Chapter 37
Twitter Based Capital Market Analysis Using Cloud Statistics

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ABSTRACT

People in the modern world are attracted towards smart working and earning environments rather than having a long-term perception. The goal of this work is to address the challenge of providing better inputs to the customers interested to investing in the share market to earn better returns on investments. The Twitter social networking site is chosen to develop the proposed environment as a majority of the customers tweet about their opinions. A huge set of data across various companies that take inputs from Twitter are processed and stored in the cloud environment for efficient analysis and assessment. A statistical measure is used to signal the worth of investing in a particular stock based on the outcomes obtained. Also, rather than ignoring the missing values and unstructured data, the proposed work analyzes every single entity to enable the customers to take worthy decisions. Tweets in the range of 1 to 100,000 are taken to perform analysis and it is observed from the results that for a maximum of 100,000 tweets, the number of missing is identified as 2,524 and the statistical measure to fill in the missing values is calculated based on the particular missing data record, the count of all data records, and the total number of records. If the outcome of the measure is obtained as a negative, then proceeding with an investment is not recommended. The findings of this work will help the share market investors to earn better profits.

INTRODUCTION

People in the modern world are attracted towards smart working and earning environment rather than having a long-term perception. This opinion is applicable to the share or stock market consortium where based on the trends in the market, shareholders make investments and undergo through huge profits if they are knowledgeable about the company's stock values. Otherwise, they have to incur heavy losses and may lose lifelong savings. This article addresses the question of incurring profit or loss based on public opinion, up on proceeding with the decision to invest in the share market consortium. The majority of the works in literature address the smart investment decisions based on opinion mining, sentiment analysis, stock exchange data, etc. In either of these domains, either the preprocessing technique applied to clean the data is time consuming or the missing data, though large in number, is ignored.

The nature of large amounts of data emerging from any social networking or e-commerce websites which may be required by the industries, government organizations, educational institutions, financial houses etc. contains a mixture of structured, semi-structured and unstructured text content. It is difficult to analyze the semi-structured data in the form of XML tags, and unstructured data in the form of audio files, video files, pdf documents etc. Hence, before mining data of any kind to make suitable predictions, it is essential to extract the structured format of data.

Stock market analysis, which is the evaluation of a market as a whole, is done to take a proper decision to incur better profits by investing in a suitable firm (Stock Analysis, 2018). India's premier stock exchanges are the Bombay Stock Exchange and the National Stock Exchange (https://economictimes. indiatimes.com/definition/stock-market).

There are 2 ways in which the analysis can be carried out. The first is a fundamental analysis, where in the country's economic and financial conditions are assessed to make a decision about investment based on the balance sheet, profit and loss statements etc. On the other side, there is technical analysis, which is based on the supply-demand analysis and historic data analysis independent of the financial aspects around. Customer can choose a suitable one based on the knowledge levels acquired, trend analysis and formula to achieve better return on investments (What is Technical & Fundamental Analysis, 2018). In addition to the focus on trends in stock market, it is also essential to gather inputs on market resiliency, which is the worth of processing a transaction with a minimal impact on the cost factor, in accordance with the elasticity of supply and demand in the market (Wanzala et al., 2018).

Opinion mining, which is also known as sentiment analysis, is familiarly used to detect the contextual polarity of a word based on positive, negative and neutral outcomes. Based on the reviews of a particular product like electronic gadgets, wrist watches, wall decorators etc. in the social networking websites, a person may prefer to purchase it. This approach works well for a limited set of products and a limited set of companies forecasting the reviews using available tools and techniques. Positive feedbacks obtained on a particular product will attract huge set of audience to go ahead with the review decisions, there by strengthening the necessity to use the product. At the other end, if the feedback is negative, it enables the designers of the product to re-iterate on the working model and overcome the flaws (Ingle et al., 2015). However, there is a limitation on the number of tuples or records being mined to achieve better accuracy.

To perform sentiment analysis on Twitter data, the relevant API is used that enables the developers to access nearly 1% of tweets at a particular timestamp, based on an appropriate keyword. A tweet usually comprise of plain text, emoticons, user name, location and time stamp as retrieved by the Twitter API (Barskar & Phylre, 2017). This API is available to handle the missing tweets by ignoring them, which if in large numbers, leads to inappropriate decisions on investments.

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