startup ecosystems, the focus of innovation is on high-growth technology sectors. Additionally, I agree with Singh in his assessment of the importance of early-stage traction. I predict that the health of Indian innovation from 2015-2020 will be underscored by large amounts of early stage Venture Capital and Angel investments.

Methods

To analyze the post 2016 startup ecosystem I use a Kaggle dataset of Indian startups (n=3024) funded from 2015 to 2020.[7] The data was collected by Trak.in, an Indian business and tech news blog and shared publicly to promote research on Indian startups. Using Python, I conduct a descriptive analysis of the dataset, seeking to reveal patterns, trends, and key figures about the ecosystem during this time. Specifically, I examine three key factors.

First, I explore the industries represented in the dataset. I examine both the number of startups in each industry and the amount invested in each industry. Because the origins dataset included 822+ unique industries, I used OpenAI's ChatGPT to create a custom index categorizing

[7] https://www.kaggle.com/datasets/sudalairajkumar/indian-startup-funding

startups into a limited set of 113 industries. For example, “Video Games” and “Mobile Game development & Design platform” were mapped to “Media & Entertainment” while “Home Cooked Food Order & Delivery platform” and “Online Grocery platform” were mapped to “Food & Beverage.” The full index is available in Appendix B — Python Scripts.

Second, I take a deeper look at the investors within the dataset. Unfortunately, I was unable to find a free online database of investors, and so a deep analysis was quite difficult. Additionally, many investment rounds were syndicated, meaning that there were multiple investors present. This made analysis quite difficult. Still, I attempted to extract the top investors. I also used ChatGPT to map the top fifty investors to their country of origin to see where investments were coming from. Finally, I stratified investments by their financing stage (Seed, Series A, Debt, etc.) to visualize any patterns apparent in the maturity of Indian startups.

Third, I examined the location of the startups themselves. I looked both at the amount of startups within each represented city and the investment amount within each city. Unfortunately, because the dataset might not be comprehensive, and since there is likely a large selection bias at play in which startups were included, it is difficult to make any conclusive judgements about the geography of the Indian startup ecosystem.

Findings

Overall, I found that my analysis was limited by my dataset. Initially, I had planned to update my dataset by connecting it to Crunchbase, however, the Crunchbase API is not free to use and thus I was limited in my ability to do deeper analysis. However, I was able to find interesting results using the data available. In general, the distribution of funding across sectors, investors and cities is quite skewed, and, in most cases, the top 10 to 15 categories take up the majority of the money. All visualizations can be found in Appendix A.

Industry Sector

Several industries seem to dominate the Indian startup ecosystem: Consumer Internet, E-Commerce, Transportation & Logistics, Finance & Fintech, and General Technology. In terms of number of startups, Consumer Internet was the top sector with over 900 startups (Appendix A — Figure 1). Technology, with 500 startups and E-commerce with 400 startups were second and third. On average, each industry sector had 25 startups with a standard deviation of 252. However, after removing the top ten sectors, the average company per sector was only 4. Likely, the categorization of industries could be drastically improved.

When considered in terms of investment amount (Appendix A — Figure 2), however, E-Commerce has received more funding (~$10B) than Consumer Internet (~$6B). However, like industry counts, the amount invested is heavily skewed to the top sectors, and after removing the top 10 industries, the average investment amount per sector is ~$50 Million.

This skewed investment amount is expected in a startup ecosystem. High tech software industries like FinTech, Consumer Internet, and E-Commerce are naturally popular investments due to their high growth potential. What is interesting about this analysis is the industries that

are less pronounced in the top industries such as Pharma & Biotech, Media, and Energy. It seems that, in these industries specifically, there is still a lot of potential for Indian innovation.

Investors

The analysis on investors was complicated by the fact that investors often create syndicates when investing. This means that instead of investing as a single investor, the amount is divided among each investor within a group. Unfortunately, the exact distribution of investments is not available in my dataset. To mitigate this, I just assume that each investor in a syndicate has contributed an equal amount to the investment. Likely, this creates bias in multiple directions as large investors are attributed less funding and small investors might be attributed more. This is clear in the fact that Vijay Shekhar Sharma was indicated as the fourth largest investor, having invested ~$1.2 Billion, his entire net worth, into Indian startups (Appendix A — Figure 3). Likely, this is simply the result of a bias in my analysis.

Next, I took the top 50 investors and asked ChatGPT to categorize them into their respective countries. The GPT prompt and output can be seen in Appendix A, Figure 9. Using this index, I then mapped out the origin of the top 50 investors (Appendix A — Figure 4). Naturally, India was the top investor origin followed by Japan, the US, and, to a lesser degree, China. Unfortunately, since I was limited to the top 50 investors,[8] it is possible that my results were biased in favor of foreign investment. It is unlikely that foreign investors would be as focused on smaller deals. A future, more robust analysis, might examine the different types of investments for each country.

[8] I could easily apply the same ChatGPT approach to all 3000 investors, however this would not be free, and since my budget is $0, I opted not to.

Finally, I explored the different stages of investment (Appendix A — Figure 5). As expected, early stage Angel/Seed Funding was far and away the most popular investment stage. This indicates that many more countries were started in 2015-2020 than were scaled during that time period. If the goal is to jumpstart the startup ecosystem, then this is a good sign for the future. Future, better funded, research should connect this historical dataset to an API like crunchbase to get updated information about the companies to see how many Seed-Stage investments made it to Series A and beyond.

Location

My third level of analysis was the location of the companies. Overall, the dataset listed startups from 112 distinct cities in India. On average cities had 25 startups, however, after removing the top ten cities, that average was reduced to three startups per city. Bangalore, the city with the most startups, had 850 unique companies (Appendix A — Figure 6). Next were Mumbai (550), New Delhi (400), and Gurgaon (300). In terms of funding amount (Appendix A — Figure 7), Bangalore was still at the top with ~$18 Billion total. On average, each city received ~$300 Million, but after removing Bangalore, Mumbai, New Delhi, and Gurgaong, that number drops to ~$70 Million per city.

Conclusion

Following the release of the Startup India Initiative in 2016, which set out to create a vibrant startup ecosystem in India, there certainly appears to be a budding startup industry forming. Capital is flowing both from within India and from the international investment communities. High growth, high tech industries are being jump-started, and it appears as though the crucial early-stages of the startup life cycle is a clear focus among investors. However, both in terms of amount and in terms of the diversity of investment, the India startup ecosystem is still in the process of maturing.

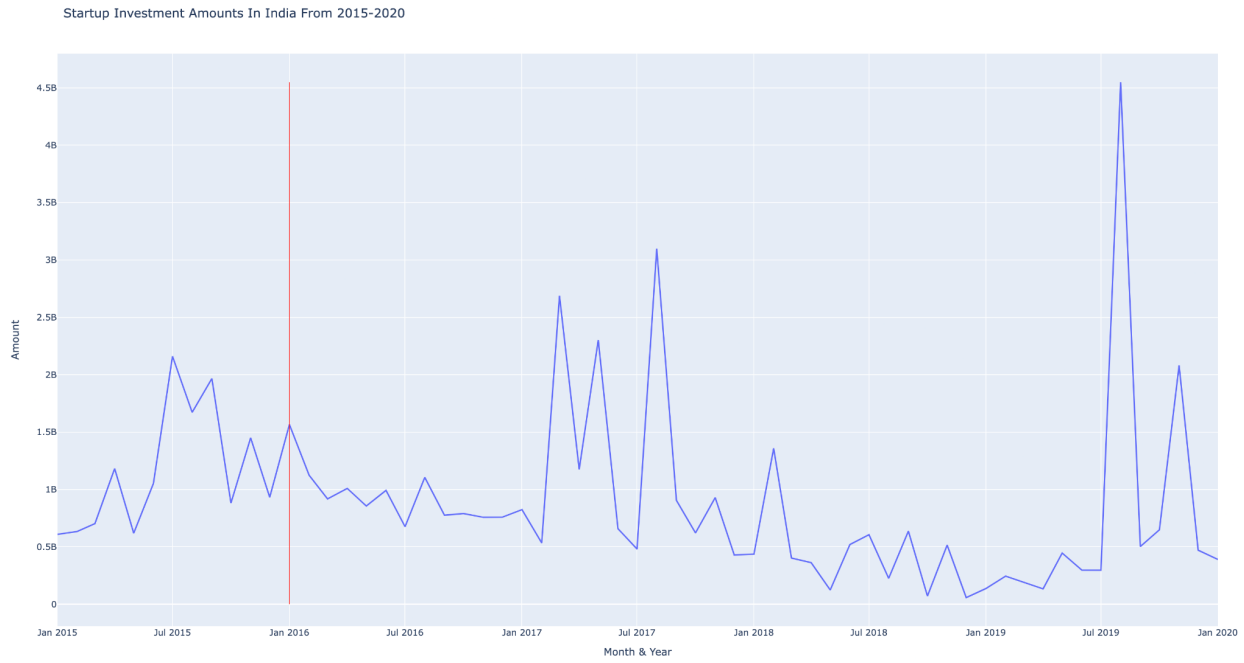


Figure 2: Startup Investment Amounts In India From 2015 to 2020. The red line indicates the Startup India Initiative.

As Figure 2 shows, there has been no obvious spike in investments, since the 2016 initiative, however, the dataset used in this study is limited in its ability to measure the long

term success of startups. While investments are certainly important for innovation, it is the innovation itself that matters more. While this research does not say anything conclusive about the startup ecosystem, it does lay down a baseline for how future scholars might approach the topic, armed with more data. If for example, I had been able to connect this dataset with an API like crunchbase, I could have looked at the growth of each startup since its creation. I could have evaluated not only which companies were funded, where, and by who, but also which companies went on to grow and succeed.

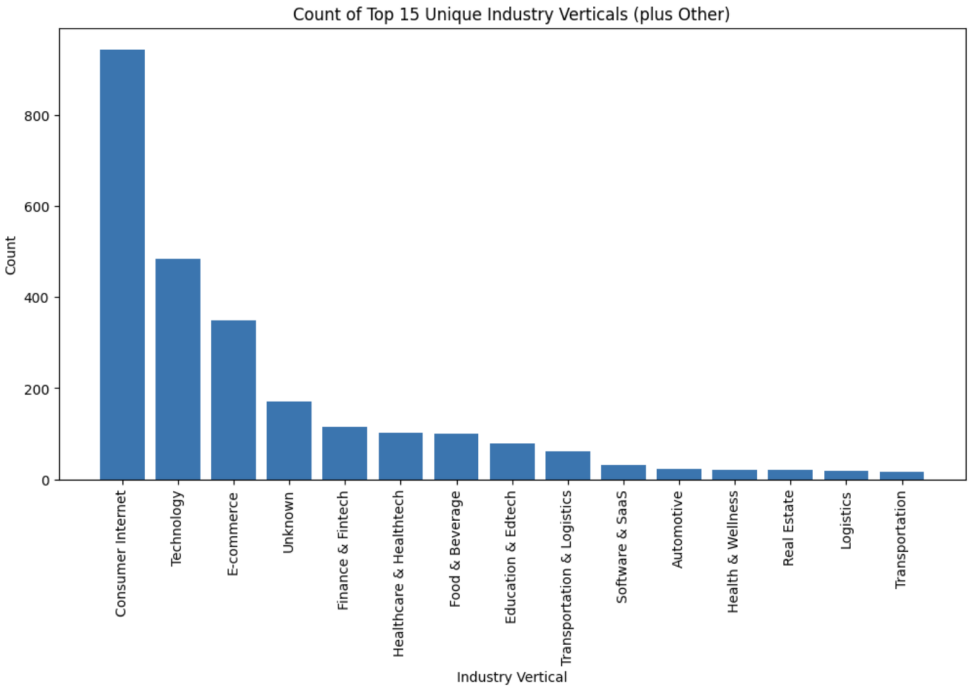
In 2021, India had over 26,000 startups. It was the third-largest startup ecosystem in the world. It had 3 "unicorns," companies valued at over $1 Billion. As David, Gopalan, and Ramachandran explain, this was due mainly to "private investments including seed, angel, venture capital, and private equity funds, with technical support from incubators, accelerators, and the government. The government, for its part, is creating an enabling environment through its flagship Startup India initiative."[9] However, it is the period from 2015-2020 that created the Indian startup ecosystem as it is today.

Future research ought to examine how exactly that ecosystem got from A to B. What exactly were the effects of the Startup India Initiative? Out of the 1,551 Seed/Angel companies founded within this time period, how many survived long enough to see future funding rounds? What distinguished them? The India of today did not arise out of nowhere. To create the unicorns of tomorrow, Indian policy makers should look towards the startups of yesterday.

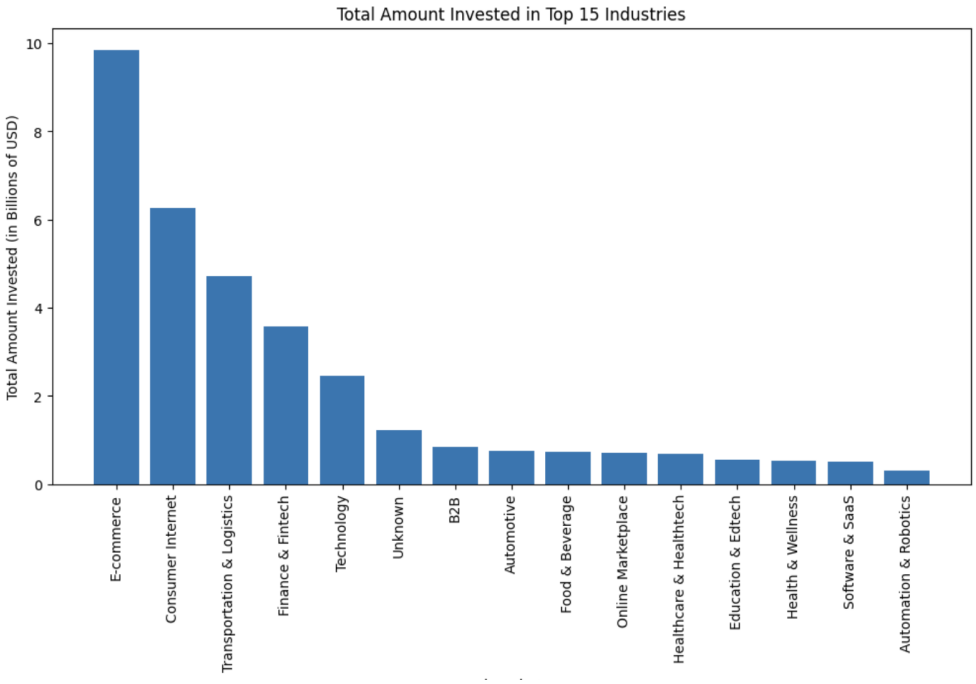
---

[9] David, Dharish, Sasidaran Gopalan, and Suma Ramachandran. "The Startup Environment and Funding Activity in India." In *World Scientific Series in Finance*, by Farhad Taghizadeh-Hesary, Naoyuki Yoshino, Chul Ju Kim, Peter J Morgan, and Daehee Yoon, 193–232. WORLD SCIENTIFIC, 2021. https://doi.org/10.1142/9789811235825_0007.

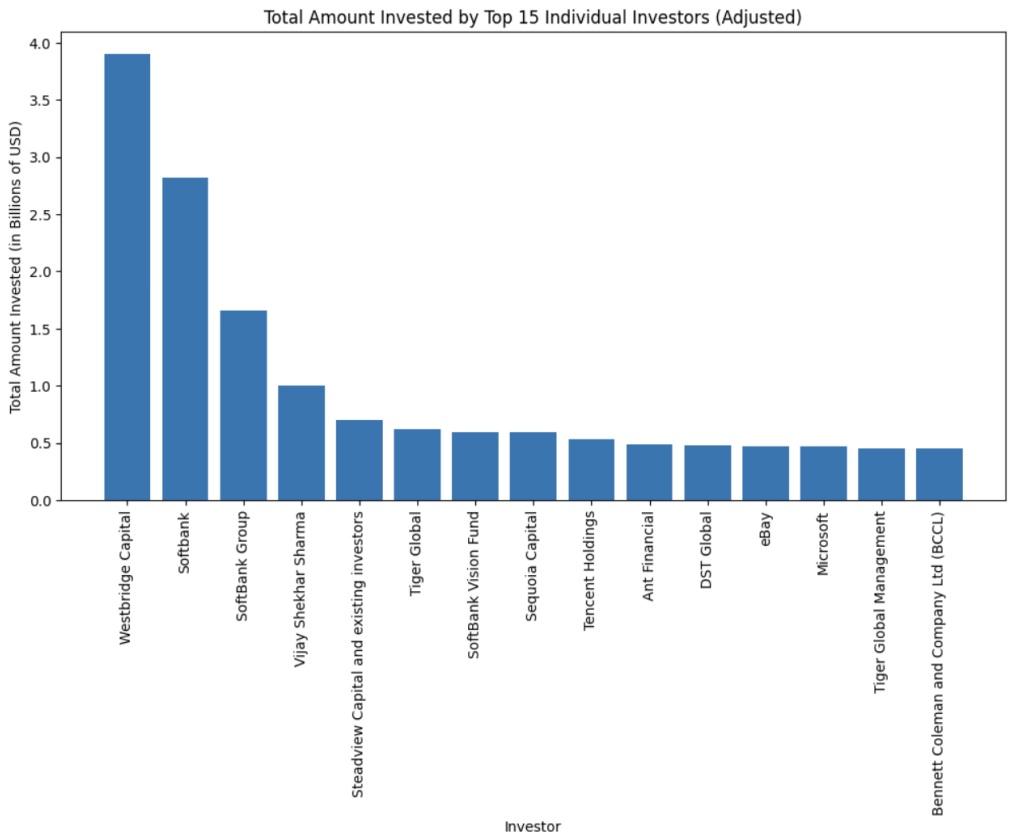
Appendix A — Key Figures:



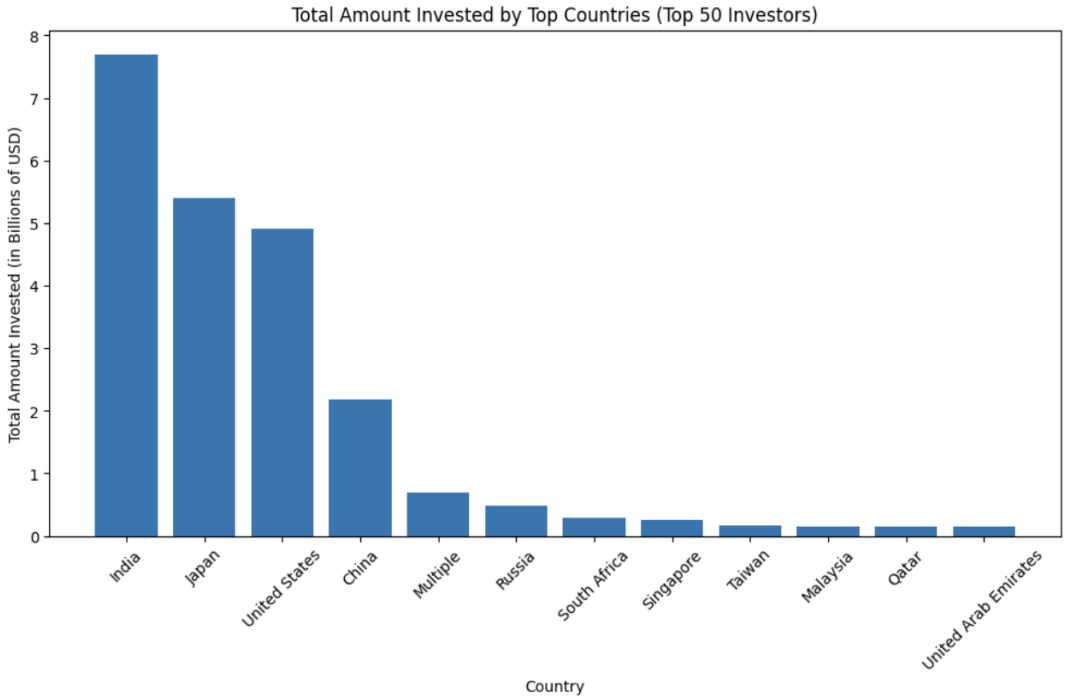
Appendix A — Figure 1



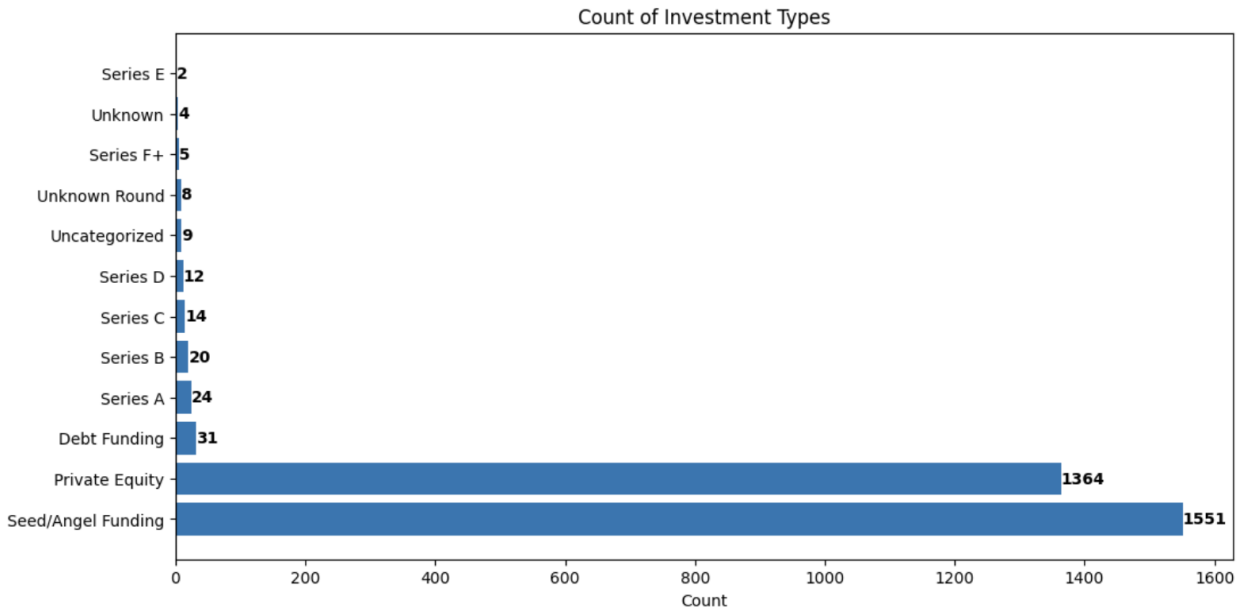
Appendix A — Figure 2



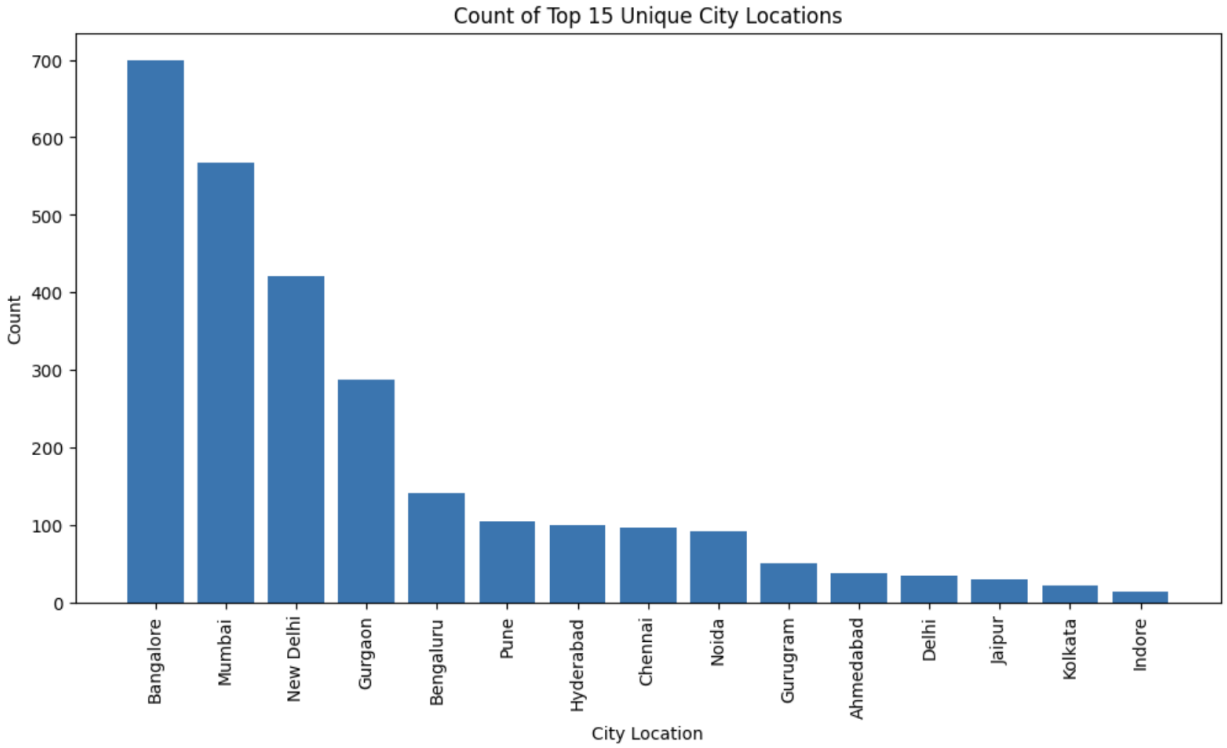
Appendix A — Figure 3



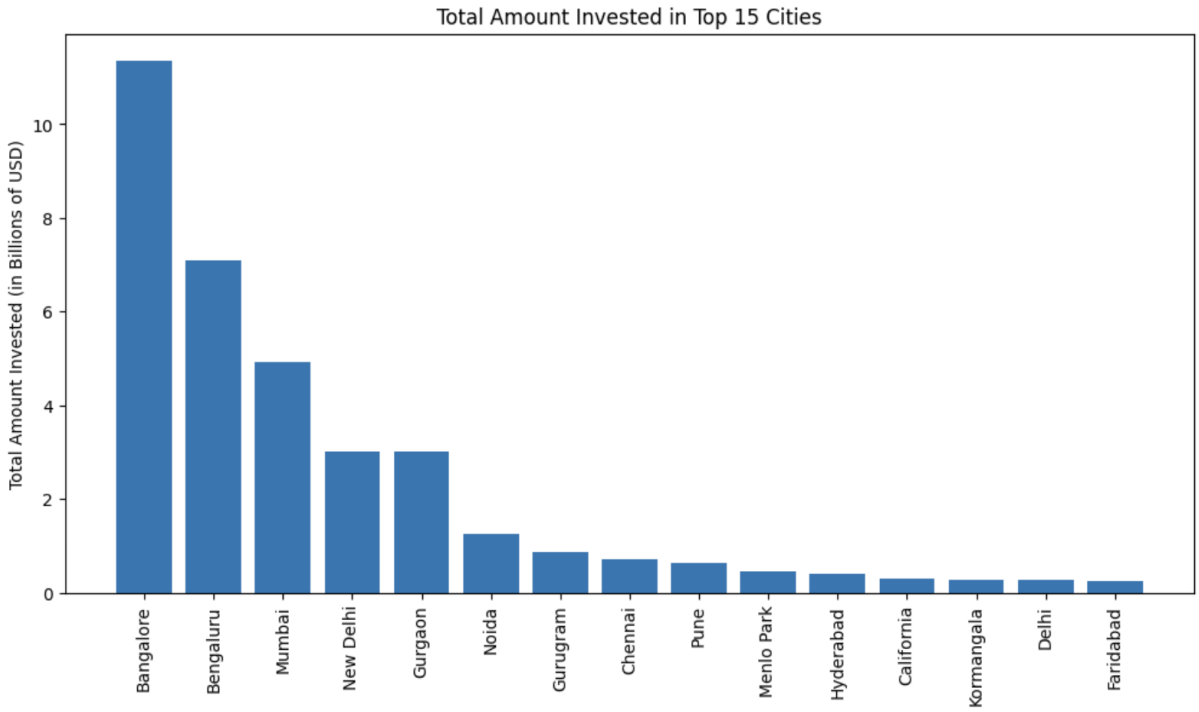
Appendix A — Figure 4



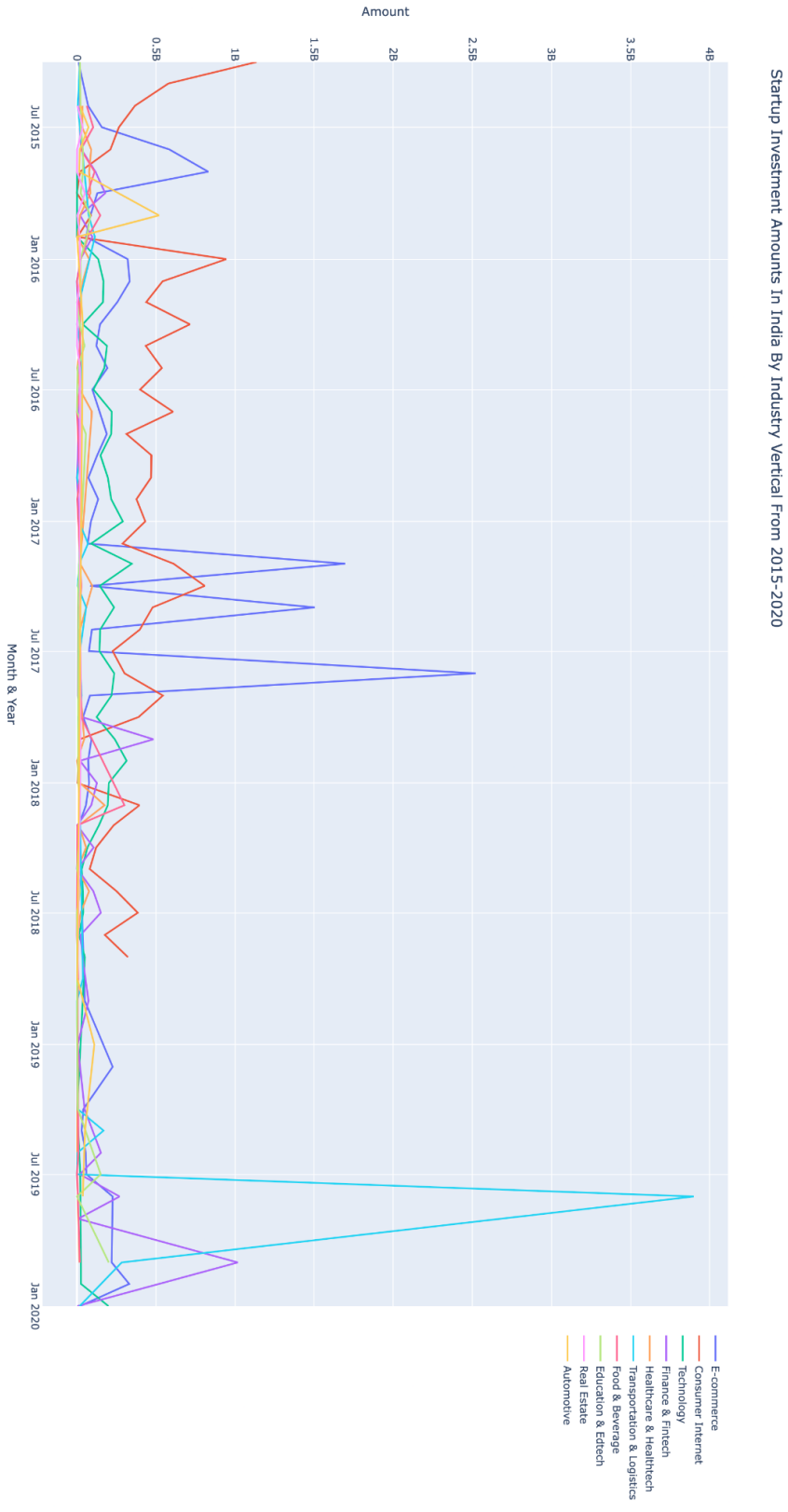
Appendix A — Figure 5



Appendix A — Figure 6



Appendix A — Figure 7



Appendix A — Figure 8: Investment by sector over time

Please create a dictionary of Those 50 investors and their respective countries

Here's a dictionary containing the top 50 investors and their respective countries. Please note that these countries are based on the typical location of the investors or their headquarters, and some investors may have global operations.

python Copy code

```python
top_50_investors_countries = {
    "Westbridge Capital": "India",
    "Softbank": "Japan",
    "SoftBank Group": "Japan",
    "Vijay Shekhar Sharma": "India",
    "Steadview Capital and existing investors": "India",
    "Tiger Global": "United States",
    "SoftBank Vision Fund": "Japan",
    "Sequoia Capital": "United States",
    "Tencent Holdings": "China",
    "Ant Financial": "China",
    "DST Global": "Russia",
    "eBay": "United States",
    "Microsoft": "United States",
    "Tiger Global Management": "United States",
    "Bennett Coleman and Company Ltd (BCCL)": "India",
    "Alibaba": "China",
    "Altimeter Capital": "United States",
    "Accel Partners": "United States",
    "Alibaba Group": "China",
    "SoftBank Group Corp": "Japan",
    "Warburg Pincus": "United States",
    "Naspers": "South Africa"
```

Stop generating

Appendix A — Figure 9