

Abstract

Spark Funds wants to make investments in a few companies. The CEO of Spark Funds wants to understand the global trends in investments so that she can take the investment decisions effectively.

Business and Data Understanding:

Spark Funds has two minor constraints for investments:

- It wants to invest between **5 to 15 million USD** per round of investment
- It wants to invest only in **English-speaking countries** because of the ease of communication with the companies it would invest in
- For our analysis, we will consider a country to be English speaking only if English is one of the official languages in that country.

Strategy:

Spark Funds wants to invest where most **other investors are investing**. This pattern is often observed among early stage startup investors.

Data source: We have taken real investment data from *crunchbase.com*.

Abstract

Spark Funds' business objective :

To identify the best sectors, countries, and a suitable investment type for making investments. The overall strategy is to invest where others are investing, implying that the 'best' sectors and countries are the ones 'where most investors are investing'.

Goals of data analysis:

- **Investment type analysis:** Comparing the typical investment amounts in the venture, seed, angel, private equity etc. so that Spark Funds can choose the type that is best suited for their strategy.
- **Country analysis:** Identifying the countries which have been the most heavily invested in the past. These will be Spark Funds' favorites as well.
- **Sector analysis:** Understanding the distribution of investments across the eight main sectors. (Note that they are interested in the eight 'main sectors' provided in the **mapping file**. The two files — **companies** and **rounds2** — have numerous sub-sector names; hence, we will need to map each sub-sector to its main sector.)

Data files: companies.csv, rounds2.csv, mapping.csv

Data files details

companies.csv

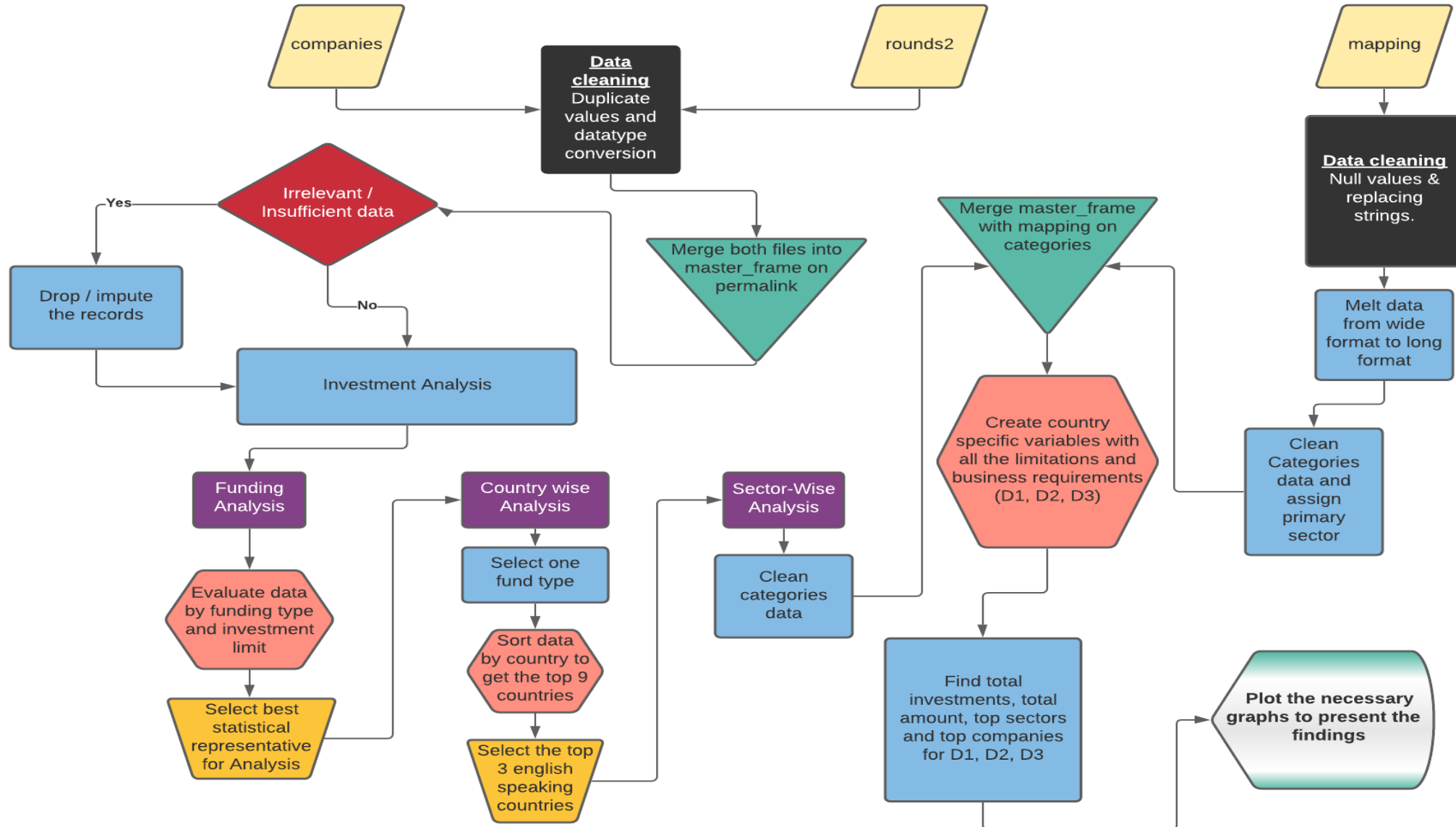
Attribute	Description
Permalink	Unique ID of company
name	Company name
homepage_url	Website URL
category_list	Category/categories to which a company belongs
status	Operational status
country_code	Country Code
state_code	State

rounds2.csv

Attributes	Description
company_permalink	Unique ID of company
funding_round_permalink	Unique ID of funding round
funding_round_type	Type of funding – venture, angel, private equity etc.
funding_round_code	Round of venture funding (round A, B etc.)
funded_at	Date of funding
raised_amount_usd	Money raised in funding (USD)

mapping.csv: This file maps the numerous **category names** in the companies table (such 3D printing, aerospace, agriculture, etc.) to eight broad **sector names**. The purpose is to simplify the analysis into eight sector buckets, rather than trying to analyse hundreds of them.

Problem Solving Methodology



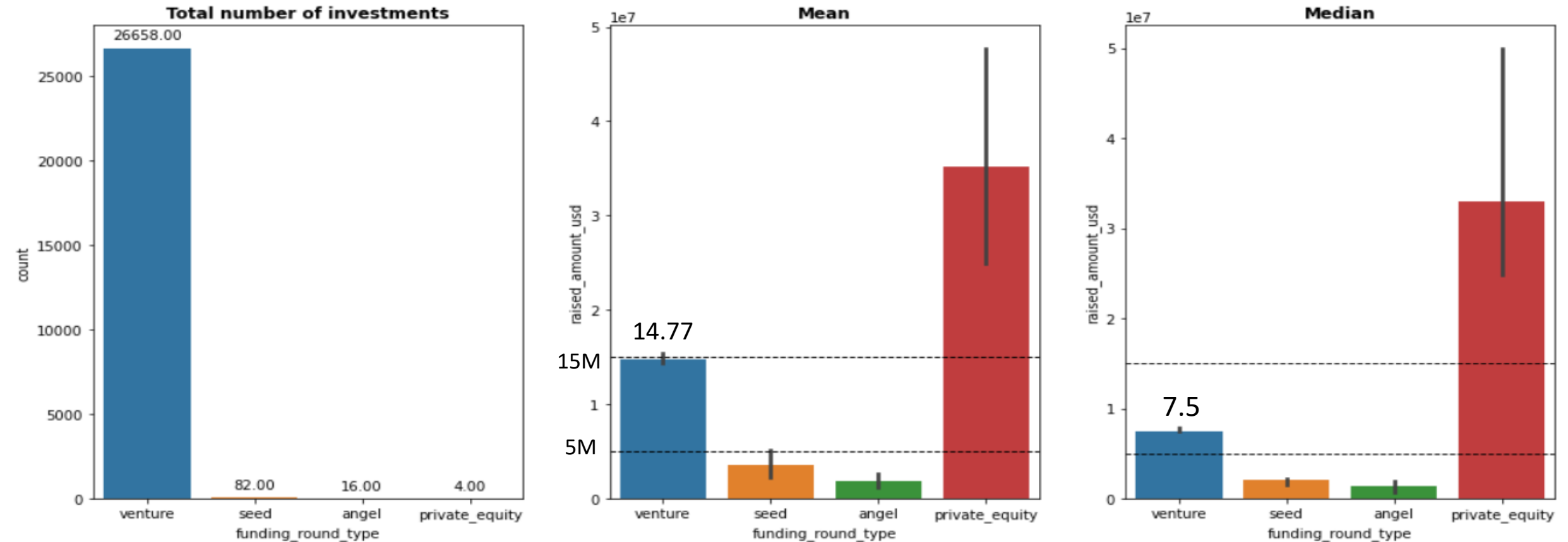
Funding Analysis

- The funding types such as seed, venture, angel, etc. depend on the type of the company (startup, corporate, etc.), its stage (early stage startup, funded startup, etc.), the amount of funding (a few million USD to a billion USD)
- Seed/angel funding refer to early stage startups whereas venture funding occurs after seed or angel stage/s and involves a relatively higher amount of investment.
- Private equity type investments are associated with much larger companies and involve much higher investments than venture type. Startups which have grown in scale may also receive private equity funding. This means that if a company has reached the venture stage, it would have already passed through the angel or seed stage/s.

Objectives of Funding Type Analysis:

- 1) Calculate the most representative value of the investment amount for each of the four funding types:
 - venture
 - angel
 - seed
 - private equity
- 2) Based on the most representative investment amount calculated above, which investment type is the most suitable for Spark Funds keeping in mind the first constraint where Sparks funds wants to invest between 5 to 15 million USD per round of investment

Funding Analysis

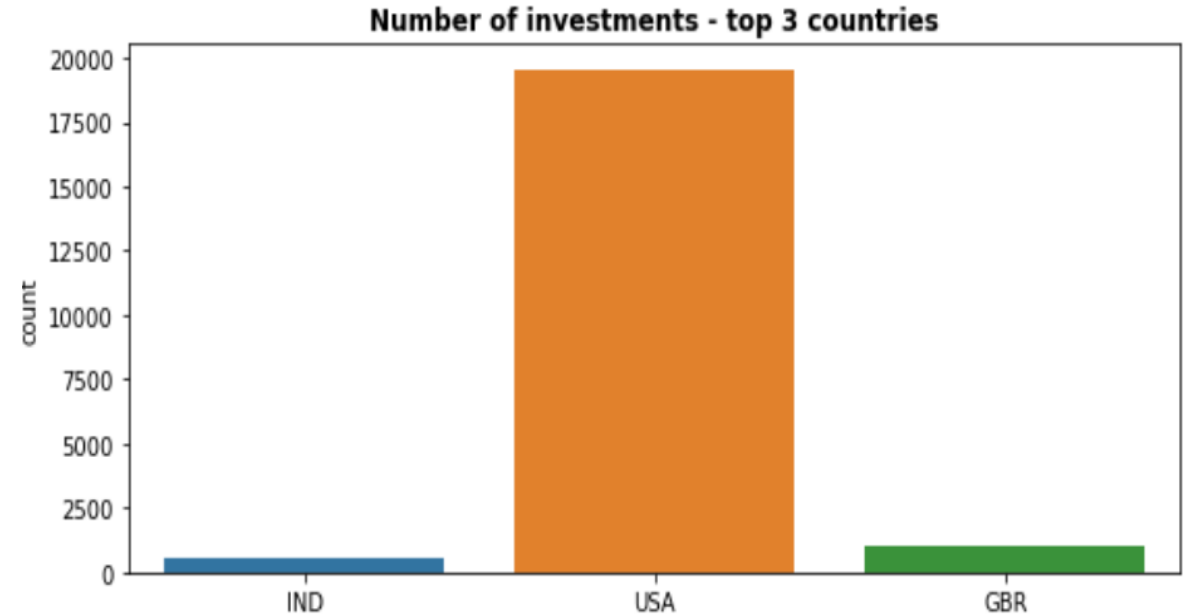
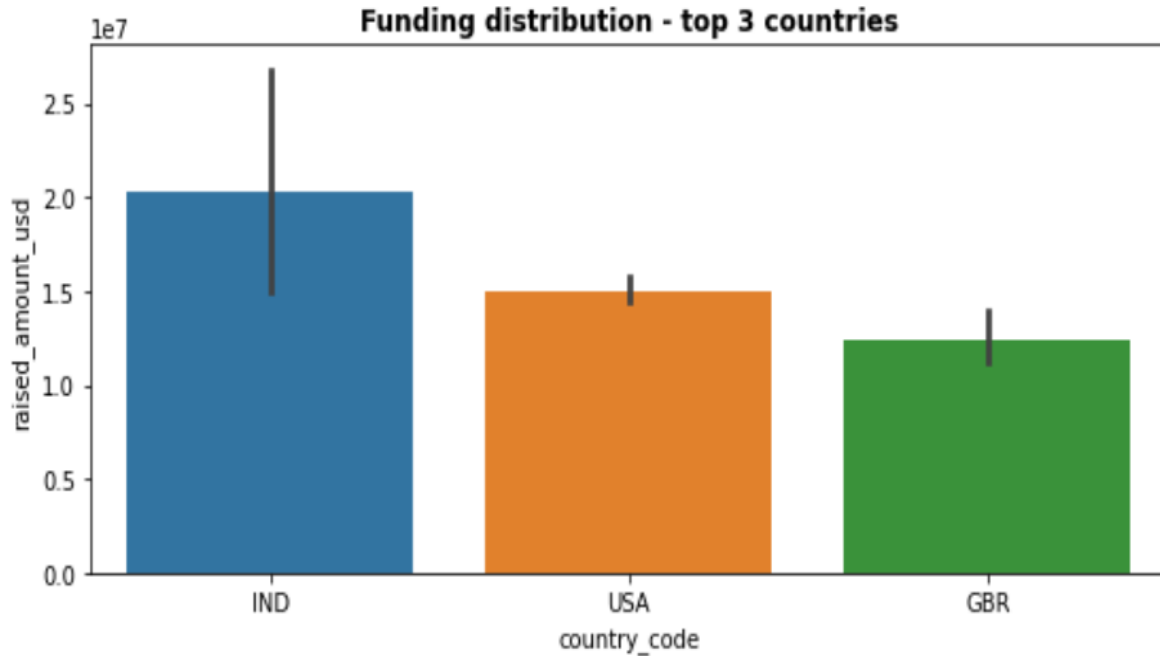


We observe that out of all the 4 funding types **“Venture”** was the most invested in having **26658 investments** in total and it also satisfies the business constraint of Spark funds investing in the range of 5 – 15 million USD as the derived mean is **14 million** (estimate) and the derived median is **7 million** (estimate).

Country-wise Analysis

- Spark Funds wants to invest in countries with the highest amount of funding for the chosen investment type.
- This is a part of its broader strategy to invest where most investments are occurring. Spark Funds wants to see the top nine countries which have received the highest total funding (across ALL sectors for the chosen investment type)
- Hence For the chosen investment type, Lets make a data frame named top9 with the top nine countries (based on the total investment amount each country has received)

Country-wise Analysis



- After some clear analysis we have inferred that USA, GBR and IND are the top 3 countries which have English as their official language
- We observe that across the top 3 English speaking countries, `India -IND` raised more amount and `USA` made more investments.

Sector-wise Analysis

- When we say sector analysis, we refer to one of the eight main sectors (named `main_sector`) listed in the mapping file (note that 'Other' is one of the eight main sectors). This is to simplify the analysis by grouping the numerous category lists (named `category_list`) in the mapping file. For example, in the mapping file, category_lists such as '3D', '3D Printing', '3D Technology', etc. are mapped to the main sector 'Manufacturing'.
- Also, for some companies, the category list is a list of multiple sub-sectors separated by a pipe (vertical bar |). For example, one of the companies' category_list is Application Platforms|Real Time|Social Network Media.
- We discuss with the CEO and come up with the business rule that the first string before the vertical bar will be considered the primary sector. In the example above, 'Application Platforms' will be considered the primary sector.
- The below mentioned are the main categories present in the data:

Automotive & Sports

Blanks

Cleantech / Semiconductors

Entertainment

Health

Manufacturing

News, Search and Messaging

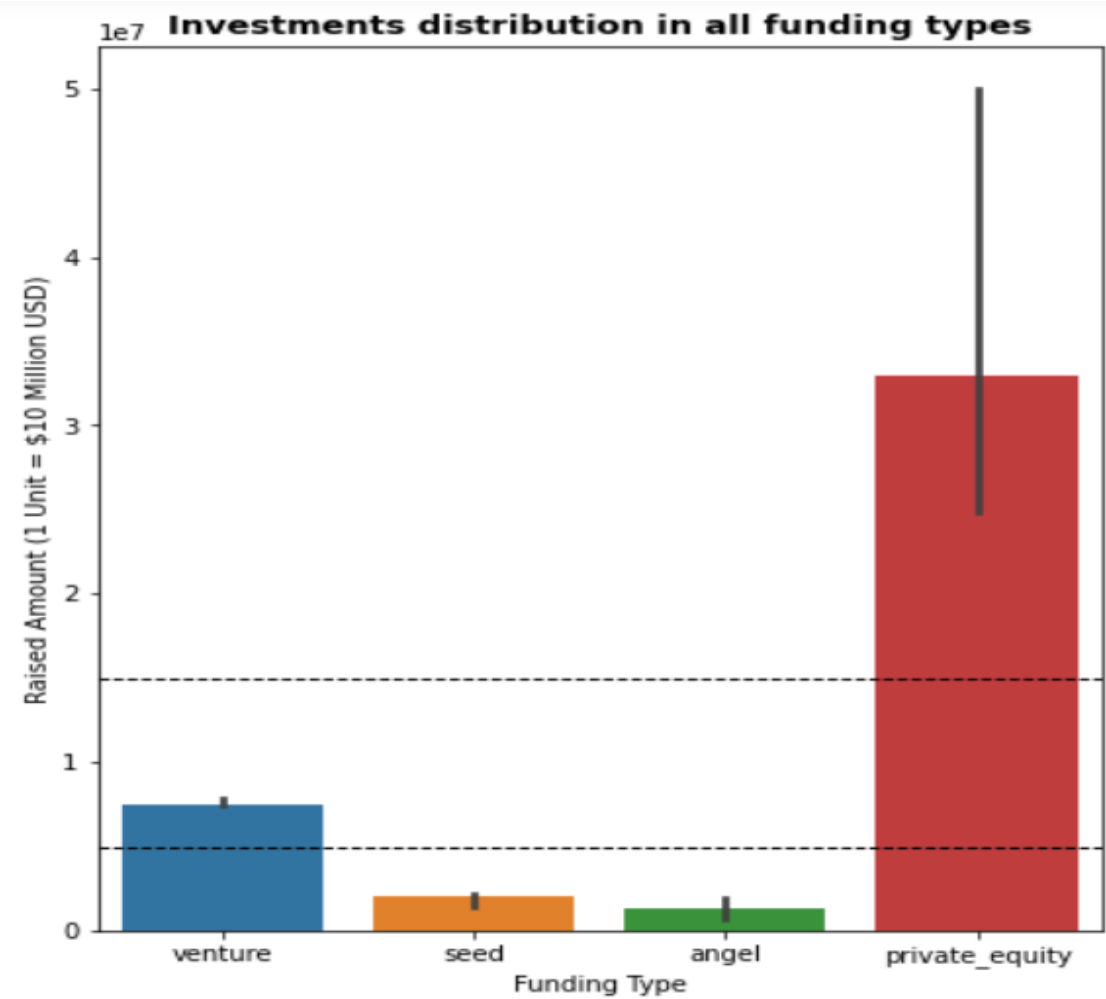
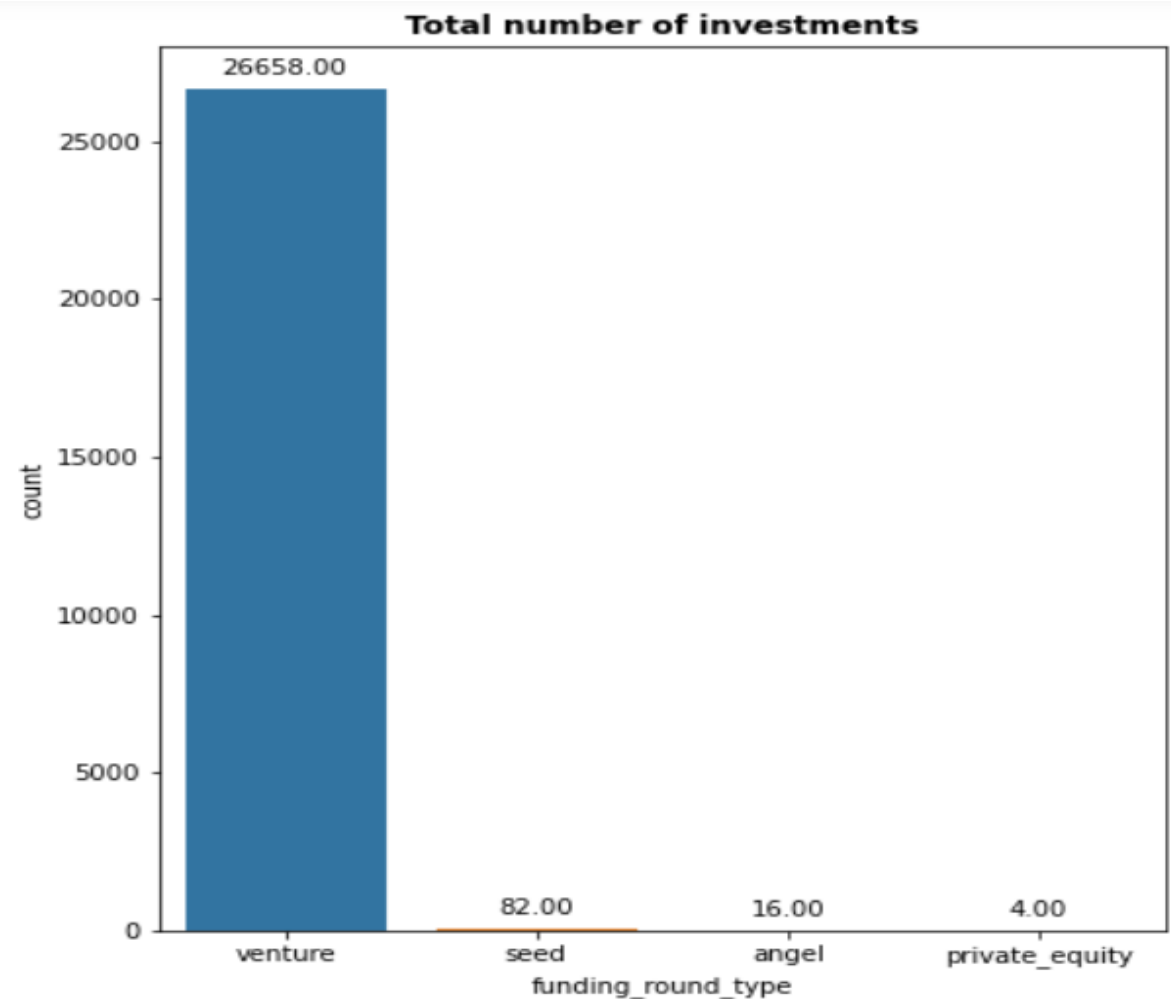
Others

Social, Finance, Analytics, Advertising

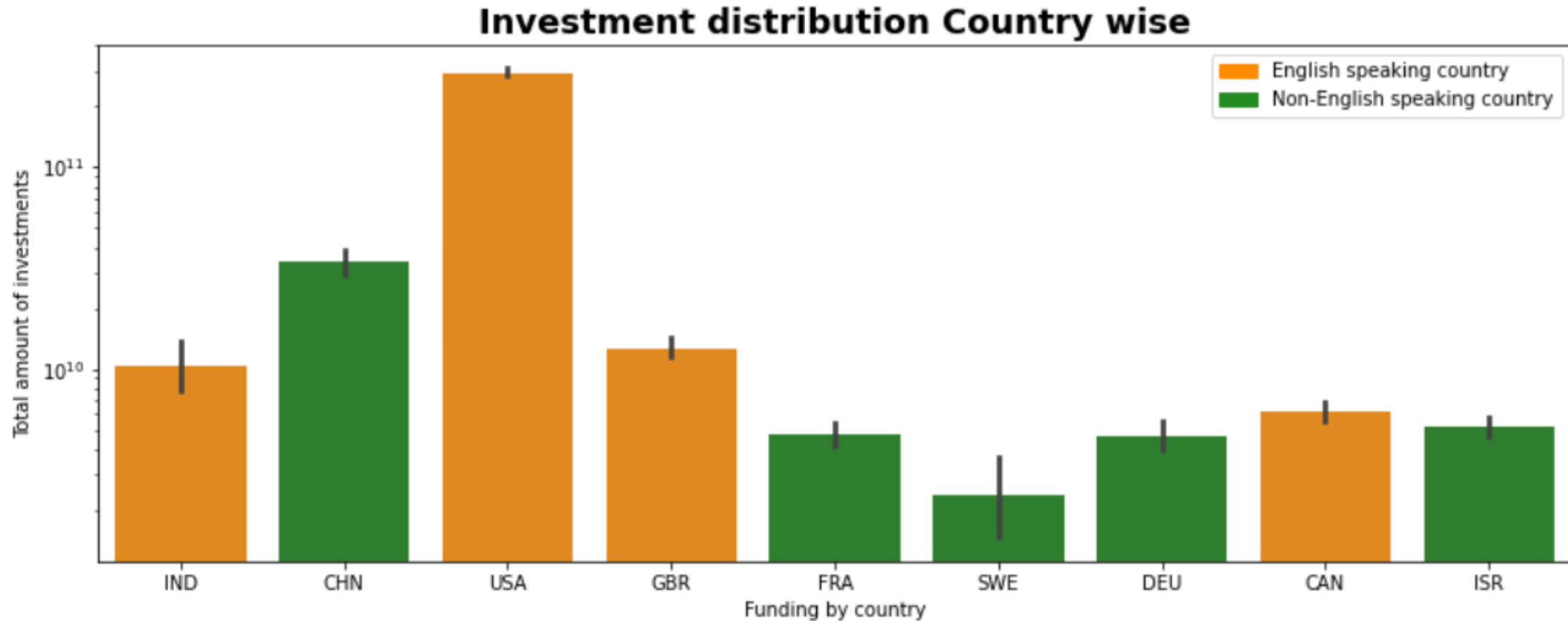
Sector-wise Analysis

Observations	USA	GBR	IND
Total number of Investments (count)	8585	383	228
Total amount of investment (USD)	77920593466	3438842990	2037157552
Top Sector name (no. of investment-wise)	Others	Social, Finance, Analytics, Advertising	Others
Second Sector name (no. of investment-wise)	Social, Finance, Analytics, Advertising	Cleantech / Semiconductors	Social, Finance, Analytics, Advertising
Third Sector name (no. of investment-wise)	Cleantech / Semiconductors	Others	News, Search and Messaging
Number of investments in top sector (3)	2167	98	81
Number of investments in second sector (4)	2157	82	41
Number of investments in third sector (5)	1378	81	41
For point 3 (top sector count-wise), which company received the highest investment?	Virtustream	Celltick Technologies	FirstCry.com
For point 4 (second best sector count-wise), which company received the highest investment?	Demandbase	Horizon Discovery	Manthan Systems

Bar plot showing the fraction of total investments (globally) in angel, venture, seed, and private equity, and the average amount of investment in each funding type. This chart should make it clear that venture funding type is best suited for Spark Funds

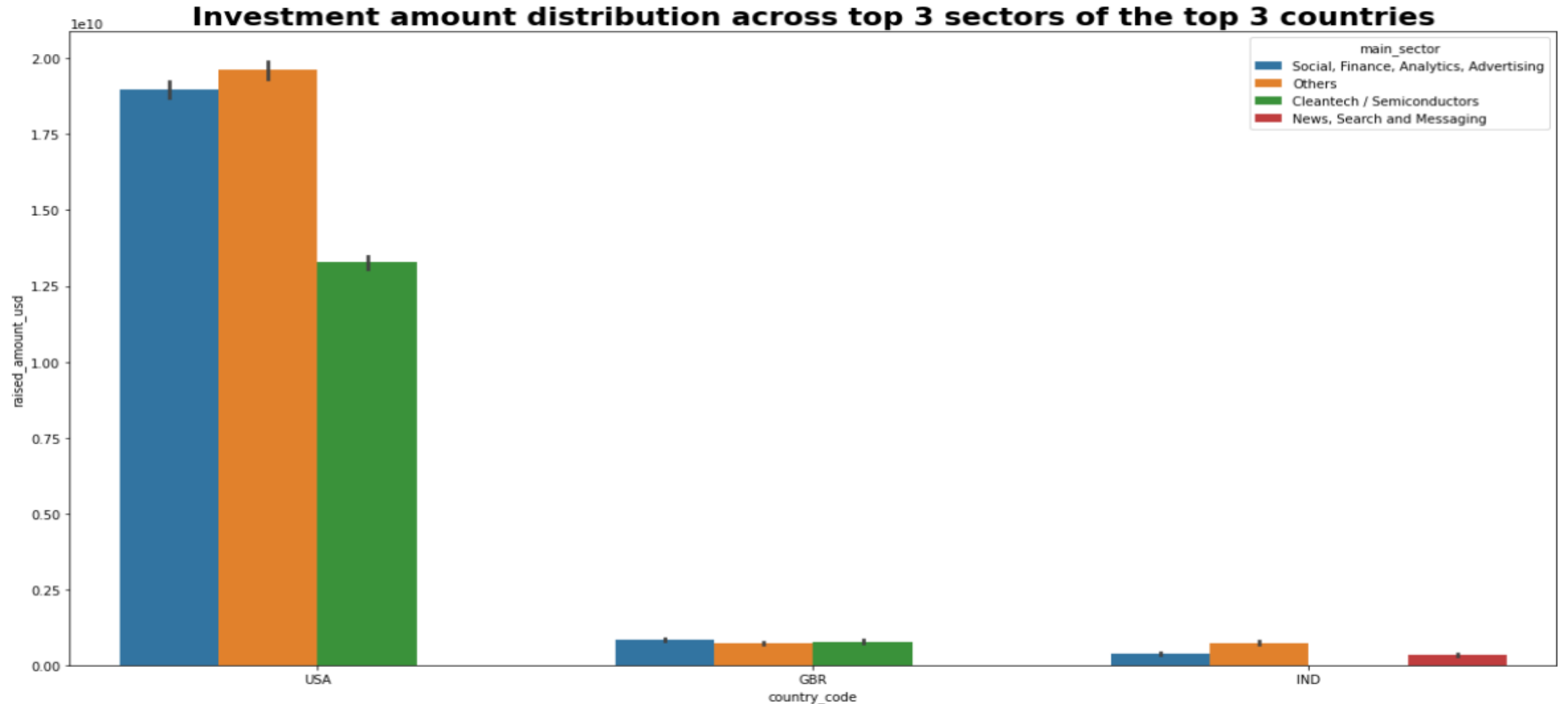


Bar plot showing the top 9 countries against the total amount of investments of funding type "venture". This should make the top 3 countries (USA, United Kingdom, and India) very clear.



Note: The top three countries are USA, Great Britain (BGR) and India(IND), China(CHN) was not considered as English is not its official language

Bar plot showing the number of investments in the top 3 sectors of the top 3 countries on one chart (for the chosen investment type - “Venture”).



Conclusion

- ❑ We can understand from the Analysis performed that the most suited funding type to invest would be “**Venture**” funding type.
- ❑ The best country to invest would primarily be United states of America and then United Kingdom and India follow after it, Hence Spark Funds should make sure to divide the investment amount to largely accommodate investments in United states and its top sectors as it would be more profitable.
- ❑ The best sectors to invest country wise are as follows:
 1. USA :
 - Others
 - Social, Finance, Analytics, Advertising
 - Cleantech / Semiconductors
 2. Great Britain / United Kingdom :
 - Social, Finance, Analytics, Advertising
 - Cleantech / Semiconductors
 - Others
 3. India :
 - Social, Finance, Analytics, Advertising
 - Cleantech / Semiconductors
 - Others