INVESTMENT CASE STUDY

SUBMISSION

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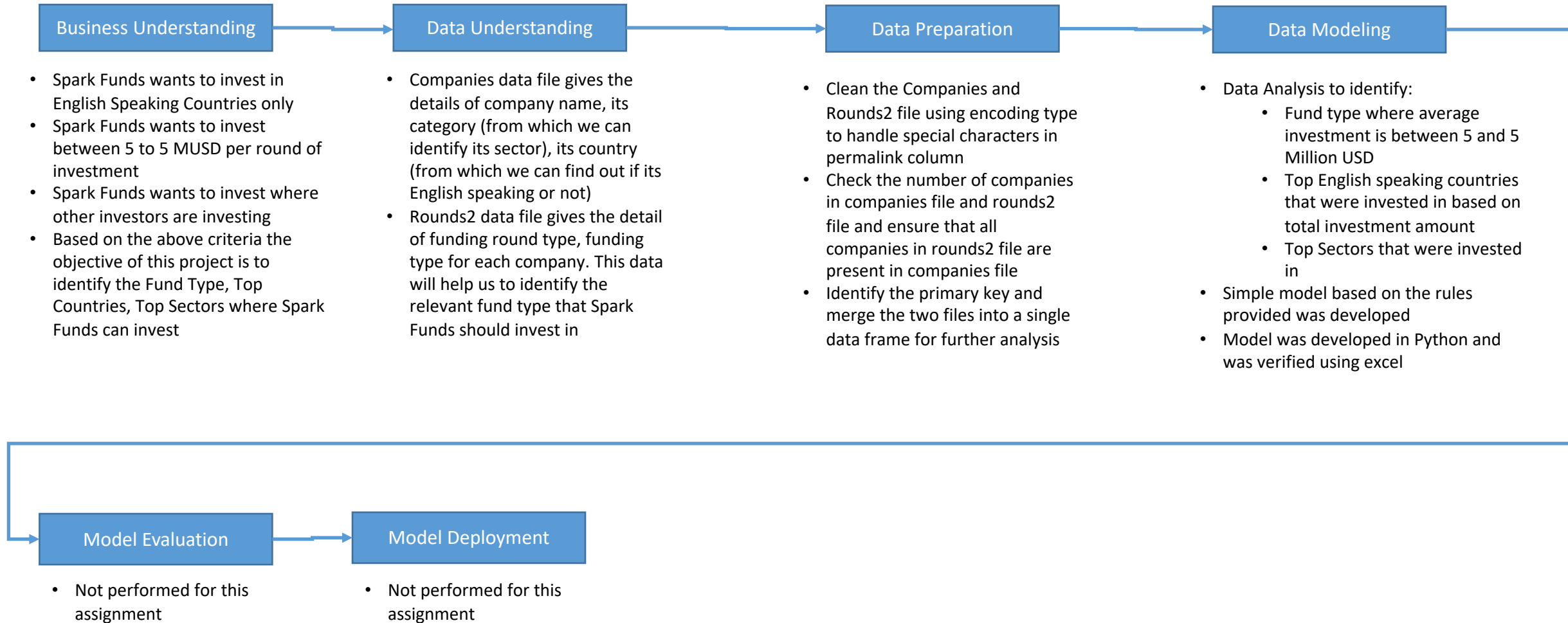3.   Lakshmi Narasimhan B S
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Abstract

Spark Funds is an asset management company that wants to do investments in English speaking countries based on global investment trends. This analysis used data from crunchbase.com to identify the investment type, top countries and top sectors that received funds in the past. The funding data is between 1960-2015

The analysis was carried out primarily using python and used excel to validate the findings. The company categories were mapped to eight major industry sectors. Spark Funds wants to invest only 5 to 15 M USD per investment round. This constraint was in place during the analysis. The important findings were that Spark Funds should do 'Venture' investment type in the 3 top English speaking nations – USA, UK and India. The top sector identified across all three countries was one that includes multiple categories which indicates a very diversified nature of investments. The second top sector across all three countries was 'Social, Finance, Analytics, Advertising'. The third top sector in US and. UK was 'Cleantech / Semiconductors' and for India it was 'News, Search and Messaging'.

This report details out the method used to perform this analysis, the data quality checks performed and finally documenting the results of analysis in form of tables and graphs.
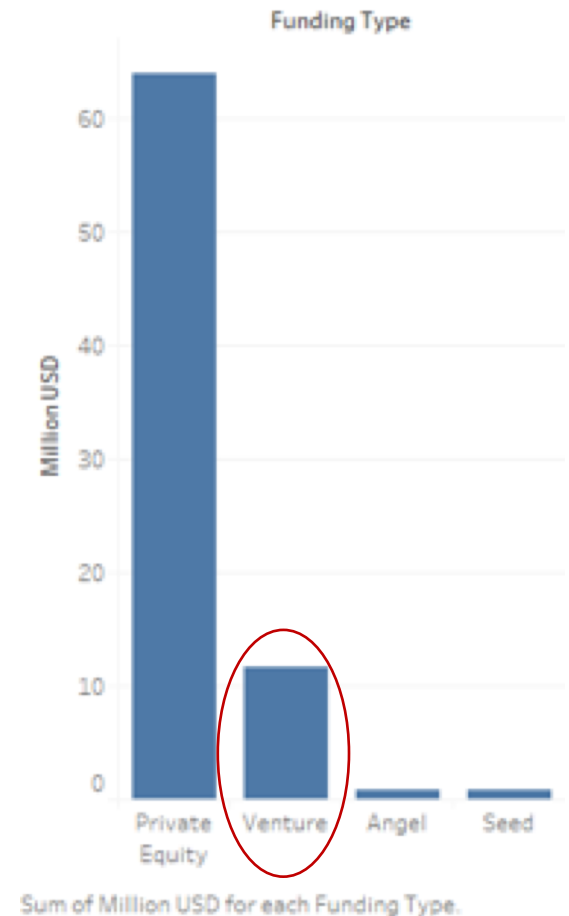
Problem Solving using CRISP - DM Framework

Business Understanding

- Spark Funds wants to invest in English Speaking Countries only
- Spark Funds wants to invest between 5 to 5 MUSD per round of investment
- Spark Funds wants to invest where other investors are investing
- Based on the above criteria the objective of this project is to identify the Fund Type, Top Countries, Top Sectors where Spark Funds can invest

Data Understanding

- Companies data file gives the details of company name, its category (from which we can identify its sector), its country (from which we can find out if its English speaking or not)
- Rounds2 data file gives the detail of funding round type, funding type for each company. This data will help us to identify the relevant fund type that Spark Funds should invest in

Data Preparation

- Clean the Companies and Rounds2 file using encoding type to handle special characters in permalink column
- Check the number of companies in companies file and rounds2 file and ensure that all companies in rounds2 file are present in companies file
- Identify the primary key and merge the two files into a single data frame for further analysis

Data Modeling

- Data Analysis to identify:
  - Fund type where average investment is between 5 and 5 Million USD
  - Top English speaking countries that were invested in based on total investment amount
  - Top Sectors that were invested in
- Simple model based on the rules provided was developed
- Model was developed in Python and was verified using excel

Model Evaluation

- Not performed for this assignment

Model Deployment

- Not performed for this assignment

Analysis: Funding Type

- The objective of this analysis is to find out the best investments type among the four applicable investment types for Spark Funds which are: Seed, Angel, Venture or Private Equity.

- The given data is checked for average investment amount in past in these four investment types by other funds. As Spark Funds is planning to invest between 5 to 15 MUSD per investment round, the average investment amount should also be in this range.

- ***The fund type 'Venture' has an average of around 11.75 MUSD and hence will be the most preferred investment type for Spark Funds.*** Almost all other investment types are either above 15 MUSD or below 5 MUSD.

Funding Type

Sum of Million USD for each Funding Type.

Analysis: Country Analysis

- The objective of this analysis is to find out the top 9 English speaking countries which attracted top investment dollars in the 'Venture' investment type

- The list of English speaking countries was provided

- The Master Frame dataset has the country detail for each country based on which whether it is English speaking or not was determined

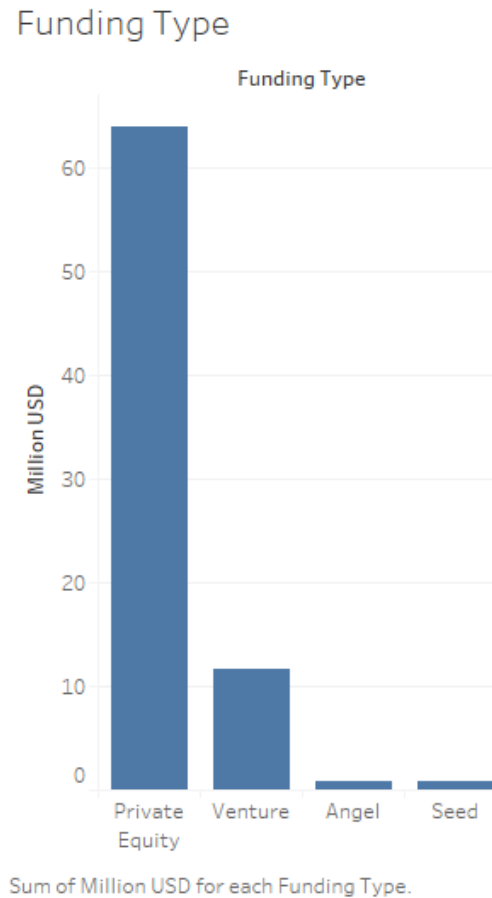- ***USA, UK and India emerged as the top English speaking countries***

Top 9 Countries	Total Investment in Millions USD
USA	422510.84
GBR	20245.63
IND	14391.86
CAN	9583.33
SGP	2793.92
IRL	1676.13
AUS	1322.93
NZL	448.32
NGA	245.44

Analysis: Sector Analysis

- The objective of this analysis is to find out the top sectors from the given 8 sectors for Spark Funds to invest in

- In the Master Data frame for each company we have a category information

- A mapping file was provided which maps each category into one of the sector

- It was observed that in the mapping file there some data issues as '0' was found instead of 'Na' or 'na'. These were corrected

- However not all categories found in the Master Data frame file could be mapped to one of the 8 sectors

- Some of the companies did not have category information. These were mapped to 'Blank' sector and there were other categories that were not found in the mapping file.
    - The total value of investments in these companies were around 1% of the total of the respective countries and hence it will not make any impact in the overall analysis due to this missing information. (For USA:0.63%; GBR: 1.19%; IND: 0.91%)

- The top sectors for each of the three countries were identified: Both total investment amount and the count of investments were identified. Refer to Plot 3 for details and also the table below.

- ***<u>The top sector in all three countries comes out as 'Others' which includes a lot of different categories. This indicates a very diversified nature of investments in these countries.</u>***
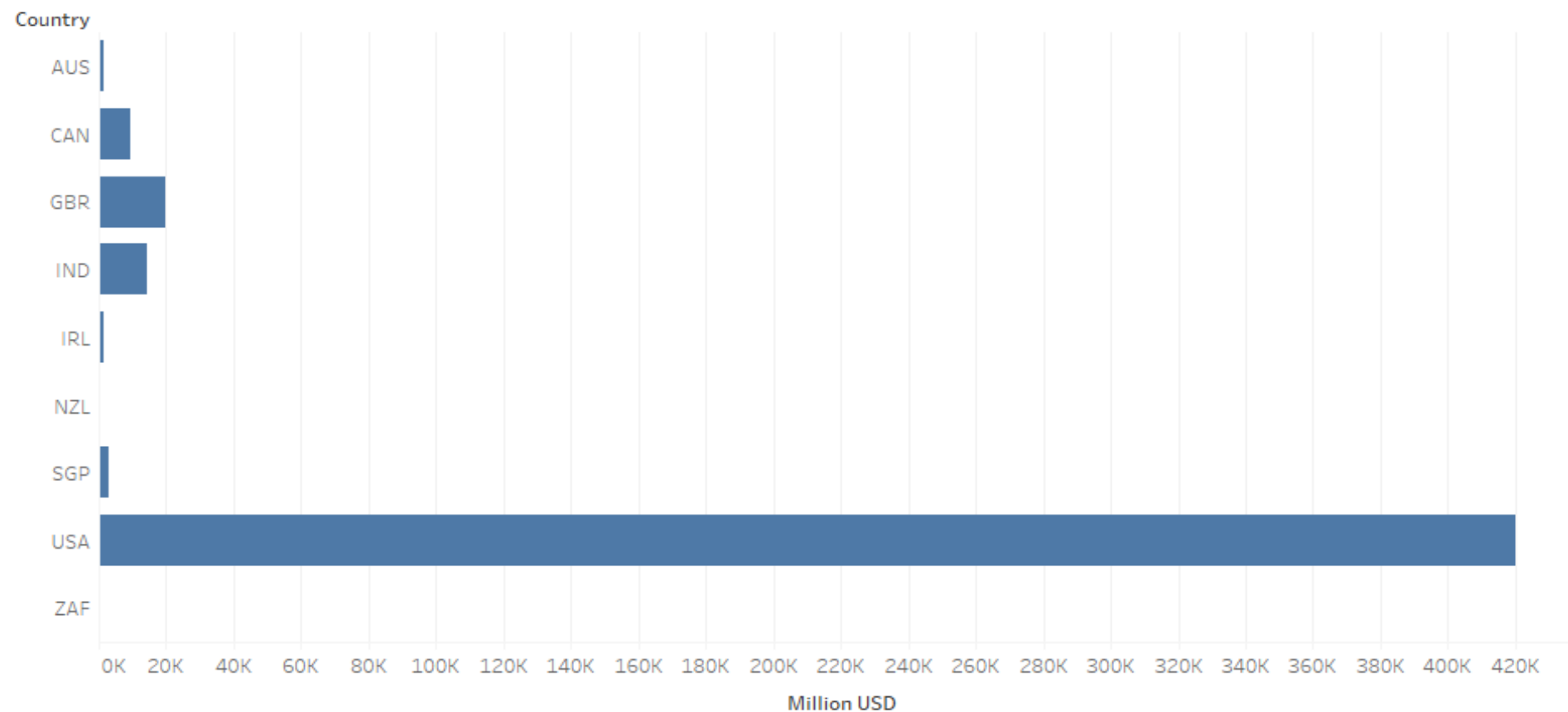
	USA	GBR(UK)	India
Top Sector name (no. of investment-wise)	Others	Others	Others
Second Sector name (no. of investment-wise)	Social, Finance, Analytics, Advertising	Social, Finance, Analytics, Advertising	Social, Finance, Analytics, Advertising
Third Sector name (no. of investment-wise)	Cleantech / Semiconductors	Cleantech / Semiconductors	News, Search and Messaging
Company that received the highest investment in the top sector	/organization/virtustream	/organization/electric-cloud	/organization/firstcry-com
Company that received the highest investment in the second top sector	/organization/shotspotter/	/organization/celltick-technologies	/organization/manthan-systems

Plot 1: Funding Type

Funding Type

Funding Type

Sum of Million USD for each Funding Type.

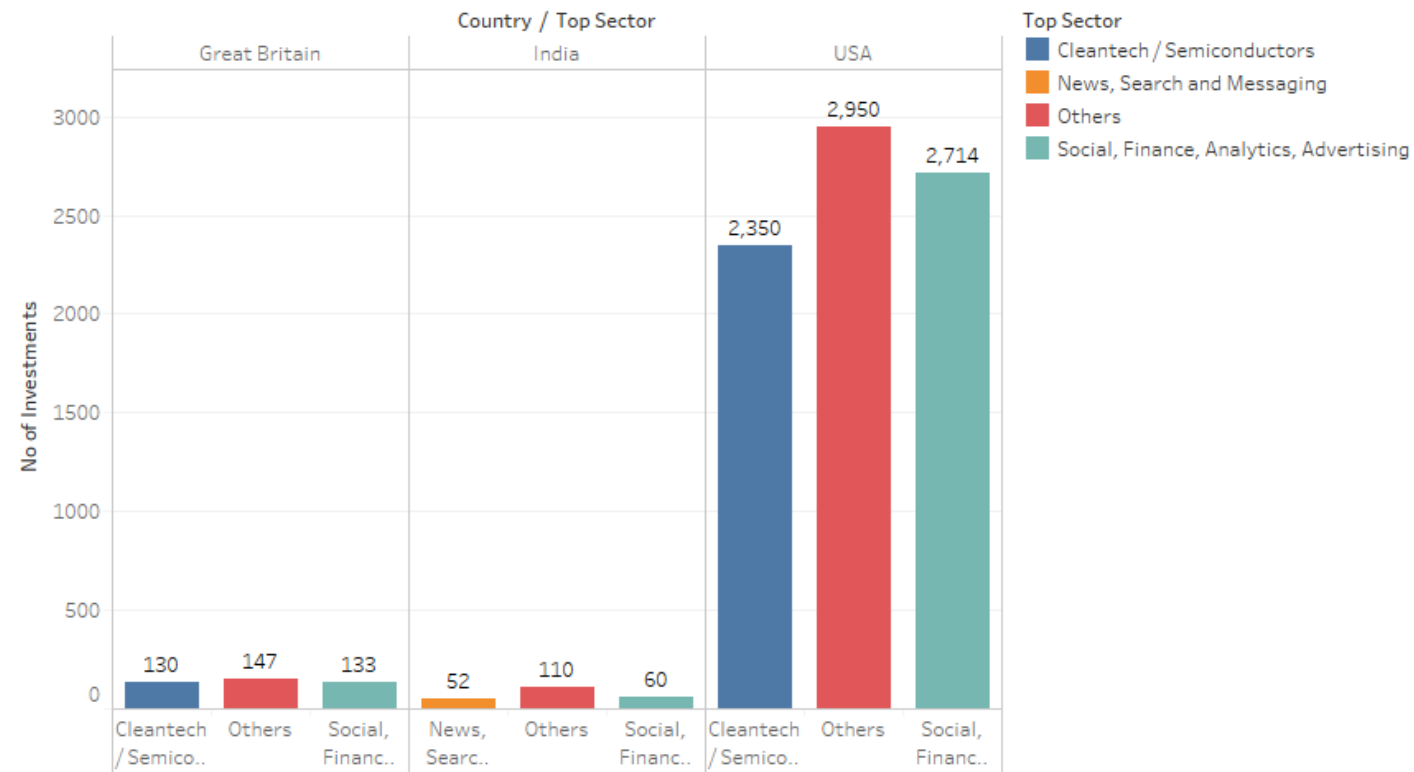# Plot 2: Country Wise Analysis

Country Wise Analysis

Sum of Million USD for each Country.

Plot 3: Top 3 Sectors in Top 3 Countries

Top 3 Sectors for Top 3 Countries

Sum of No of Investments for each Top Sector broken down by Country. Color shows details about Top Sector.