Data-Acquisition, Data Analysis and Prediction Model for Share Market

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Abstract

Data-acquisition involves gathering signals from measurement sources and digitizing the signal for storage, analysis and presentation on a PC. Analysis and prediction is very necessary in today's market for the accurate utilization of funds at hand. For analysis, there has to a proper system where in the required data is first acquired from the destination. This data then needs to be analysed using any analysis model. Currently there are many analysis models available in the market. These models are based on the past behaviour of the stocks. However, it is seen that there is no model which predicts the future behaviour of the stocks. For this reason, a model is developed which not only analyses the stocks but also predicts its future behaviour based on the past conduct.

Keywords: *Data-acquisition, share-market analysis, share-market predictions.*

1. INTODUCTION

Data-Acquisition systems are in great demand in the industry and consumer applications. Data-acquisition systems are defined as any instrument or computer that acquires data from sensors via amplifiers, multiplexers, and any necessary analog to digital converters or the internet. The system then returns data to a central location for further processing. An acquisition unit is designed to collect data in their simplest form from the internet.

Now-a-days Data-Acquisition systems are used more and more as these systems provide precise accuracy. Also, these systems remove the overhead of constant monitoring. A single person can monitor the entire system and also interact with the system if required. These systems enable the user to analysis the acquired data and also produce required predictions. Data-Acquisitions can be a very tedious task or even virtually impossible if these systems were not in place. These systems have allowed us to make more accurate, reliable and fool-proof data sharing, data analysis and data collection.

Share-Market Analysis is an important part of market analysis and indicates how well a firm is doing in the market place compared to its competitors. Analysis helps the share broker to carefully study the behaviour of the stocks and utilize his funds in a more veracious way. Analysis of stocks takes into consideration the past behaviour of the particular stock and analysis shown to the user in the form of graphs. These graphs can be represented in a number of ways depending on the preferences of the users.

In this paper, the share market analysis and prediction model is proposed. This model is established using a reliable data-acquisition system which acquires data from the internet. This data is then analysed using the analysis module. After analysing the data the prediction module starts working. It does its calculations and the resulting predictions are recorded in table format and are reflected on the graphs.

2. RELATED WORK

There are data-acquisition and control devices that will be a substitute for a supervisor in a multisite job operation. A single person can monitor and even interact with the ongoing work from a single base station. An acquisition unit designed to collect data in their simplest form is detailed in [1]. Data collection via wireless internet-based measurement architecture for air quality monitoring is discussed in [2]. Some applications adding remote accessibility are detailed in [3] and [4], which are built to collect and send data through a modem to a server. Some applications have integrated systems for data-acquisitions. One such system is used in [5].

There are a number of analysis models that are available. These models provide analysis as desired by the user. One such model is discussed in [6]. This is stock market software, which supports multiple countries' stock market. (11 countries at this moment) It provides Real-Time stock info, Stock indicator editor, Stock indicator scanner, Portfolio management and Market chit chat

features. One more such model is shown in [7]. It provides a free web based stock price analysis module. The easy to use interface incorporates Fundamental Analysis to calculate: Fair Value stock price; comparative stock Value; profit Target sell price; Stop Loss sell price; Price Earnings Ratio (PE) for Fair Value and Buy prices; stock Return on Investment %; and provides access to Technical Analysis charts to evaluate stock movements and buy/sell signals.

In section 3, a software analysing and making predictions for share market is introduced. In section 4, an example that shows a working model of the discussed software is presented. This section also makes comparisons of the discussed software with the currently available software's. Section 5 presents the conclusion.

3. PROPOSED SOFTWARE

In the proposed software, the real-time data from the share market is taken from the internet. This data is then processed and analysed. After analysis, predictions for each stock are calculated using formulas. Thus the proposed software is divided into three main modules viz (3.1) Data-acquisition. (3.2) Data-analysis and (3.3) Prediction Model.

3.1 Data-acquisition

The data for the stocks in the market is acquired from the internet. This data comes in the DBF file form. A snap-shot of this file is shown in Fig1.

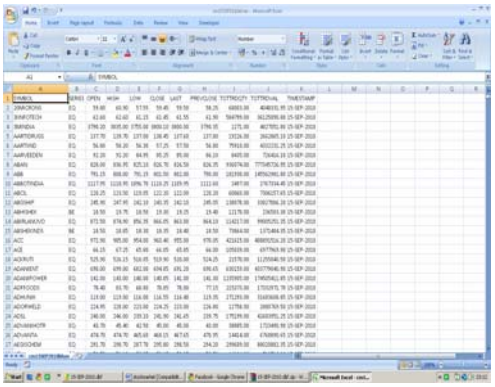

Fig. 1. DBF file.

The required data from this file i.e. the highest, lowest and the closing price of each stock for the particular day is extracted and forwarded to the analysis module. A sample of this file is shown in Fig 2. This process is done every day as each stock can have different values each day. This also helps in better analysis and more accurate predictions.

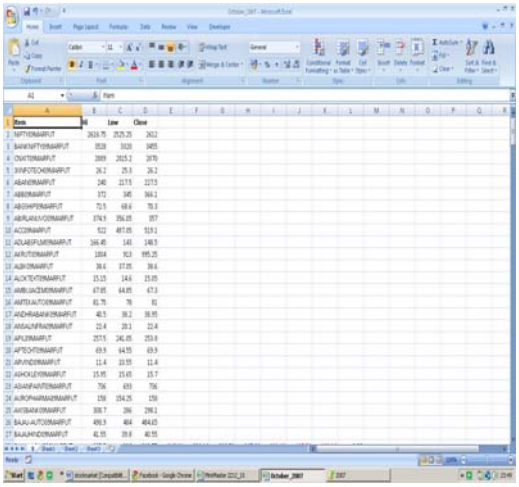

Fig. 2. Sample file showing highest lowest and close price of stocks for a particular day

3.2 Data-analysis

This model starts its work once the data-acquisition process has finished. Data-analysis reports can be made and shown to the users in a number of ways. In the proposed software, reports for the weekly, monthly and yearly highest, lowest and average prices are shown to the user in an excel sheets. The user can also directly see the graphs of all these values. A sample report file is shown in Fig 3. A sample graph is also shown in Fig 4.

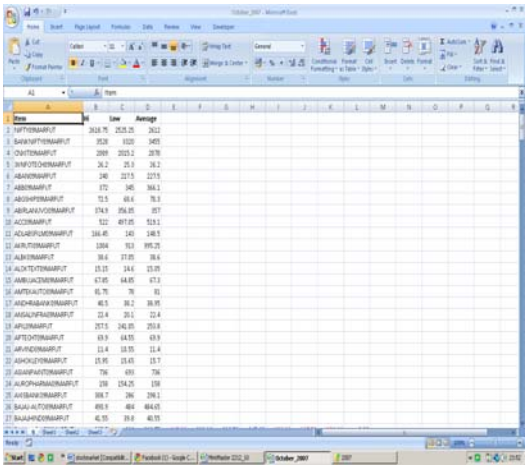

Fig. 3. Sample report file for highest, lowest and average values of stocks for a particular year.

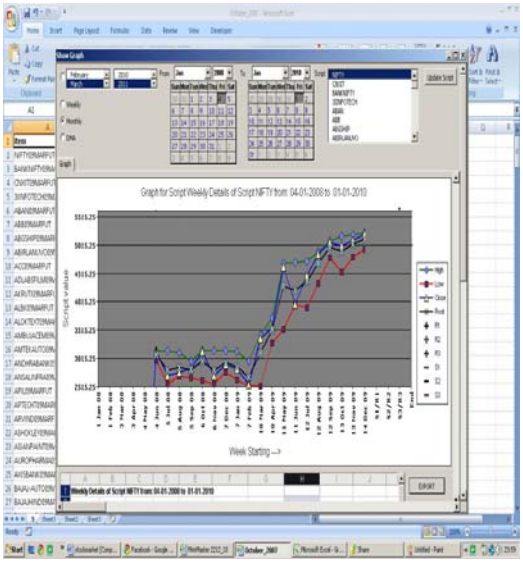

Fig 4. Sample graph for showing highest, lowest, average and average_close price of a particular stock.

3.3 Prediction Model

This model works in accordance with the analysis model. The prediction model makes use of a set of formulae to estimate the future behaviour of the stocks. The inputs to these formulae are the values obtained during analysis of the particular stock. As the future behaviour of the stocks can be predicted only after analysis the past conduct of the stocks, prediction has to work hand in hand with analysis. After doing all the predictions this module generates a report as shown in Fig 5. The predictions model gives a distinct colour code to all its different types of predictions. These colour codes helps the user to identity whether the particular stock is a good stock to invest on, or whether the currently possessing stocks are predicted to abate.

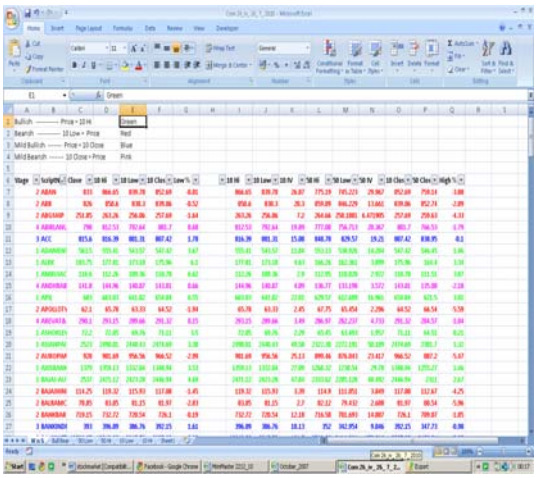

Fig. 5. Report generated by the prediction model

4. EXPERIMENTS & RESULTS

Data acquired from the internet, the acquired data analysed and the predictions calculated all these stages are shown in Fig 1, Fig 2, Fig 3, Fig 4 and Fig 5. This software is briefly explained in the following discussion.

Data is acquired through the internet directly from the website of BSE(Bombay Stock Exchange). These bulks of data are then sorted out and only the useful data is exported from the bulk and stored in excel sheets for the use of the software. The software imports this data into its database and starts analysing it. Once all the necessary analyses are done the prediction model takes charge. It uses the analysis results to make its predictions.

The user has the option of analysing the data according to his needs. There are many different analysis models included in the software. The snapshots of the software at different stages of working are shown below.

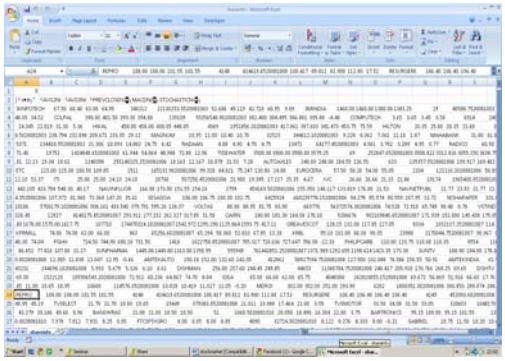

Fig. 6. Raw data acquired from the internet.

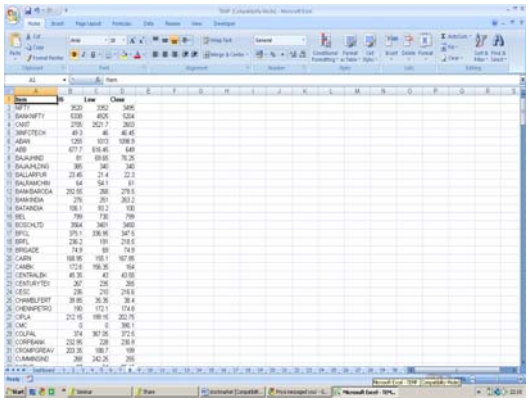

Fig. 7. Filtered data.

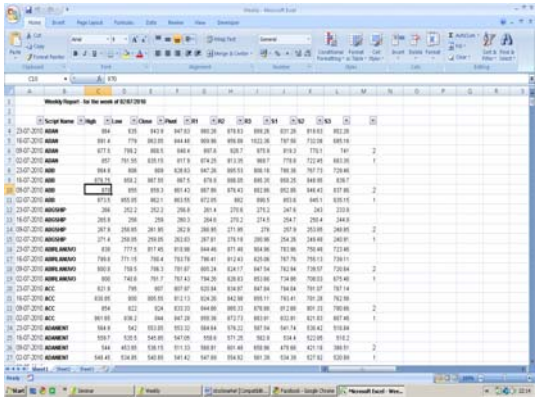

Fig. 8. Analysis Report – 1

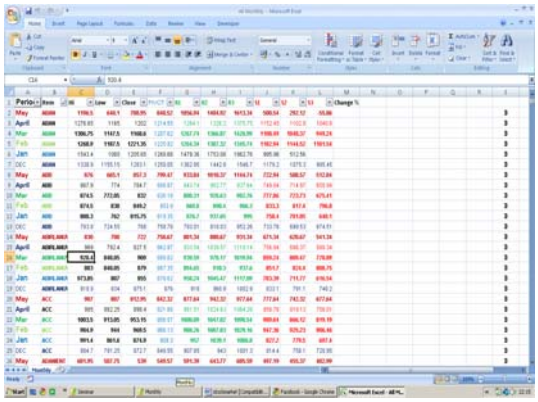

Fig. 9. Analysis Report - 2

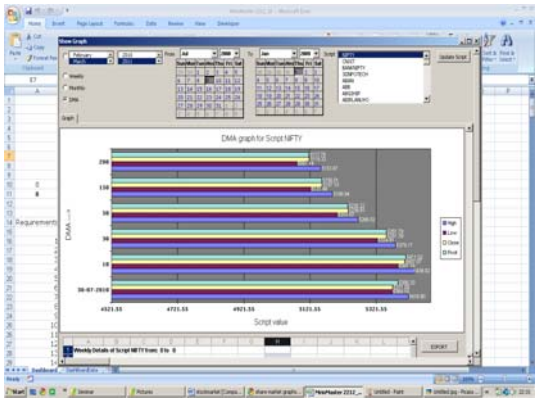

Fig. 10. Analysis graph.

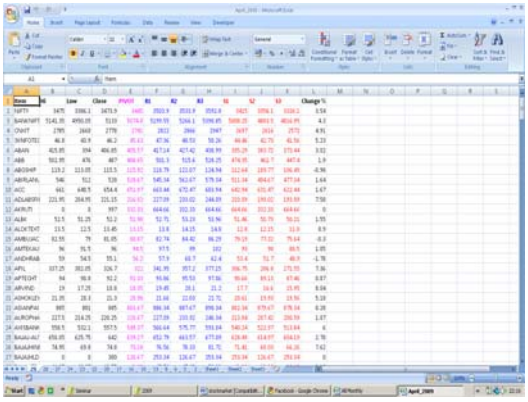

Fig. 11. Prediction Report – 1

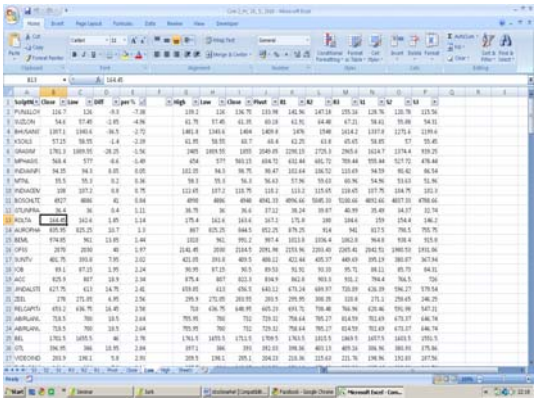

Fig. 12. Prediction Report – 2

Now let us see the comparison of the share market graphs with this software.

Fig. 13. Analysis graph - 1

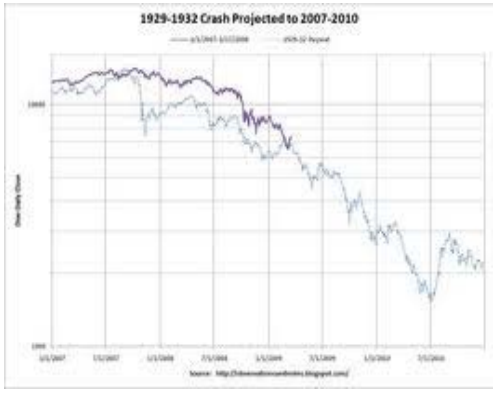

Fig. 14. Analysis graph - 1

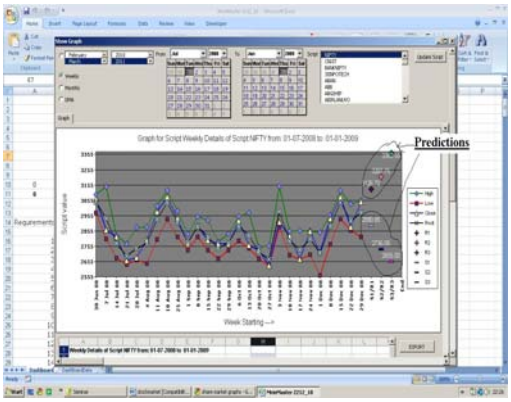

Fig. 15. Prediction graph - 1

As it is seen, Fig 13 and Fig 14, it shows graphs for analysis of a particular stock. But these graphs only take into consideration the past behaviour of the stocks. They show no predictions. Whereas the graph shown in fig 15 shows the past behaviour as well as predict the future of the stock.

5. CONCLUSION

In this software, analysis and predictions are made that should find interest from the stock market investors. The software has a huge possibility of development with addition of more and more powerful analysis models. A prediction module cannot sustain on itself without analysis, the stronger analysis will help give more accurate predictions (up to 90% efficiency). The current predictions have tested to be 80% accurate.

Compared to other share market software's, this software has an advantage as it provides a prediction module. The software is designed to sustain both analyses and predictions at the same time.

Research for more improvement in the prediction model is still in the process. Also developments in increasing the speed of operation of the software are being made.

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