Annexure-II

Cover Page

Startup Ecosystem and Investment Trends In India

A Project Report

Submitted in partial fulfilment of the requirements for the

Award of the degree of

(in Times New Roman, <font size14>)

Master of Computer Applications

By

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Centre for Distance and Online Education

LOVELY PROFESSIONAL UNIVERSITY

PHAGWARA, PUNJAB

Year

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Annexure-III

Declaration by the Student

To whom-so-ever it may concern

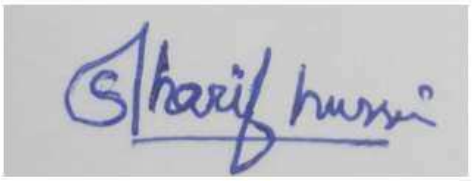
I, **Md. Sharif Hussain**, **Registration Number 322200634**, hereby declare that the work done by me on "**Startup Ecosystem and Investment Trends In India**", is a record of original work for the partial fulfilment of the requirements for the award of the degree, **Master of Computer Applications**.

Name of the Student (Registration Number)

Md.Sharif Hussain

322200634

Signature of the student



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I extend my sincere appreciation to my friends, whose support, collaboration, and constructive feedback have been invaluable. Your companionship made this journey more enjoyable and fulfilling.

Thank you all for being an integral part of this accomplishment.

Chapter 1

Introduction

1.1 Overview of the Startup Ecosystem in India

India's startup ecosystem witnessed remarkable growth from 2017 to 2022, becoming the world's third-largest startup hub. Key sectors such as fintech, edtech, healthtech, SaaS, and e-commerce drove this expansion, fueled by innovation, government support, and increasing internet penetration. Initiatives like Startup India and reforms such as easier tax norms and streamlined compliance boosted entrepreneurial activity.

Investment Trends

1. **2017–2019:** Steady growth with venture capital and private equity investments increasing. Early-stage funding was dominant, but late-stage funding gained momentum.
2. **2020:** Despite COVID-19, investments pivoted toward resilient sectors like edtech (Byju's, Unacademy) and healthtech. Investor interest in digital transformation grew.
3. **2021:** A record-breaking year, with startups raising over $1.1 billion. India produced 44 unicorns, driven by sectors like fintech (Razorpay, Cred) and e-commerce (Meesho, Lenskart).
4. **2022:** A cooling-off period due to global economic uncertainties. Funding shifted to profitability-focused startups, though India's resilience continued to attract significant investments.

The period demonstrated India's ability to foster innovation and adapt to dynamic global trends, solidifying its position as a global startup powerhouse.

1.2 Importance of the Project:

1. **Understanding the Growth Trajectory**
This project helps in analyzing the significant growth and transformation of India's startup ecosystem over the last few years. By understanding investment trends from 2017 to 2022, it provides insights into how startups have evolved in response to market demands, technological advancements, and the changing regulatory environment. This allows entrepreneurs, policymakers, and investors to track the trajectory and strategize for future growth.

2.Identifying Key Sectors of Growth
The project sheds light on which sectors have attracted the most investment and innovation, such as fintech, edtech, healthtech, and e-commerce. This understanding is crucial for entrepreneurs seeking to enter high-growth industries, and for investors looking to make informed decisions about which sectors have the potential for maximum returns in the coming years.

3. Impact of Government Initiatives
Through this analysis, the project highlights the role of government initiatives like Startup India in driving the entrepreneurial spirit. It underscores the importance of favorable policies, financial incentives, and reforms that have helped reduce barriers to entry for startups and attracted both domestic and foreign investments, fostering an environment conducive to innovation and business development.

Investment Trend Analysis for Strategic Decision-Making

The project provides an in-depth study of the investment patterns over the last five years, including venture capital, private equity, and angel investments. By understanding these trends, investors and venture capitalists can adjust their strategies to focus on industries with high potential for growth, and entrepreneurs can align their business models with market expectations and investor preferences.

Navigating Economic Uncertainties

The COVID-19 pandemic and global economic shifts had a profound impact on India's startup ecosystem. This project explores how startups adapted during uncertain times, focusing on sectors that proved resilient during economic downturns, such as healthtech and edtech. This knowledge helps in forecasting the adaptability and resilience of the ecosystem in the face of future global challenges.

Contribution to India's Global Positioning

By analyzing the startup ecosystem's impact on India's global standing, this project highlights how the country has become one of the largest and most attractive destinations for startup investments. Understanding these dynamics contributes to recognizing India's position in the global market and provides stakeholders with insights into how to leverage India's startup ecosystem for international partnerships, collaborations, and global expansion.

1.3 Role of Data Analytics in Understanding Investment Trends

Data analytics plays a critical role in understanding investment trends, particularly in the rapidly evolving startup ecosystem in India. By leveraging advanced analytical techniques, investors, policymakers, and entrepreneurs can make informed decisions and gain valuable insights into market dynamics, sectoral performance, and funding patterns.

1.

1. Identifying Sectoral Growth and Investment Patterns

Data analytics helps identify sectors that attract the most funding, revealing emerging trends in industries like fintech, edtech, healthtech, and e-commerce. Through data collection from funding rounds, market share analysis, and startup performance metrics, analytics can highlight high-growth sectors and areas with investment potential.

2. Tracking Investment Flows

By analyzing large datasets, including funding rounds, investor participation, and the size of investments, data analytics offers real-time insights into how capital flows into startups across different stages (seed, early, growth, and late-stage funding). This helps identify investor behavior, the concentration of investments, and the types of startups (e.g., tech-driven or product-based) that attract attention.

3. Geographical Analysis

Data analytics can also be applied to assess geographical trends in investment. It can reveal which regions or cities (e.g., Bengaluru, Delhi, Mumbai) attract the most investments, allowing investors to focus their attention on high-potential startup hubs.

4.Benchmarking and Competitive Analysis

Analytics tools can help benchmark the performance of startups against competitors in the same sector or market. Understanding where a startup stands in comparison to others in terms of funding, growth trajectory, and market share can provide strategic advantages.

1.4 Objective of This Project

The objective of this capstone project is to analyze and understand the key dynamics of India's startup ecosystem and investment landscape from 2017 to 2022. The project aims to explore various factors influencing investment trends, sectoral growth, and regional preferences. Key points of focus include:

1.Prime Locations for Sectors: Identifying and analyzing the key geographical locations in India that have become hot-spots for different startup sectors, such as Bengaluru for tech, Mumbai for fintech, and Delhi-NCR for e-commerce.

2.Investors' Priority in Sectors and Locations: Understanding the factors that influence investors' decision-making processes, including which sectors and locations are prioritized for investment by both domestic and international investors.

3.Investment Trends Over the Years: Exploring how investments evolved between 2017 and 2022, including shifts in sectoral focus and the effects of global events like the COVID-19 pandemic on funding dynamics.

4.Types of Investments and Their Impact: Investigate the different types of investments (e.g., seed funding, venture capital, private equity) and the stages at which startups typically receive investments, assessing the impact of these investments on business growth and scaling.

5.Trending Business Sectors: Identifying the sectors that attracted the most attention from investors during this period, including fintech, edtech, healthtech, e-commerce, and SaaS, and analyzing their growth patterns.

6.Investment Trends of Foreign and Domestic Investors: Comparing the trends in investments from foreign and domestic investors, including the differences in investment preferences, risk appetite, and sectoral focus.

1.5 Scope and Limitations

Scope of the Project: This capstone project will provide a comprehensive analysis of the startup ecosystem in India and the investment trends between 2017 and 2022. The scope will cover the following areas:

Startup Ecosystem Overview:

1. Key sectors driving growth (fintech, edtech, healthtech, etc.).
2. Government initiatives like Startup India and regulatory changes.
3. The role of incubators, accelerators, and venture capital firms.
4. Growth metrics such as number of startups, unicorns, and exits.

Investment Trends:

1. Analysis of funding patterns (early-stage vs. late-stage investments).
2. Sector-specific funding trends and investor preferences.
3. Impact of global economic conditions (e.g., COVID-19, inflation).
4. Role of domestic and international investors.
5. Funding amounts and growth trajectory of high-profile startups.

Key Players and Stakeholders:

1. Major investors, venture capital firms, and angel investors.
2. Successful startups and unicorns during the period (2017–2022).
3. Government policies and their impact on the ecosystem.

Limitations of the Project

Data Accessibility:
The availability and reliability of data may be limited, especially for private funding rounds or confidential investor information. Publicly available data may not reflect the full scope of investments or exit strategies.

Focus on Investment Trends:
The project will primarily focus on investment patterns rather than operational or market challenges faced by startups, limiting the scope to financial aspects rather than the broader business environment.

Geographical Focus:
The study will primarily focus on startups in metropolitan areas like Bengaluru, Delhi,

and Mumbai, which may not fully represent the startup ecosystem across the entire country, especially in smaller cities or rural areas.

Time Frame:
The project will focus on the period from 2017 to 2022, which may overlook longer-term trends that emerged post-2022 or may not capture the initial phase of certain startups or sectors.

Sector-Specific Variability:
The trends discussed will predominantly cover the high-growth sectors like fintech and edtech, while startups in less visible sectors might not be sufficiently represented in the analysis.

1.6 Tools and Methodology

Microsoft Excel
Microsoft Excel was used for **data cleaning and transformation**. The raw data, sourced from various reports and databases, was organized, filtered, and transformed into a structured format. Key operations included:

1.Data cleaning: Removing duplicates, handling missing values, and correcting inconsistencies.

2.Data transformation: Aggregating data, creating calculated fields, and categorizing data based on relevant parameters such as funding stages, industries, and investment size.

3.Data analysis: Using Excel's built-in functions and pivot tables to perform basic statistical analysis and uncover trends.

Power BI
Power BI was utilized for **data visualization**. After the data was cleaned and transformed in Excel, it was imported into Power BI to create interactive and dynamic visualizations that effectively communicated the trends in the startup ecosystem and investment landscape.
Key visualizations included:

Trend analysis: Graphs and charts to represent funding amounts over time, sectoral growth, and the emergence of unicorns.

Geographical distribution: Charts to showcase investment concentration across various states and cities in India.

Investment type analysis: Pie charts and bar graphs to differentiate between early-stage and late-stage investments and sector-wise investment distribution.

Methodology
The project followed a **quantitative research methodology**, leveraging historical data from 2017 to 2022. The analysis focused on identifying patterns, correlations,

and key drivers behind the growth of the startup ecosystem and the investment trends in India. This involved:

1.Data Collection: Gathering data from secondary sources such as government reports, market analysis, and industry surveys.

2.Data Cleaning and Transformation: Preparing the raw data for analysis using Excel.

Data Analysis: Identifying key insights and patterns from the cleaned data.

3.Data Visualization: Creating interactive dashboards and reports in Power BI to present the findings in an easily understandable format.

Chapter 2

Review of Literature

2.1 Capstone Project Overview:

This capstone project focuses on analyzing the dynamic startup ecosystem in India and the investment trends from 2017 to 2022. The objective is to explore the rapid growth of India's startup landscape, highlighting the factors contributing to its expansion and the key sectors that have attracted substantial investments. The project delves into the evolution of startup support mechanisms, government initiatives, and the changing investor landscape, including the rise of unicorns and the shift in investment focus post-COVID-19.

The study examines how innovation, digital transformation, and evolving consumer demands have shaped the Indian startup ecosystem. It also investigates the funding trends, from early-stage investments to late-stage funding, and the impact of global economic shifts on investment patterns. By providing a comprehensive overview of these trends, this project aims to offer valuable insights into the future trajectory of India's startup scene and the evolving role of investors in this thriving market.

2.2 Key Investment Trends

1.Early-Stage Investment Growth (2017-2019):
Venture capital and angel investments were predominantly focused on early-stage startups. Investors targeted innovative ideas in fintech, edtech, and e-commerce, with funding rounds in the $1-$10 million range becoming common.

2.COVID-19 Resilience and Digital Transformation (2020):
The pandemic accelerated investment in sectors like edtech, healthtech, and SaaS, as startups that enabled remote learning, telemedicine, and digital services thrived. Funding was directed towards tech-driven solutions with scalable business models.

3.Funding and Unicorn Boom (2021):
India's startup ecosystem saw massive investments, surpassing 1.1 billion, with the emergence of 44 new unicorns. Fintech, e-commerce, and SaaS became dominant sectors for funding, as investor confidence soared, seeking high-growth potential.

4.Shift Toward Profitability and Late-Stage Funding (2022):
Investment strategies became more cautious due to global economic challenges. Investors shifted focus to startups showing clear paths to profitability, resulting in more mature-stage investments and consolidation within the market.

2.3 Role of Technology in Analyzing Business Ecosystem

In analyzing the Business ecosystem and investment trends in India, technology plays a crucial role in gathering, processing, and visualizing large datasets. Tools like

Power BI and Excel can significantly enhance the accuracy and efficiency of analysis. Here's how technology contributes:

1.Data Collection & Integration: Power BI and Excel can efficiently aggregate data from multiple sources, such as investment reports, startup databases, and market trends. This helps in analyzing the growth trajectory, sectoral performance, and investor activity in the Indian startup ecosystem.

2.Trend Analysis: Both Power BI and Excel enable the visualization of historical data to identify investment patterns over the years. Through pivot tables and Power BI dashboards, you can track the rise of specific sectors (e.g., fintech, edtech) and evaluate funding trends from 2017 to 2022.

3.Real-time Insights: Power BI's real-time data integration allows users to track the latest investment developments, including funding rounds, valuations, and emerging sectors. This is crucial for understanding shifts in investor behavior and startup dynamics.

4.Predictive Analysis: Excel's advanced formulas and Power BI's machine learning capabilities can help forecast future investment trends, assisting in understanding how economic shifts and technological disruptions may impact the startup ecosystem.

5.Visualization & Reporting: Power BI offers interactive dashboards and visualizations, making it easier to present complex data in an accessible format. Investors, policymakers, and entrepreneurs can view real-time insights into startup growth and investment allocation across industries.

6.Scenario Analysis: Both tools allow for "what-if" analyses, helping to simulate different business environments and investment conditions, offering a clearer picture of potential outcomes and decision-making strategies for startups and investors.

2.4 Application of Power BI in Data Visualization

1.Data Integration and Transformation
Power BI allows seamless integration of data from multiple sources, including Excel, databases, and online APIs. For this project, data related to startup funding, sectoral performance, and investment trends can be consolidated into a single dashboard for easy comparison and analysis.

2.Trend Analysis
Power BI's powerful visualization tools enable the tracking of investment trends over time. Using line charts, bar graphs, and area charts, trends in funding over the years (2017–2022) can be visualized, highlighting periods of growth or decline in the startup ecosystem in India.

3.Sectoral Insights
Power BI can create sector-specific views using tree maps,. This helps in understanding which sectors (e.g., fintech, edtech, SaaS) have attracted the most investment and how they compare against one another, providing actionable insights for investors and entrepreneurs.

4.Investor Activity Visualization
Power BI can highlight the role of different investors, such as venture capitalists, angel investors, and private equity firms, using bar charts. It can show which investors have been most active, which sectors they are investing in, and their preferred funding stages.

6.Capital Allocation
Using Power BI's interactive dashboards, it is possible to break down funding allocation by various criteria such as stage (seed, Series A, etc.), funding size, and investor type. Excel can be used for further analysis of detailed financial metrics, such as ROI, funding growth, and portfolio performance.

7.Data Filtering and Drill-down
Power BI’s drill-down functionality enables users to explore data more deeply by filtering investment trends based on factors such as investor type, startup stage, or sector. This allows for tailored insights, making it easier to identify patterns and anomalies in the startup ecosystem.

Chapter 3

Implementation of Project

3.1 Data Collection And Preparation

Here is the methodology shown in the figure 3.1 for collecting, cleaning, transforming and visualization of data

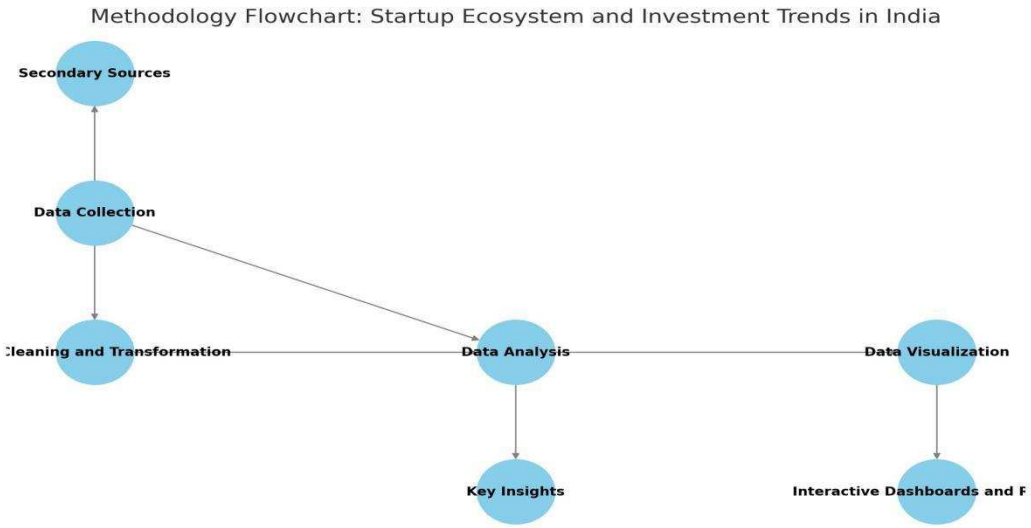

Figure 3.1

3.1.1Sources of Data : For this project, data was collected from three credible sources to analyze the startup ecosystem and investment trends in India:

Kaggle:
Kaggle provided a rich dataset with information on Indian startups, including key metrics like company size, industry sector, revenue, and founding year. This data allowed for a detailed analysis of the growth trajectory of various startups across different sectors. Kaggle datasets were used for visualizations and trend analysis in Power BI, helping to identify patterns in startup emergence and sectoral dominance.

Inc42 (Company Details):
Inc42 is a leading platform that offers in-depth insights into the startup landscape in India. The dataset from Inc42 included comprehensive information on startups' funding rounds, valuation, sectoral focus, and their market impact. This source was particularly useful for tracking the evolution of startup companies, understanding key market players, and providing details on unicorns, funding stages, and industry developments.

Tracxn (Investments and Investor Names):
Tracxn is a platform that tracks investments, investors, and funding rounds in startups. Data from Tracxn was used to gather insights into investment trends, highlighting the names of investors, funding amounts, and key rounds for startups across various stages (seed, series A, B, etc.). This data was crucial for analyzing investment patterns and investor interests in India's startup ecosystem.

S.No	Date dd/mr	Startup Nar	Industry Ve	Sub Vertica	City Locatic	Investors N	Investment	Amount in I	Remarks
1	09-01-2020	BYJU'S	E-Tech	E-learning	Bengaluru	General Atl	Private Equ	40,00,00,00	nan
2	13-01-2020	Shuttl	Transporta	App based	Gurgaon	Susquehan	Series C	1,00,48,394	nan
3	09-01-2020	Mamaearth	E-commerc	Retailer of	Bengaluru	Sequoia Ca	Series B	3,83,58,860	nan
4	02-01-2020	wealthbuck	FinTech	Online Inve	New Delhi	Vinod Khat	Pre-series A	30,00,000	nan
5	02-01-2020	Fashor	Fashion an	Embroiled	Mumbai	Sprout Ven	Seed Rounc	18,00,000	nan
6	13-01-2020	Pando	Logistics	Open-mark	Chennai	Chiratae Ve	Series A	90,00,000	nan
7	10-01-2020	Zomato	Hospitality	Online Foo	Gurgaon	Ant Financi	Private Equ	15,00,00,00	nan
8	12-12-2019	Ecozen	Technology	Agritech	Pune	Sathguru Ca	Series A	60,00,000	nan
9	06-12-2019	CarDekho	E-Commerc	Automobile	Gurgaon	Ping An Glo	Series D	7,00,00,000	nan
10	03-12-2019	Dhruva Spa	Aerospace	Satellite Co	Bengaluru	Mumbai An	Seed	5,00,00,000	nan
11	13-12-2019	Rivigo	Technology	Logistics Se	Gurgaon	SAIF Partne	Series F	2,00,00,000	nan
12	17-12-2019	Healthians	B2B-focuse	Food Soluti	Bengaluru	Paytm, NPT	Series C	1,20,00,000	nan
13	16-12-2019	Licious	E-Commerc	Online Mea	Bengaluru	Vertex Gro	Series E	3,00,00,000	nan
14	16-12-2019	InCred	Finance	Non-Bankin	Mumbai		Debt Fundi	59,00,000	nan
15	14-12-2019	Trell	Video	Experience	Bengaluru	Ruizheng In	Seed Rounc	20,00,000	nan
16	11-12-2019	Rein Games	Gaming	Real money	Noida	Manipal Ed	Seed Rounc	5,00,00,000	nan
17	20-12-2019	Lenskart.co	E-Commerc	Online Eyev	Faridabad	SoftBank Vi	Series G	23,10,00,00	nan
18	13-11-2019	Freshworks	Software	Business an	San Francis	Sequoia, Ca	Series H	15,00,00,00	nan
19	14-11-2019	Misters	Health and	Men's Heal	Gurgaon	Sauce.vc, R	Series B	4,86,000	nan
20	13-11-2019	Sunstone E	Education	Elearning	Gurgaon	Prime Venti	Seed	15,00,000	nan

Figure3.2

Figure 3.2 shows the raw data collected for the analysis of the startup ecosystem and investment trends in India

3.1.2 Data cleaning And Transformation

The data cleaning and transformation process is a critical step in ensuring the accuracy and consistency of the dataset used for the analysis of the ecosystem in India and investment trends. This process is performed to eliminate errors, remove duplicates, handle missing values, and standardize the data for further analysis.

1.Removing Duplicates:

1.I used Excel's built-in **Remove Duplicates** feature to ensure that each data point is unique. Duplicate rows or entries that could skew the analysis were removed to maintain data integrity.

2.String Similarity Method:

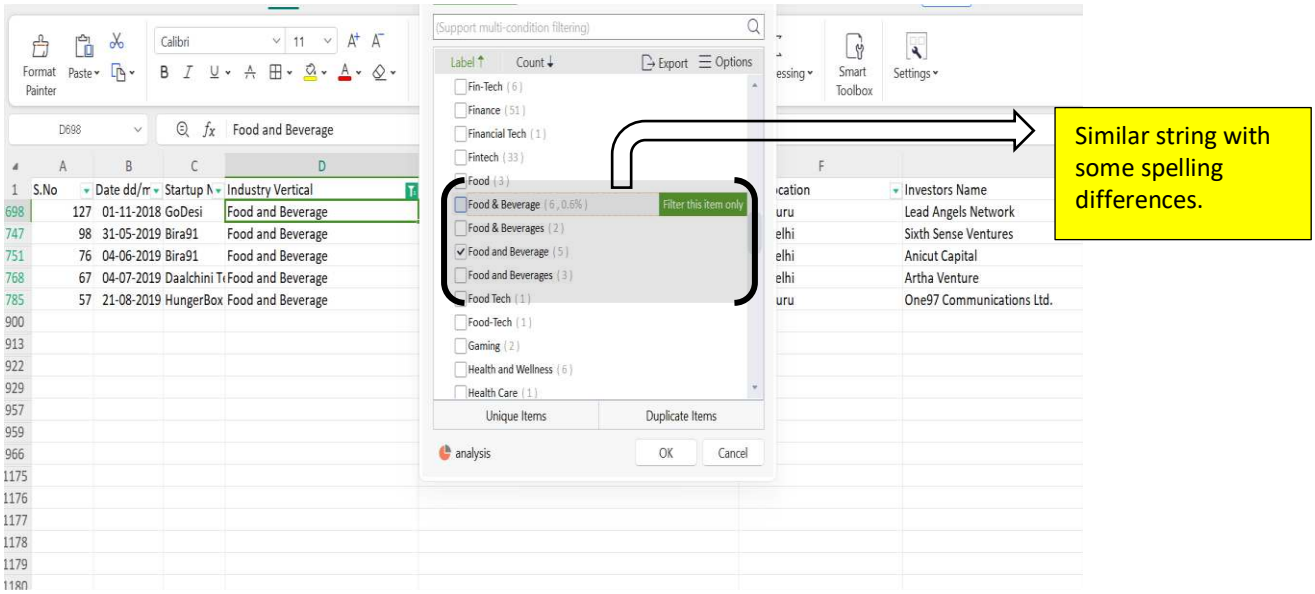

Figure 3.3 similar string problem

As shown in figure 3.3 there are similar string with some spelling differences for this have implemented a **string similarity matching method** to compare and identify similar strings or text entries. This technique is used to enhance data accuracy by detecting and handling discrepancies or variations in string formats, such as typos or different naming conventions. It ensures better data matching and consistency across the system.

2.Handling Missing Values:

Incomplete data was handled by analyzing patterns of missing values. For numerical columns, missing values were either imputed with the mean or median, depending on the distribution. For categorical data, I used mode imputation or, when necessary, removed rows with too many missing entries.

3.Data Standardization:

The dataset contained various date formats, currencies, and measurement units. I standardized these using Excel's **Text to Columns** feature, converted currencies into a single unit (USD), and ensured all date formats followed a uniform pattern.

Data Transformation:

1.Normalization: For analyzing investment trends, I normalized financial data (e.g., investments, revenues) to make them comparable across different sectors.

2.Categorization: Investment data was classified into sectors (e.g., technology, healthcare, etc.) for easier trend analysis. I used **Pivot Tables** to summarize and categorize investments by sector and time period.

3.Filtering and Sorting: I used Excel's **Filter** and **Sort** functions to remove irrelevant data points (e.g., outliers) and organize the data based on key factors like investment type, amount, or region.

3.2 Designing the power BI Dashboard :

The objective of this project was to design an intuitive and interactive Power BI dashboard that provides insights into the dynamic ecosystem in India, with a particular focus on investment trends. This dashboard is designed to offer a clear visualization of the various economic, environmental, and social factors that shape India's ecosystem, while also analyzing investment patterns across key sectors.

The dashboard consolidates data from multiple sources to provide a comprehensive view of India's growing investment landscape. Key metrics, including investment inflows, sector-wise investment distribution, and regional investment patterns, are displayed in an easy-to-understand format. The visualizations also highlight trends over time, showing how different sectors have attracted investments, and the factors influencing these trends.

Features of the dashboard include:

1.Top 5 and Bottom 5 Funded Cities: Displays the cities receiving the highest and lowest funding, helping identify regional investment trends.

2.Trending Business Categories: Highlights business categories with the highestgrowth or popularity in funding over a specific period.

3.Prime Locations: Identifies geographical hotspots for investments, showcasing areas with maximum economic activity.

4.Top 10 Foreign and Domestic Investors: Provides a ranking of the leading investors, segmented into foreign and domestic, based on the amount and frequency of their investments.

5.Investment Types: Categorizes funding into types such as equity, debt, grants, or hybrid models, illustrating the diversity in funding approaches.

6.Sectoral Investment: Breaks down investments by industry sectors (e.g., technology, healthcare, manufacturing) to highlight where capital is being allocated.

7.Investment Trends by Year: Visualizes funding patterns over the years, showcasing growth rates, peaks, and troughs in investments.

3.3 Visualization.To provide an intuitive and comprehensive analysis of investment trends, the dashboard incorporates a variety of visualizations tailored to the dataset:

1.Donut Chart for Prime Locations: A visually appealing donut chart highlights the prime locations with maximum investment activity. The chart segments the data by geographical areas, offering a quick glance at regional hotspots for investments.

2.Stacked Area Chart for Trending Business Categories: This chart illustrates the evolution of business categories over time, with stacked layers representing different categories. It provides insights into which categories have gained or lost traction in specific timeframes.

3.Clustered Bar Chart for Top 5 Most and Least Funded Cities: A clustered bar chart compares the top 5 most funded cities with the bottom 5 least funded ones. It enables a clear visual distinction between the cities receiving the highest and lowest investments, making it easier to identify regional disparities.

4.Line Chart for Business Summary Over Years: A line chart depicts the overall business investment trends over the years. This visualization helps track growth patterns, identify peak periods, and predict future trends based on historical data.

5.Treemap for Top 10 Investors: A treemap effectively showcases the top 10 investors, categorizing them by their contribution size. The hierarchical structure highlights both the major players and their relative investment proportions.

Chapter 4

Results And Discussion

Results :

Over View of Dashboard

Here is the overview of the the dashboard shown in figure 4.1

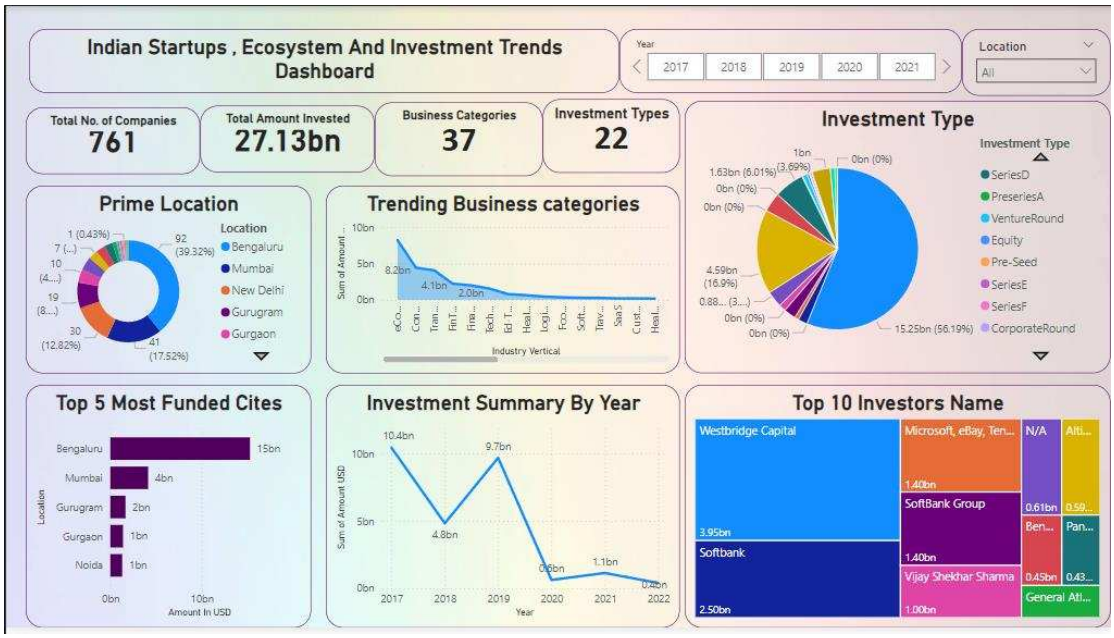

Figure 4.1

The dashboard provides a comprehensive visualization of investment trends, focusing on Indian startups and their ecosystem. It summarizes data across multiple dimensions, including funding amounts, business categories, prime locations, and key investors, offering a holistic view of the investment landscape.

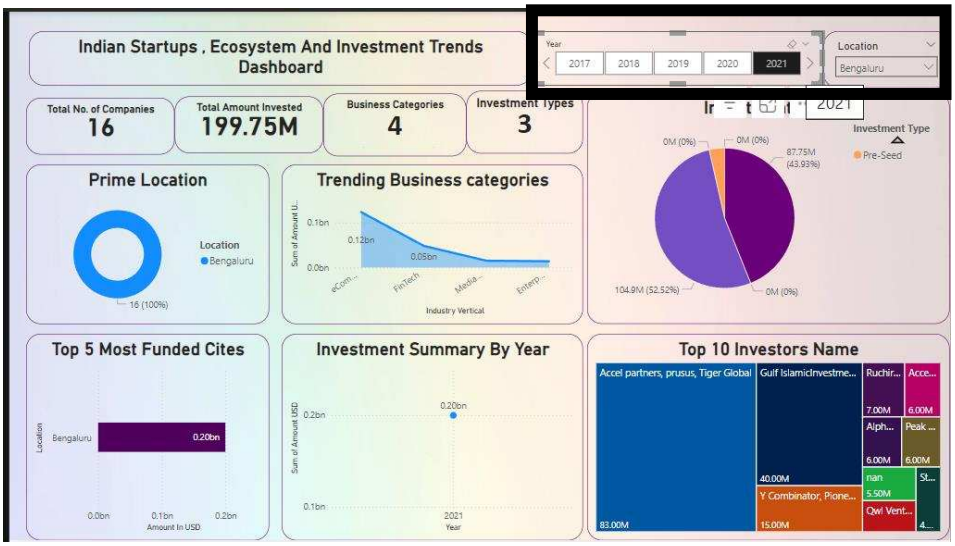

Figure 4.2

As shown in figure 4.2 this dashboard is dynamically designed with interactive features, including tiles for year-based filtering and a dropdown for city selection. Both functions are implemented using card visualization format, allowing users to easily filter and view data by year and city. This design enhances user experience by offering intuitive and flexible data exploration.

4.1: Key Metrics:

1.Total number of companies: 761

2.Total investment amount: $27.13 billion

3.Business categories: 37

4.Investment types: 22

4.2 Trending Business Categories:

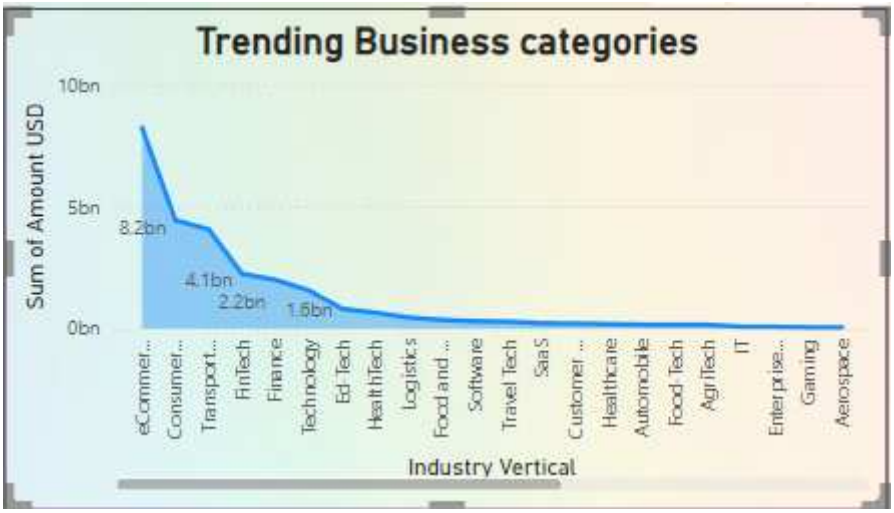

Figure4.2

Visualization : Stacked Area Chart

As shown in figure 4.2 **Trending Business Categories**, it is evident that investors are focusing heavily on certain key sectors based on the sum of investment amounts (in USD).

Top Booming Sectors:

1.E-commerce: The leading sector, attracting the highest investment of $8.2 billion. This indicates the continued growth and reliance on online retail platforms, driven by increasing internet penetration and consumer demand.

2.Consumer Goods: Securing $4.1 billion in investments, this sector ranks second. The focus here suggests investor confidence in brands catering to essential and lifestyle consumer needs.

3.Transportation: With $2.2 billion in funding, this sector remains a strong area of interest, likely fueled by logistics innovations and ride-hailing services.

4.Fintech: Garnering $1.6 billion, fintech is emerging as a critical player in the startup ecosystem. The rapid adoption of digital payment systems and financial services innovations have made it highly attractive for investors.

5.Tech and EdTech: Investments in technology and EdTech show promise as they leverage advancements in AI, machine learning, and digital learning tools.

4.3 Investment Trends

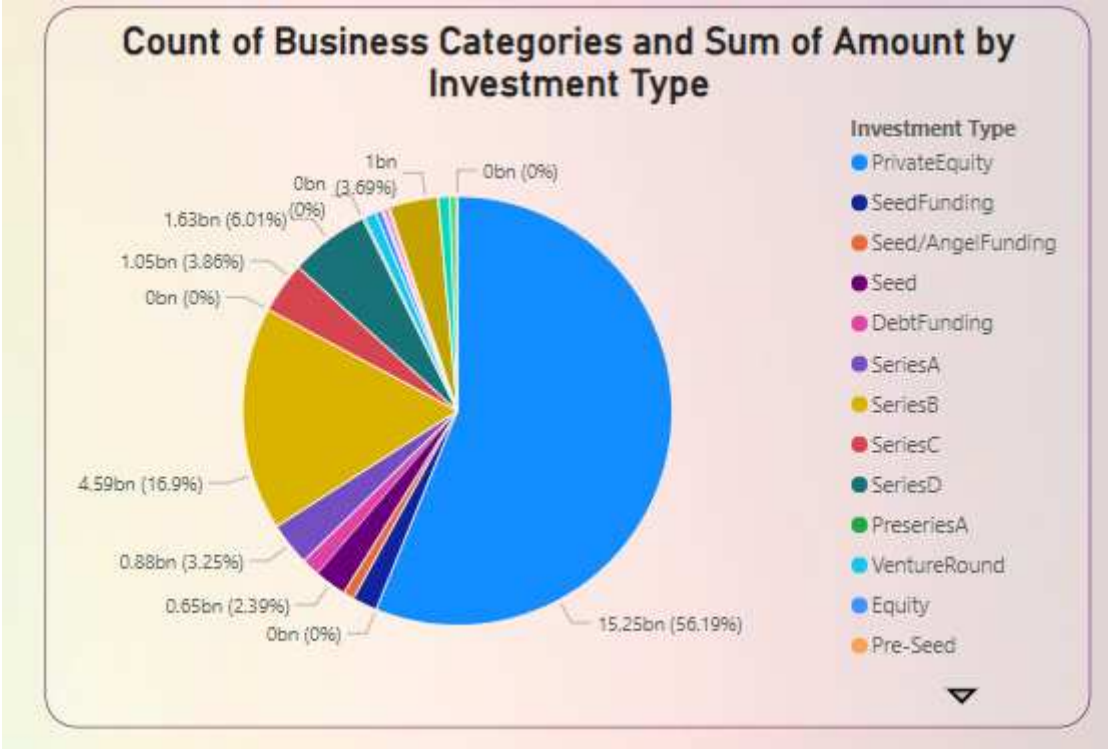

Figure4.3

Visualization: Pie Chart

As shown in Figure 4.3, private equity dominates as the most preferred investment type, comprising 56.19% of the total investments, amounting to $15.25 billion. It is followed by Series B (16.9%, $4.59 billion) and Series D (6.01%, $1.63 billion). This trend highlights a growing preference for high-risk, high-reward investments, with private equity leading due to its potential for substantial returns across diverse industries. The prominence of growth-stage funding like Series B and D further underscores investor confidence in scalable startups with proven market potential.

4.4 Foreign And Domestic Investment Circle

Figure 4.4

Visualization: Tree Map

As shown in Figure 4.4, the tree map visualizes the landscape of investments in India, categorizing the highest foreign and domestic investors. The largest portion of the map represents **West Bridge Capital and SoftBank are the top investors** the leading foreign investor, with a remarkable investment of approximately 4 billion and 2.50 billion USD. This highlights the growing interest and trust of international investors in the Indian market.

On the domestic front, **Vijay Shekhar Sharma** stands as the highest individual investor, with a **1 billion USD** investment. His contribution reflects the robust domestic investment ecosystem, emphasizing local entrepreneurial success in shaping India's financial landscape.

4.5 Top 5 most Funded Cities:

Figure 4.5

Visualization : Clustered Bar Chart

Bengaluru: Leading with a funding of 15 billion, Bengaluru stands as the top city in terms of investment. Known as the Silicon Valley of India, it has a strong presence in tech, startups, and innovation, attracting global investors.

Mumbai: With 4 billion in funding, Mumbai ranks second. As India's financial capital, Mumbai remains a hub for business, finance, entertainment, and trade, drawing significant investments from various sectors.

Gurugram: Receiving 2 billion, Gurugram (also known as Gurgaon) is a major business and IT hub near Delhi, known for its modern infrastructure, corporate offices, and presence of numerous multinational companies.

Gurgaon: Similarly, Gurgaon has attracted 1 billion in funding. It is part of the National Capital Region and is renowned for its rapid urbanization, making it a prime spot for business and real estate investments.

Noida: Matching Gurgaon with 1 billion in funding, Noida is a key player in IT, manufacturing, and real estate. It benefits from its proximity to Delhi, offering a conducive environment for business and technological growth.

This summary focuses on the funding values provided, with an emphasis on the major economic and industrial roles these cities play.

4.6 Cities with Minimal Investment:

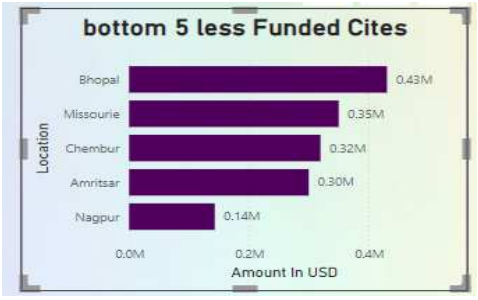

Figure 4.6

Visualization : Clustered Bar Chart

1.Bhopal: Received the highest funding among the bottom 5 cities at $0.43 million. This indicates some level of startup activity but suggests untapped potential for growth.

2.Missourie: At $0.35 million, it ranks second-lowest, reflecting minimal investment interest despite possible opportunities in tourism or local industries.

3.Chembur: Secured $0.32 million in funding, showing limited activity in this urban locality, likely overshadowed by neighboring metropolitan areas.

4.Amritsar: With $0.30 million, it reflects limited funding, possibly due to its focus on traditional sectors rather than startups.

5.Nagpur: The lowest funded city, receiving only $0.14 million, highlighting a lack of investment traction despite its potential as a logistics hub due to its central location.

The bottom 5 cities reflect significant disparities in investment distribution compared to major hubs like Bengaluru and Mumbai. These cities offer potential opportunities for investors to explore underfunded regions and sectors, particularly in traditional industries or localized innovations. Strategic efforts to improve infrastructure, policy support, and entrepreneurial ecosystems could attract more investment to these regions.

4.7 Investment Trends Trough Year :

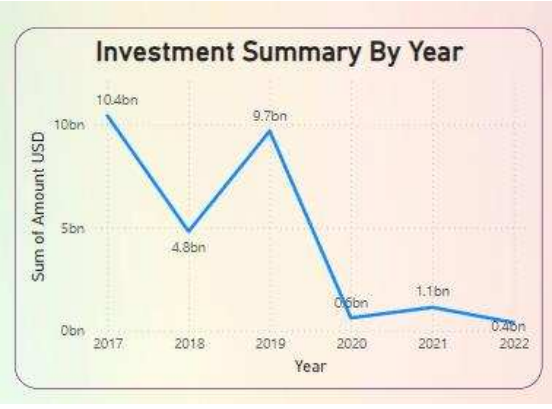

Figure 4.7

Visualization : Line Chart

As Shown in figure 4.7 Between 2017 and 2022, investment trends exhibited considerable fluctuations. In 2017, investments reached a peak of $10.4 billion, but by 2018, they had decreased by 54.6%, falling to $4.8 billion. This decline was followed by a rebound in 2019, where investments surged to $9.7 billion, reflecting a recovery in market confidence. However, the global outbreak of COVID-19 in 2020 caused a dramatic downturn, with investments dropping by 83.1% to just $1.1 billion. The effects of the pandemic continued to resonate in 2021, with investments further declining to $0.4 billion. These trends highlight the profound impact of the pandemic on global investment patterns, leading to substantial uncertainty and risk aversion in the market during this period.

Chapter 5

Conclusion

Summary of Capstone Project: Ecosystem in India and Investment Trends (2017-2022)

This capstone project provides a comprehensive analysis of India's ecosystem from 2017 to 2022, focusing on the dynamics of key sectors and the evolving trends in investments. The period from 2017 to 2022 witnessed significant changes in India's economic landscape, driven by technological advancements, policy reforms, and global market influences. The project examines these transformations, particularly how they have influenced investment flows across sectors such as technology, renewable energy, healthcare, and infrastructure.

India's investment ecosystem has been shaped by both domestic and foreign factors, with an increasing trend of global investors seeking opportunities in the country's rapidly growing markets. Key policy reforms, such as the Atmanirbhar Bharat initiative, have played a role in transforming the business environment and fostering investment confidence. The rise of digitalization, infrastructure projects, and green energy ventures are highlighted as key areas where India has experienced notable investment growth.

5.1 Key Findings from 2017-2022:

5.1.1 Technology & Startups:

1.The technology sector, especially in areas like fintech, e-commerce, and SaaS (Software as a Service), attracted substantial investment from both venture capitalists and global firms.

2.India's startup ecosystem saw exponential growth, with a rising number of unicorns and an increase in funding rounds.

3.Foreign direct investment (FDI) in the tech industry surged, largely due to India's growing digital infrastructure and government support for innovation.

5.2 Healthcare and Pharmaceuticals:

1.The healthcare sector saw a shift towards digital health, telemedicine, and biotechnology, accelerated by the COVID-19 pandemic.

2.Increased foreign investments were directed towards pharmaceutical and healthcare innovation, especially in vaccine production, which became a crucial industry during the pandemic.

5.3 Foreign Investments:

1.India's investment climate was bolstered by an increase in foreign direct investment (FDI), especially from countries like the USA, Japan, and Singapore.

2.The tech, retail, and financial sectors saw strong FDI inflows, with India emerging as a hub for global investment due to its large consumer market.

In conclusion, from 2017 to 2022, India experienced a notable shift in its investment landscape, driven by technological advancements, robust policy initiatives, and global economic shifts. These factors led to a dynamic investment environment across various sectors, with technology, renewable energy, healthcare, and infrastructure emerging as key beneficiaries. The government's proactive approach and reforms significantly enhanced India's appeal as an investment destination.

5.4 What I Learned

Data Collection and Cleaning:

Gained experience in gathering data from diverse sources such as investment reports, startup databases, from various sources like Kaggle , Inc42 and Tracxn.

Learned the importance of cleaning and preprocessing raw data to ensure accuracy and reliability.

Data Analysis:

Developed a deeper understanding of investment trends, including funding stages, sectors attracting the most investments, and geographic hotspots for startups in India.

Analyzed patterns such as funding growth over the years, major contributors (VCs, angel investors), and emerging sectors

Power BI Expertise:

Gained hands-on experience with Power BI to create interactive dashboards and reports.

Learned how to use Power BI features like DAX functions, relationships, and slicers to make dynamic visualizations.

Industry Insights:

Acquired knowledge about the challenges and opportunities in the Indian startup ecosystem.

Understood how macroeconomic factors like global trends influence investment

5.5 Challenges Faced

Data Availability and Quality:

Encountered difficulties in finding comprehensive and up-to-date datasets on Indian startups and investments.

Faced challenges with incomplete, inconsistent, or unstructured data that required extensive cleaning.

Technical Issues:

Experienced technical challenges in integrating data into Power BI or dealing with complex DAX formulas.

Managed issues like slow performance when handling large datasets in Excel or Power BI.

Complexity of Trends:

Interpreting investment trends across multiple dimensions (time, sectors, regions) was challenging due to the sheer volume of data and the dynamic nature of the industry.

Decision-Making on Visualizations:

Deciding the most effective way to represent data through charts, graphs, and KPIs in Power BI required iterative experimentation.

Time Constraints:

Limited time for project execution demanded effective prioritization of tasks and rapid problem-solving.

Interpreting Results:

Drawing actionable conclusions from data trends and linking them to real-world scenarios in the Indian startup ecosystem posed a learning curve.