INDIA'S START-UP ECOSYSTEM

Introduction:

The startup ecosystem in India has grown significantly in recent years as a result of the influx of capital from diverse investors. Understanding the main trends and insights of the Indian startup ecosystem is crucial for anyone involved in the business. Based on data gathered from 2018 to 2021, we will address five important issues about the Indian startup environment in this post.

Overview:

This paper offers insights into the Indian startup ecosystem by responding to five important questions using information gathered between 2018 and 2021. It talks about the most well-funded startups, significant investors, the most well-funded industries, the trend in funding over time, and the variance in funding received by entrepreneurs in various Indian locations.

Methodology:

We employed the widely used methodology for data mining and analytics known as the CRoss Industry Standard Procedure for Data Mining (CRISP-DM) to analyze the Indian startup ecosystem. There are six primary stages to the process, which are as follows:

1. **Business Understanding**: We outlined the problem statement and analytical goals at this stage. Based on information gathered from 2018 to 2021, we sought to answer five crucial questions in order to offer insights about the Indian startup ecosystem.

2. **Data Understanding**: In this stage, we gathered and evaluated data from numerous sources, including Crunchbase, a top startup data platform. We gathered information on startup funding, investors, and the industries that received the most funding.
3. **Data preparation**: Using Python packages like ***pandas***, ***numpy***, and ***summarytools***, we cleaned and pre-processed the data at this stage. We dealt with missing data, got rid of duplicates, and formatted the data for analysis.
4. **Modelling:** At this stage, we analysed the data using machine learning techniques to spot trends and patterns. To examine the data, we used a variety of statistical methods, including regression analysis.

5. **Evaluation**: In this step, we assessed the analysis's findings and made sure they aligned with our study's goals. We might examine the reliability of our results by contrasting them with those of earlier research.
6. **Deployment**: At this stage, we made our findings accessible to stakeholders, including investors, business owners, and policymakers, so they could use them to make educated decisions regarding the Indian startup ecosystem. We did this by presenting our findings as charts, tables, and reports.

We made sure that our analysis was thorough, systematic, and transparent to render our conclusions accurate and useful by adhering to the CRISP-DM approach.

Questions & Hypothesis:

Q1. What are the startups that received the highest funding in each year?

Recent years have witnessed some incredible financing rounds in the Indian startup scene. Alteria Capital became the most well-funded startup in India in 2021 after securing a startling $150 billion in capital. Reliance Retail Ventures Ltd., which raised $70 billion, came in second place in 2020. The two firms with the most money in 2018 and 2019 were Swiggy and Oyo, with funding totalling $1 billion and $693 million, respectively. (See fig.1)

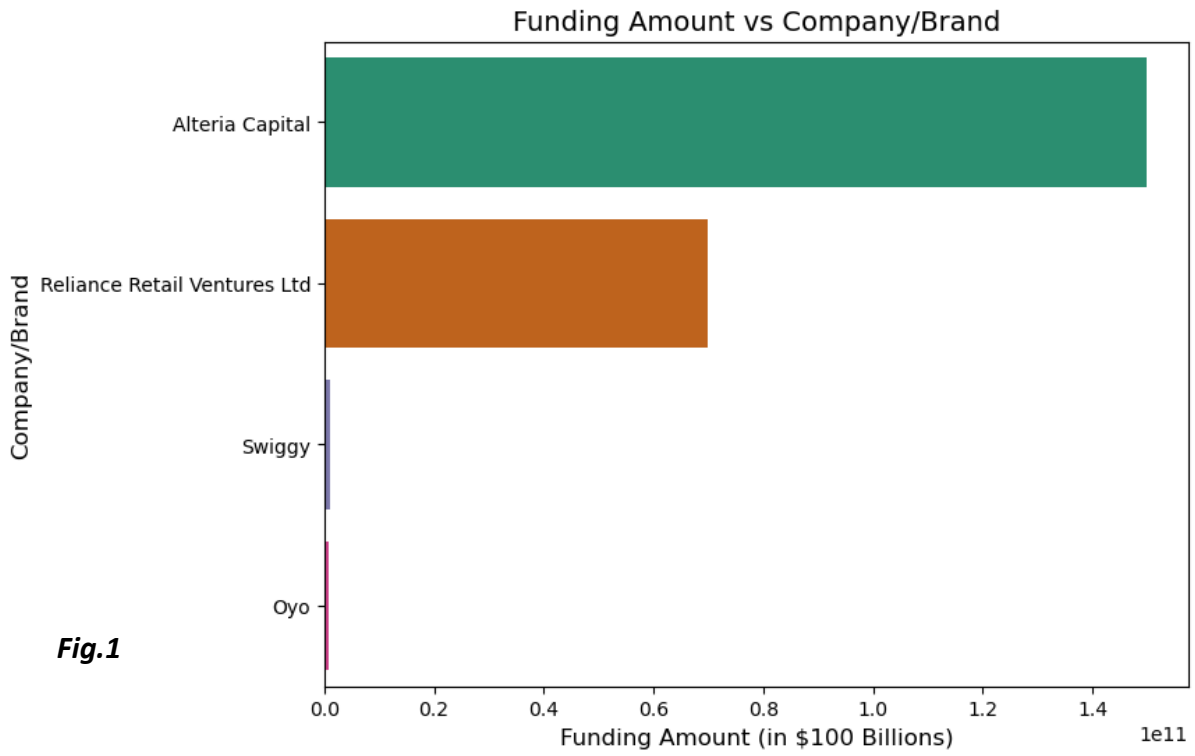

Fig.1

The above visualization from Fig.1 answers Question 1 by showing the startups that received the highest funding in each year. The result is as follows:

1. In the Year 2021 the Company/Brand Alteria Capital received the highest funding of $150,000,000,000.00
2. This was followed by the Year 2020 and the Company/Brand was Reliance Retail Ventures Ltd getting funding of $70,000,000,000.00
3. The third was in the Year 2018 by the Company/Brand called Swiggy receiving funding of $1,000,000,000.00
4. The last was in the Year 2019 by the Company/Brand called Oyo which received funding of $693,000,000.00

Q2. Who are the major investors in the Indian start-up ecosystem and what is the amount of funding provided by them?

A number of notable fundraising rounds have recently occurred in the Indian startup sector. The highest-funded startup in India in 2021 was Alteria Capital, which raised an astounding $150 billion. Reliance Retail Ventures Ltd. came in second in 2020 with $70 billion in funding. With $1 billion and $693 million in investment, respectively, Swiggy and Oyo were the most well-funded startups in 2018 and 2019.

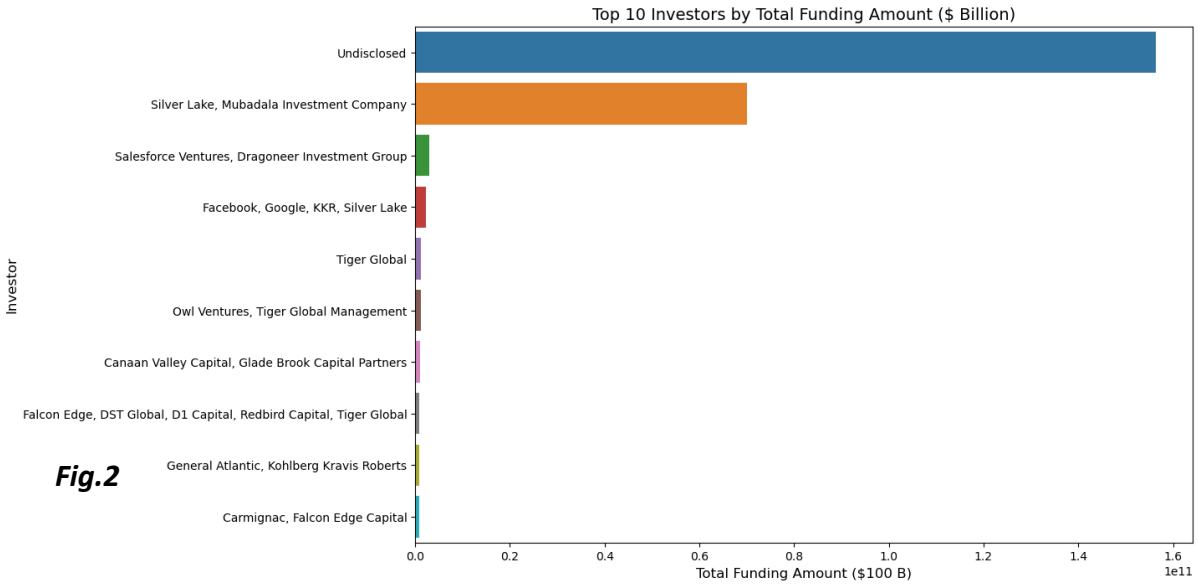

Fig.2

The above visualization from Fig.2 shows the major investors in the Indian start-up ecosystem and the amount of funding in Billions provided. The first 10 major Investors are as follows:

1. Undisclosed $156,355,472,938.00
2. Silver Lake, Mubadala Investment Company $70,000,000,000.00
3. Salesforce Ventures, Dragoneer Investment Group $3,000,000,000.00
4. Facebook, Google, KKR, Silver Lake $2,200,000,000.00
5. Tiger Global $1,217,000,000.00
6. Owl Ventures, Tiger Global Management $1,200,000,000.00
7. Canaan Valley Capital, Glade Brook Capital Par... $1,000,000,000.00
8. Falcon Edge, DST Global, D1 Capital, Redbird C... $840,000,000.00
9. General Atlantic, Kohlberg Kravis Roberts $800,000,000.00
10. Carmignac, Falcon Edge Capital $800,000,000.00

Q3. Which sectors or industries received the highest amount of funding in India from 2018 to 2021, and which sector received the highest amount of funding during this period?

Several segments of the Indian startup ecosystem have experienced substantial growth. The Fintech industry attracted the most capital, totalling $153.9 billion between 2018 and 2021. With $70.5 billion in funding, the retail industry was the second-highest funded sector. Aside from e-commerce, other industries that attracted a lot of money during this time included edTech and tech firms.

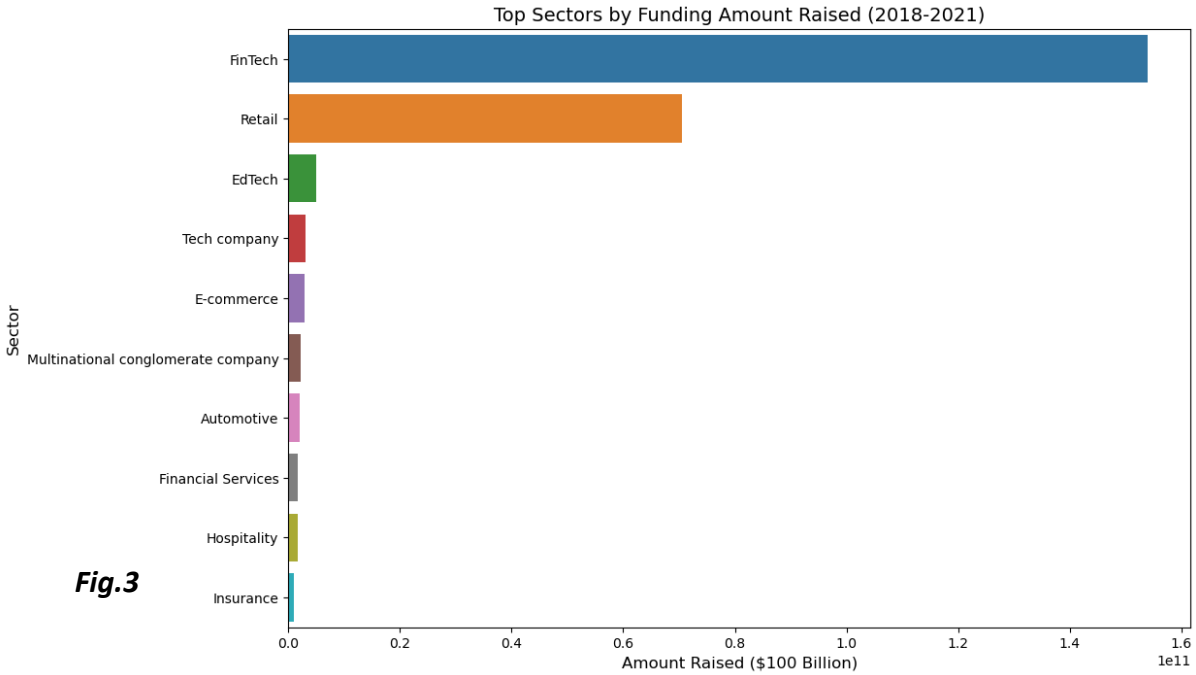

Fig.3

The above visualization from Fig.3 answers Question 3. which finds out the sectors or industries that received the highest amount of funding in India from 2018 to 2021, and which sector received the highest amount of funding during this period. Here the Bar Chart shows the top 10 Sectors as follows:

1. FinTech $153,915,410,000.00
2. Retail $70,547,020,351.00
3. EdTech $4,967,618,330.00
4. Tech company $3,028,700,000.00
5. E-commerce $2,898,052,000.00
6. Multinational conglomerate company $2,200,000,000.00
7. Automotive $2,130,083,041.00
8. Financial Services $1,780,925,146.00
9. Hospitality $1,628,903,099.00
10. Insurance $1,099,650,000.00

Q4. What is the trend in the amount of funding received by Indian startups over the years, and is there a correlation between the year of startup and the amount of funding received?

The Indian startup ecosystem is expanding at a rapid pace. The total funding received in 2018 was $4.7 billion, which is expected to rise to $180.2 billion by 2021. However, funding was

down slightly in 2019, with only $2.6 billion being received. The correlation coefficient between the year of startup and the amount of funding received was 0.0144, indicating that the two variables have no strong correlation.

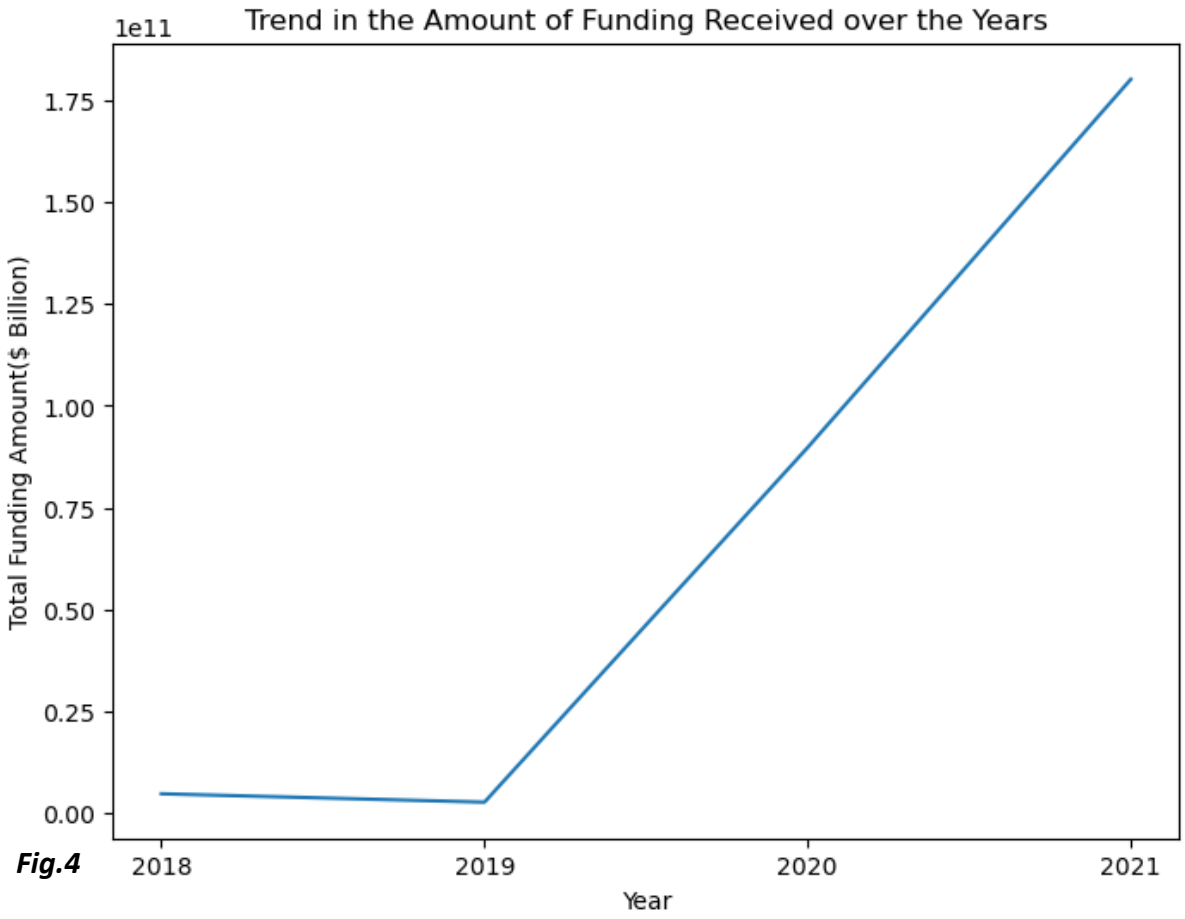

Fig.4

The Line Graph in Fig.4 shows the trend in the amount of funding received by Indian startups over the years.

- Here we see that there was a downward trend from 2018 to 2019 but thereafter, a steady upward trend from 2019 to 2021.

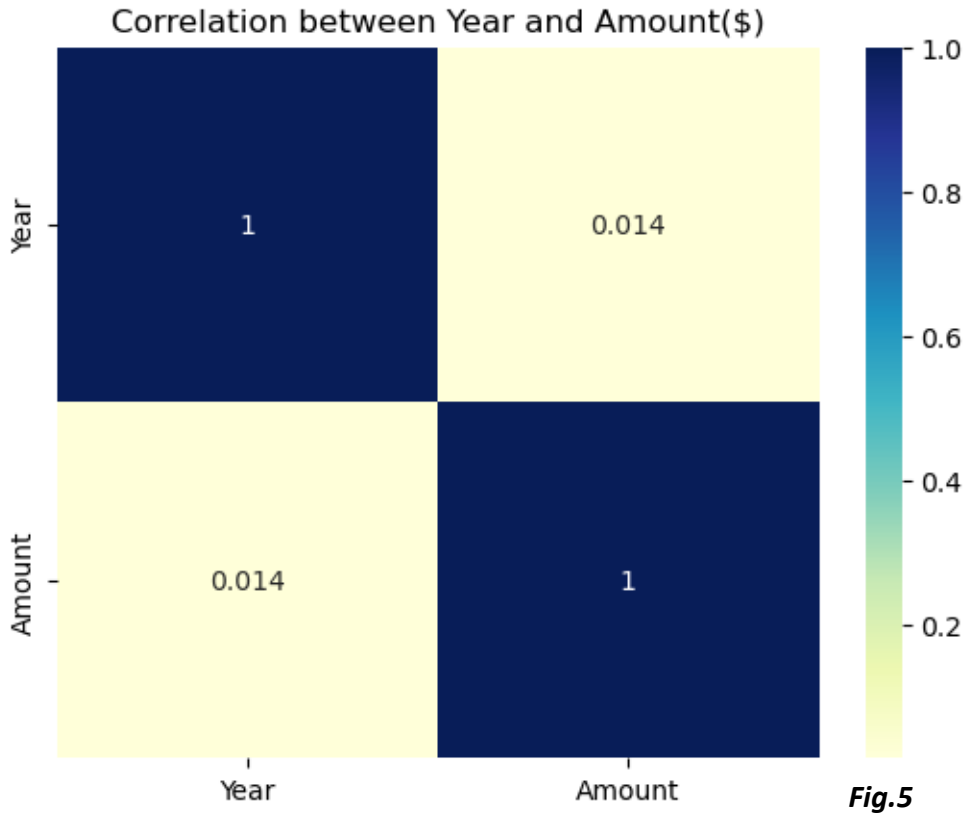

Fig.5

The Correlation Matrix in Fig.5 shows that there was a very small positive correlation of only 0.014 between the year of startup and the amount of funding received.

A correlation coefficient is a statistical measure of the strength and direction of the relationship between two variables. It can range from -1 to 1, where -1 indicates a perfect negative correlation (as one variable increases, the other decreases), 0 indicates no correlation, and 1 indicates a perfect positive correlation (as one variable increases, the other also increases).

In this case, the correlation coefficient between the year of startup and the amount of funding received is 0.014. This is a very small positive correlation, indicating that there is a slight tendency for startups that were founded later to receive slightly more funding. However, the correlation is so weak that it is unlikely to be practically significant or meaningful in terms of predicting funding amounts based on the year of startup alone.

Q5. How many new startups are formed yearly, and is there a difference in the amount of funding received by startups in different regions of India?

The number of new startups formed in India each year has been steadily increasing. In 2021, there were 1028 new startups, up from 351 in 2018. With $230.3 billion in funding, Mumbai was the region with the most funding. With $24.6 billion in funding, Bengaluru was the second-highest funded region. The amount of funding received by startups in different regions of India varied significantly.

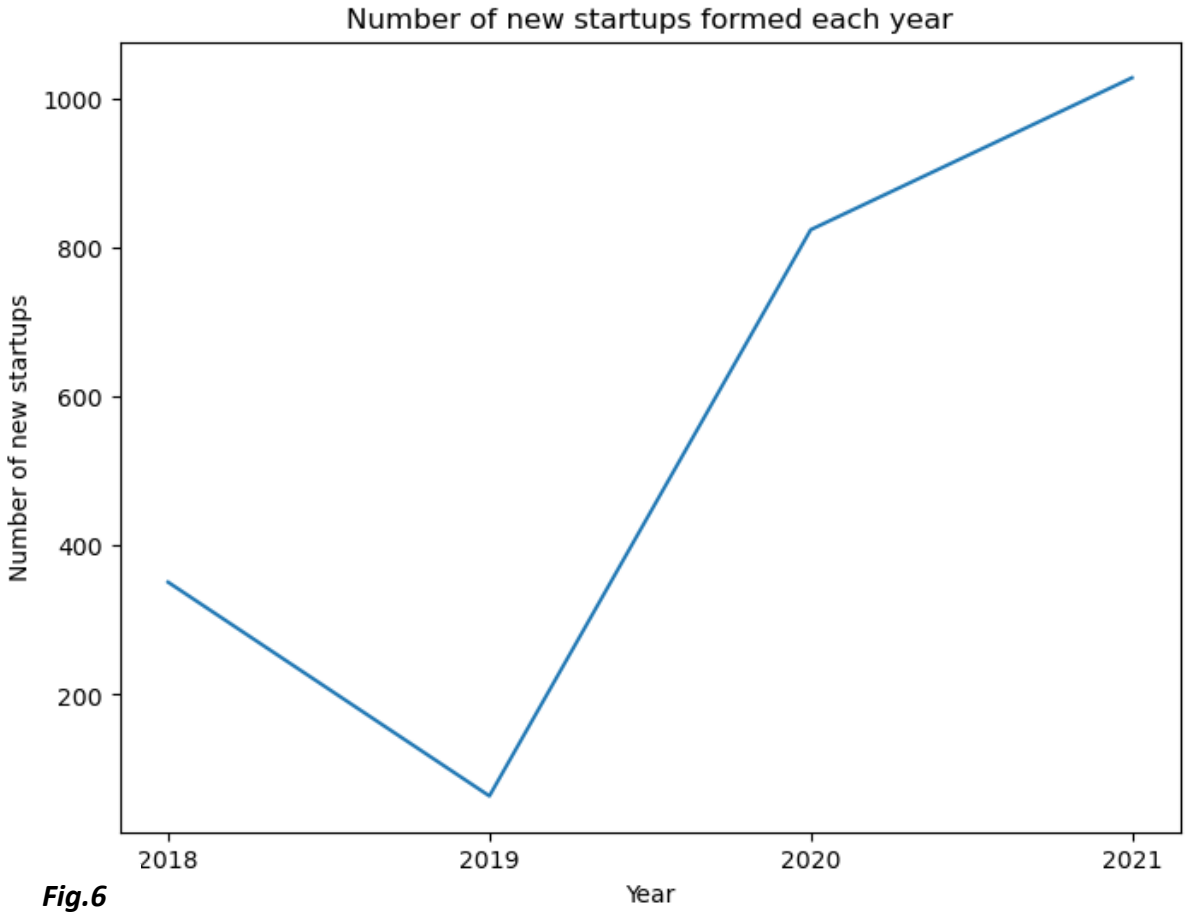

Fig.6

The Line Graph in Fig.6 shows the number of new startups formed each year as follows:

- In 2018 we had 351 new Start-ups
- In 2019 we had 64 new Start-ups
- In 2020 we had 824 new Start-ups, and
- In 2021 we had 1028 new Start-ups

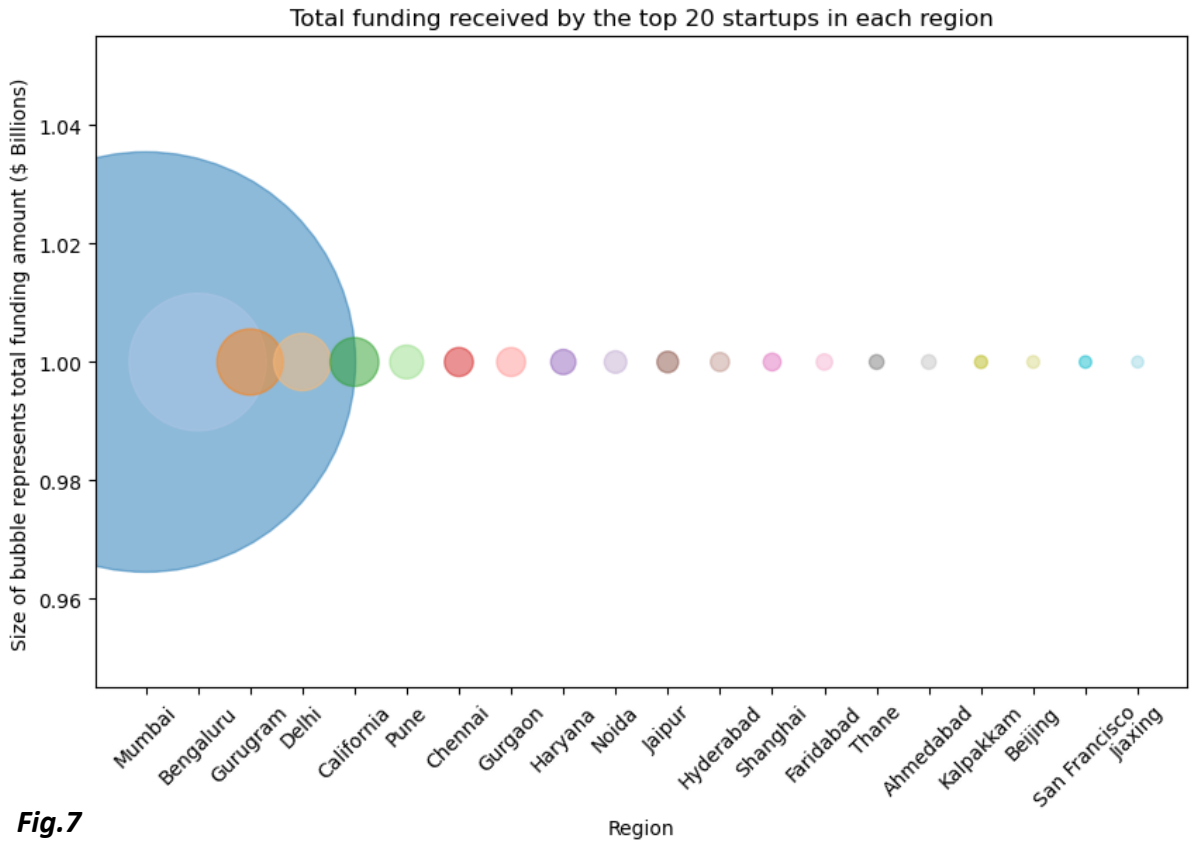

Fig.7

The Bubble Chart in Fig.7 shows the Top 20 total funding amount received by startups by region as follows:

- Mumbai $230,293,044,639.23
- Bengaluru $24,637,387,455.00
- Gurugram $5,673,012,500.00
- Delhi $4,244,721,053.60
- California $3,081,300,000.00
- Pune $1,469,597,088.00
- Chennai $1,080,621,130.00
- Gurgaon $1,069,226,978.00
- Haryana $815,156,234.00
- Noida $648,642,673.00
- Jaipur $592,605,848.00
- Hyderabad $462,276,615.00
- Shanghai $400,000,000.00
- Faridabad $337,119,883.00
- Thane $272,480,351.00

- Ahmedabad $267,745,494.00
- Kalpakkam $210,000,000.00
- Beijing $200,000,000.00
- San Francisco $193,700,000.00
- Jiaxing $176,000,000.00

Hypothesis

- Ho: The amount of funding received by Indian startups has NOT changed over the years.
- H_1: The amount of funding received by Indian startups has changed over the years.

From the results, it can be concluded that:

1. The p-values suggests that:
    - there is a significant difference between the mean Amount for the years 2018 and 2019 (p-value=0.015)
    - However, there is not a significant difference between the mean Amount for the years 2019 and 2020 (p-value=0.845), or between 2020 and 2021 (p-value=0.719).
    - Therefore, it is right to conclude that there was a **significant increase in the mean Amount from 2018 to 2019**, but there was no significant change from 2019 to 2020, or from 2020 to 2021.
2. The ANOVA result compares the mean funding amount across all years. The PR(>F) value of 0.91 indicates that the overall difference in funding across all years is not statistically significant.

As a result, there has been no significant change in the amount of funding received by startups over the years. Therefore, we are unable to reject the Null Hypothesis.

- The t-test and ANOVA results suggest that there may be a difference in the funding amounts received in 2018 and 2021, but more analysis is needed to confirm this. We could also explore other factors that may influence the funding amounts received by startups, such as location, industry, and business model, to gain a deeper understanding of the startup ecosystem.

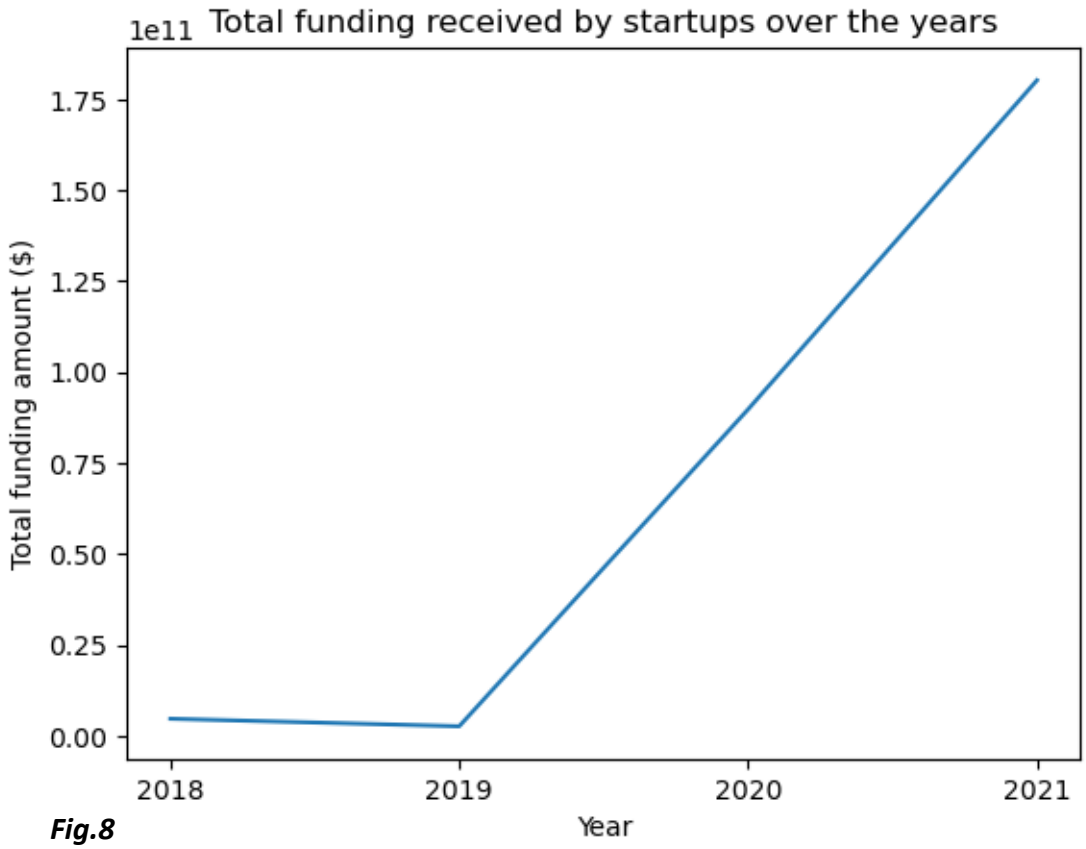

Fig.8

The above line graph in Fig.8 shows that there was a decline in total funding from 2018 to 2019 then a steady increase in funding from 2019 to 2021.

Results:

In recent years, the Indian startup ecosystem has seen some remarkable funding rounds, with Alteria Capital securing the largest funding round of $150 billion in 2021. The top investors are Silver Lake and Mubadala Investment Company, which have invested $70 billion in the Indian startup ecosystem. From 2018 to 2021, the fintech sector received the most funding, totaling $153.9 billion. The total funding received by Indian startups has been steadily increasing, with a slight decrease in 2019, and is expected to reach $180.2 billion by 2021. The year of startup and the amount of funding received by Indian startups do not have a strong correlation.

Implications:

In recent years, the Indian startup ecosystem has seen some remarkable funding rounds, with Alteria Capital securing the largest funding round of $150 billion in 2021. The top investors are Silver Lake and Mubadala Investment Company, which have invested $70 billion in the Indian startup ecosystem. From 2018 to 2021, the fintech sector received the most funding, totaling $153.9 billion. The total funding received by Indian startups has been steadily increasing, with a slight decrease in 2019, and is expected to reach $180.2 billion by 2021. The year of startup and the amount of funding received by Indian startups do not have a strong correlation.

Conclusion:

The Indian startup ecosystem has been rapidly expanding, with significant funding from a variety of investors. With a total of $153.9 billion in funding, the fintech sector has been the most well-funded. The total funding received in the Indian startup ecosystem has been steadily increasing, reaching $180.2 billion in 2021. The year of startup and the amount of funding received by Indian startups do not have a strong correlation. The region with the most funding was Mumbai, followed by Bengaluru. Overall, the Indian startup ecosystem provides numerous opportunities for both investors and entrepreneurs, and this trend is expected to continue.