A Comprehensive Analysis of Indian Stock Market IPOs

I. Introduction

Understanding the evaluation of companies before investing in them is one of the abilities an investor can have to close a good profitable deal. This can affect the returns of an investor and the ability to hire shares of valuable companies thereby raising funds for future. For our analysis on profitable investing, we will be studying about IPO (Initial Public Offering). An IPO or a stock market launch is a public offering where shares of a company are sold to public or institutional investors[]. The IPO occurs only when a company is offering people to buy its shares for the very first time for public ownerships. This act makes the company public. In a primary market, any investor is capable of buying shares of companies which are issued for the first time by processing information on IPO. The offerings of the company are listed on a stock exchange. The funds required for buying the shares are directly transferred to the companies in order to raise the equity capital of that particular company. In return, the company provides assurity to the investor by claiming to have profitable closing. When we as investors buy the shares of a particular company, we become the shareholder of the company. The prices of shares are not fixed over time and may rise and fall due to various company factors.

Problem Definition: Why is an analysis on IPO required? To answer this question, we must understand the working of IPOs. When a company displays its finances/securities to general public, the money paid to company as a result of buying shares goes directly to private investors as well as the company for the purpose of increasing working capital. Hence, the IPO allows any company to attract a wide pool of potential investors for its future growth. Moreover, the sells once bought by investors cannot be resold to the company. The investors thus have to step forward into unpredictable nature of the IPO market. For this reason, an analysis on companies' growth and future prospect needs to be taken into consideration before buying their shares.

Along with this, as mentioned in [1], in regard to the pricing process for Indian IPOs in particular, some public issues managed during the initial period may be overpriced. Thus, it becomes important for investors to have a detailed information before buying shares. In addition to this, the Indian primary markets, funds are locked in for at least three months. It should be interesting to see whether this factor induces additional underpricing [1].

Also, the Indian primary markets have witnessed a boom during the last few years. According to the statistics in [1], both the number of new issues coming to the market and the total amount sought to be raised have increased in leaps and bounds. In 1992-93, 528 companies made public issues in the Indian capital markets and raised the equivalent of 1.955 billion. Of the 528 issues, 231 issues were made by new companies, which raised over Rs.32120 million from the investing public. In 1993-94, there were 713 public issues of equity. At least 300 of these were in the form of initial public offerings (IPOs). In comparison, the annual number of IPOs in US averaged 516 during the 80s and is currently reckoned to be about 322 in the first half of 1990s. Furthermore, there is consistent increase in the number of potential investors in India with passage of time. Estimates show that there were at least 15 million individual investors in India at the end of 1993[1]. For all the reasons stated above, it becomes necessary to analyze the company IPO data before buying shares of the company.

Importance of solving the problem Due to volatile tendency of markets, the rise and fall of prices can take place in short periods of time. All the companies in IPO function differently and it may happen that market prices for one company provides better fortune than another. For predicting which company shares can give rise to early profits, the investors need to make a detailed analysis before investing. For this analysis, various aspects of the company need to be addressed and studied. These include a brief study on Listing day prices, Bidding price, Profit margins etc. If thorough analysis is performed on the data consisting of companies with IPO processing, the investor can extract knowledge that investing/buying which company shares will lead to monetary growth in future. For this analysis we will use various Clustering algorithms to make our predictions.

II. Dataset

For our analysis of clustering algorithm on IPO, we have selected Indian stock IPO dataset available on Kaggle []. By doing analysis on this dataset, it will help an investor to find out if he should start bidding for whichever companies based on various parameters. This dataset consists of companies listed in the Indian Stock Market from August 2006 till the present []. Some of the features include Company Name, Listing Date, Listing Day stock opening price, closing price, high, low, number of times subscribed by retail investors, etc. To find out the profit margins for each of the company and along with that, how beneficial they are to investors, a comparison is made between initial prices on the day of bidding and final price on the listing day open.

The dataset consists of Listing day entries for two types of stock exchanges of India namely NSE and BSE. The two main stock exchanges of India are NSE (National Stock Exchange) and BSE (Bombay Stock exchange). Discussing about difference between them, the number of companies listed in BSE is much higher than those in NSE. But when it comes to trading of volumes, NSE gets the better of BSE. Due to this, discovery of prices becomes much more easier in NSE.

For our analysis, we need to find out which companies give more profit when the stocks are sold. For this purpose, important features taken into consideration are Bid Price From, Bid Price To, NSE Listing day open, NSE SME Listing day open, BSE Listing day open, BSE SME Listing day open. These features will be useful for estimation of profit procured by comparing bidding prices and Listing day gains. Note that we are using listing day prices of both NSE and BSE stock exchanges. This is because price of stocks may vary in both of them and some investors may wish to do trading or buy stocks from both the stock exchanges. However, we must keep in mind that only few companies permit trading of shares in BSE.

For a multivariate analysis at a later stage, we would also use some of the remaining 16 features along with the ones mentioned above, namely NSE Listing day low, NSE Listing day high, NSE Listing day last trade, NSE Listing day volume, NSE SME Listing day low, NSE SME Listing day high, NSE SME Listing day last trade, NSE SME Listing day volume, and for BSE, BSE Listing day low, BSE Listing day high, BSE Listing day last trade, BSE Listing day volume, BSE SME Listing day low, BSE SME Listing day high, BSE SME Listing day last trade, BSE SME Listing day volume. Note that SME (Small and Medium sized exchanges) is a platform of NSE where SMEs whose post issue paid up capital shall be less than or equal to Rs. 25 crores. As explained in [2], the platform is expected to offer a new and alternate asset asset class to informed investors having longer investment horizon. The platform shall allow new, early stage ventures and small quality companies to raise much needed growth capital as they grow, mature and transit to NSE's main board [2]. This platform is being founded on the following 4 cornerstone pillars of Credibility, Transparency, Liquidity and Growth.

III. Methods and Tools

A. Preprocessing Steps

B. Learning Methods

1) Elbow method for Optimum value of K:

2) Dendogram for Data Visualisation:

3) KMeans Clustering:

4) Agglomerative Heirarchical Clustering:

C. Validation Methods

D. Tools/Libraries

IV. Results

A. Graphs

1) Multivariate:

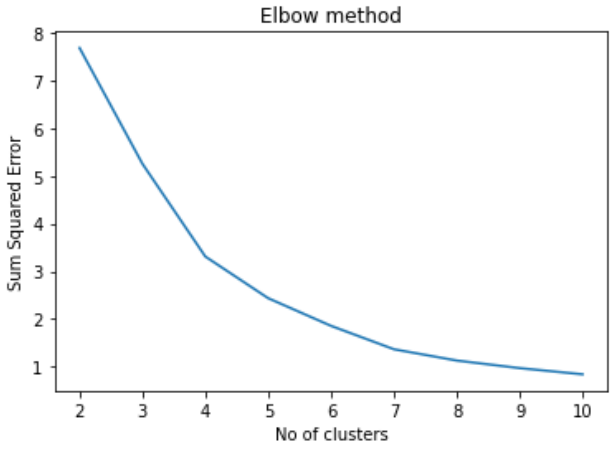

Fig. 1. Elbow method for Optimum value of K

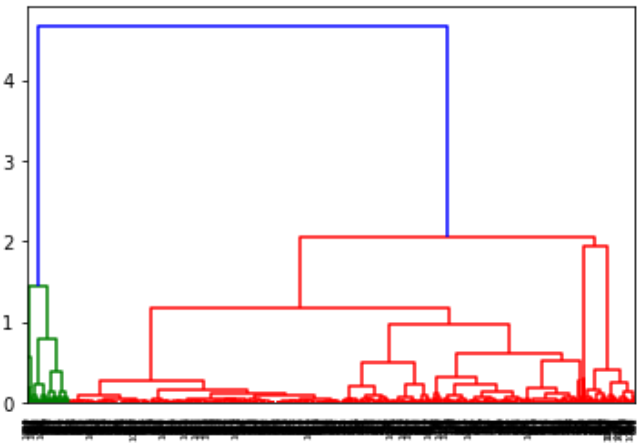

Fig. 2. Dendogram for Data Visualisation

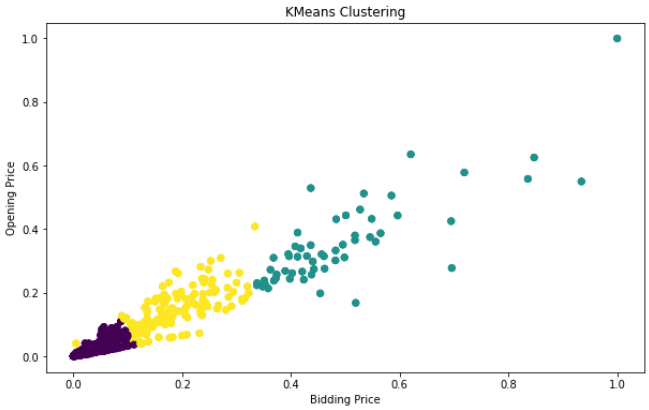

Fig. 3. KMeans

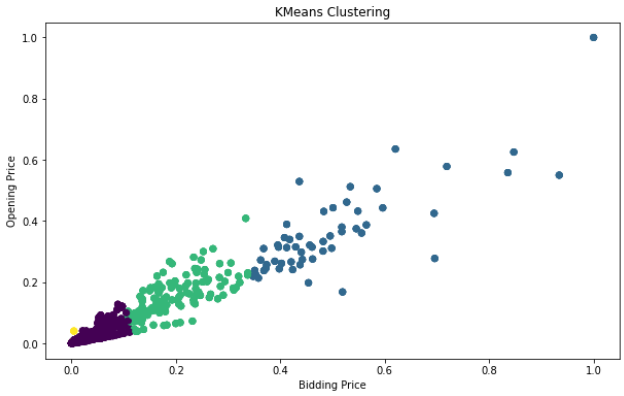

Fig. 4. KMeans

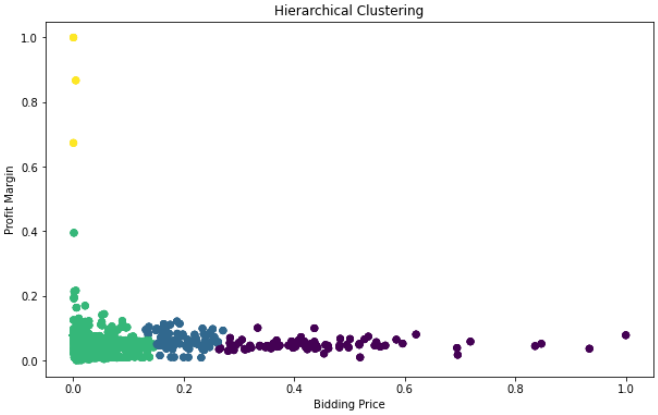

Fig. 7. Agglomerative Heirarchical

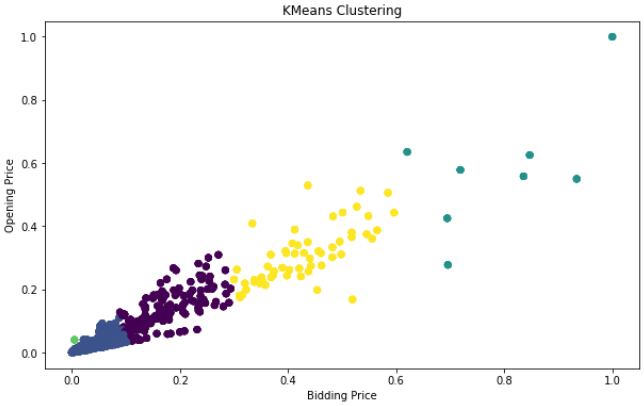

Fig. 5. KMeans

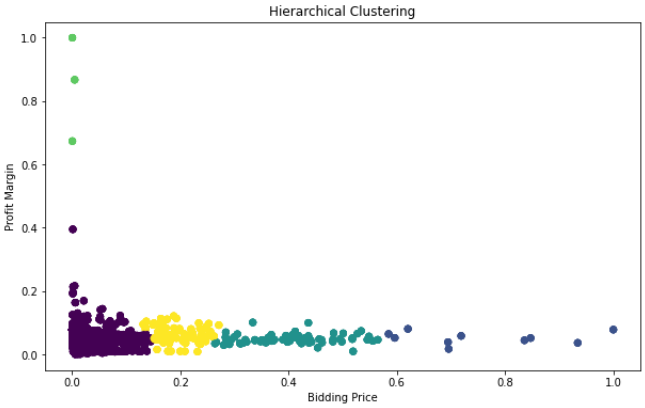

Fig. 8. Agglomerative Heirarchical

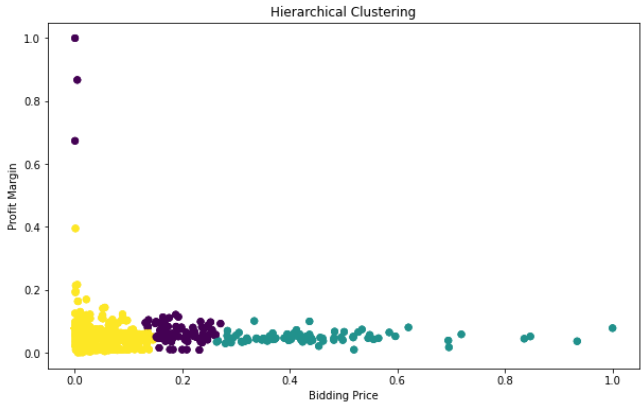

Fig. 6. Agglomerative Heirarchical

Fig. 9. Multivariate analysis

Fig. 10. Multivariate analysis

Fig. 11. Multivariate analysis

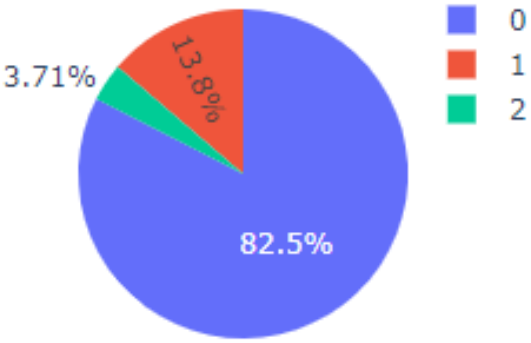

Fig. 12. Multivariate analysis

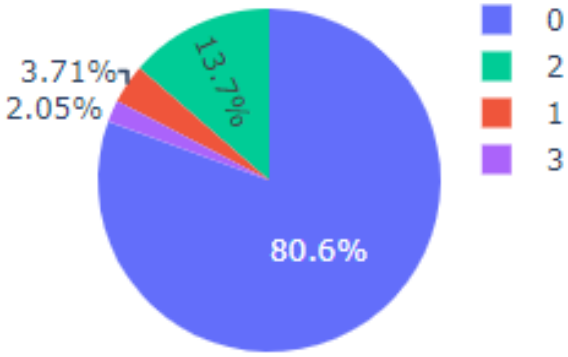

Fig. 13. My amazing figure

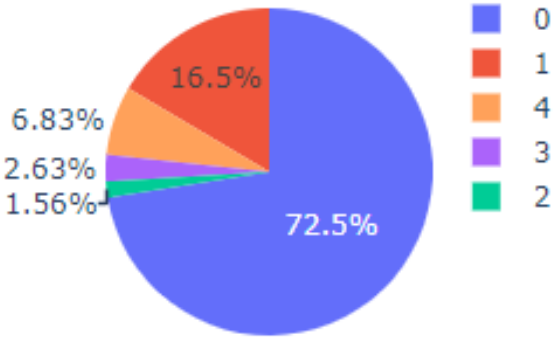

Fig. 14. My amazing figure

B. Tables

C. Explanation

V. Discussion and Conclusion

A. A summary of what has been done

B. A summary of the results

C. The significance/implications of results

D. Limitations

E. Future work

F. Maintaining the Integrity of the Specifications

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