



A STUDY ON BIG DATA ANALYTICS BY USING MACHINE LEARNING FOR PREDICTING FUTURE PRICES OF SELECTED FINANCIAL INSTRUMENTS

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Abstract

Stock market investments strategies are always complex and extremely tough to understand as the quantum of data is very high. The most common tool used for predicting the future price of various Financial Instruments is trend approach that is based on calculating the future of an event from its historical database. In some of the cases observing a trend is not that though, but in some of the cases it proves worthless. It was also observed that share that shows future trend may or may not be Correlated, in simple terms it can be concluded that it is not necessary to shares need to have correlation then they will show a trend but it found that shares who are not correlated have shown a trend and future prediction. In answering the third question it is not possible to get the exact and real future pricing predictions but yes to get somehow close to the real, it is definitely possible and feasible.

Key words. Stock market, machine learning, Neural Networks and regression.

I. INTRODUCTION

Data The term data may be day as the characters, symbols or signs that are used for operations that are preferred by a computer, which is usually stored and transmitted in the form of signals that are electronic in nature and recorded on a magnetic, optical or mechanical recording media.

STOCK PREDICTABILITY : It was mentioned earlier that there are some papers that have shown it is not possible to predict the trend of a share in the future timeline. As we know that Random walk theory has become talk of the town when it comes to stock market. This theory simply suggests that there are so many factors that influence the price of a stock that is why it is difficult to predict the future of any stock or to get the trend in the market. Burton Malkiel (1973) was the first to introduce this theory in the market. If at the same time we look towards other work there are plenty of papers that have shown that the past data and history can easily be used to predict the future of a stock in the market. However it is wrong to say that exact

pattern can be attained but close to the real estimate can be done through various factors. Technical traders have a very important influence on the flow of the market in every day market. When it comes to the large financial companies they use automated algorithms to make high - frequency trading to earn money. This can easily be argued that if we want to be successful in the market we must be accurate in terms of algorithm.

2. LITERATURE REVIEW

The methodologies that used to study the MOY effect embrace descriptive statistics to prior econometric techniques (Nageswari and Selvam 2011; Kling and Gao,2005; Hawaldar et al, 2017) The most desired approach to study MOY effect was Dummy variable ordinary least square regression” (Keim, 1982; Roll,1983; Lakonishok and Smidt, 1984 ; sharma and mittal,2014; Patel, 2016.) There was some genetic problem of heteroscedasticity in equity return data. To solve the problem of heteroscedasticity, some authors started using GARCH methodology(choudhry,2001; Mangala and Lohia,2013) and that's why this method was used over the OLS regression. (Choudary 2001;Mangala and Lohia, 2013; Ozturk et al 2018). Some authors also consider the “January effect 19 using Jensen’s alpha, regression, ARMA modelling, and describe that the companies with smaller capitalization can exceed the firms with larger capitalization by implementing January effect”in their business.Additionally, they report that the small-firm who are using January anomaly in the stock market was getting feeble from the last years, as it was on the starting period of the academic community, the latest evidence also signify the presence of January effect (Schwert, 2001).The earliest findings of studies have suggested that half of the anomalous return of small-capitalization firms was due to the January effect. It was also stated that the most of the return was generated by using the January effect in the first week of trading and eleven percent was in the first trading day of the year (Keim, 1982). Another study, Roll (1983)describes that the average security returns and volatility was higher during the January month it was also found that the yields of stocks of small companies were consequently higher as compared to large companies during the January month. They found out that many small companies had generated bulky returns specifically during the starting few working days in January (Reinganum, 1983). Another study of US companies’ authors had found that there were no trades at the start of the year, but during the end of the year small firms showed nearly twenty-five percent of the days, which was considered a dynamic transaction period for small cap stocks. Small-cap enterprises called up for some days to recreate equilibrium prices during the turn of the year period. All those hurdles lead to creating a seasonal pattern of rates of return for small-cap Stocks. Some authors had also suggested the same seasonal patterns for stocks of big corporations as well. (Lakonishok & Smidt, 1984). Authors have also come out with findings that the month of year effect was a country specific phenomena and anomaly varies from economy to economy (Mangala and Lohia, 2013). Studies were adopted in a different part of the world like Kato and Schallheim (1985) scrutinized January and size effect in the capital market of ‘Japan’ using the equity market data for the period 1964 to 1981.

3. METHODOLOGY

This chapter will discuss the Methods that are used to obtain the results of the study. This chapter consists of various elements like population of the study used, sample size, Research design and Sampling techniques

used. The chapter also explains the sourcing of the data and the graphing of the data. The Methodology followed in this thesis areas.

Population of the Study: The population for this study consists of 24 stock exchanges in the Indian economy; some of them are regional while at the same time two are national stock exchanges I.e. BSE India and NSE India. The time period considered for this thesis is from 2005 – 2020.

Sample Size and Sampling Technique: As the data for this study have been collected from the BSE India on daily basis for a period of 15 years I.e. 2005 - 2020. So we have a sample of around 180 months that is quite sufficient enough to predict the trend in the market. The nature of the research is mostly based on the secondary data that have been taken from authentic sources.

Source and Method of Data Collection:

As we know that it is only the data through which we can prove our hypothesis. There are two types of data viz. primary and secondary. The primary data are those which are collected a fresh and for the first time and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process. The nature of the research is mostly based on the secondary data that have been taken from authentic sources. The data for this research has been collected from the BSE India on daily basis.

4.RESULTS

LSTM TABLE

COMPANIES	PRE VALUE	EXPECTED VALUE
TCS	98.23	89.23
INFOSYS	94.33	99.86
HCL	97.45	96.23
WIPRO	96.44	98.49
RIL	97.21	88.65

It is quite clear that most of the figures in the table have shown that data can easily be used for the further analysis as the ratios calculated and the figures that were counted have shown evidences of the correlation and co-integrity of various factors that is discussed in the below tables . It indicates the schooling and checking out accuracy of the LSTM community from the information articles for every of the agencies. We can see from the desk that the accuracy of the take a look at dataset fluctuates widely. This is due to the volatility of the inventory values of the agencies themselves.

Conclusion and Future work.

Stock market Predictability has become a skill after so many innovations and inventions. Many researchers and scholars have tried in different ways and models to get closer to the quantum of accuracy in the prediction of the stock prices. As the market is affected by various global and local factors, it has been usually observed that in most of the researches focus has been on many factors than a particular section of field. The most common tool used for predicting the future price of various Financial Instruments is trend approach that is based on calculating the future of an event from its historical database. In some of the cases

observing a trend is not that though, but in some of the cases it proves worthless. This thesis is based on more scientific and logical approach that could have truly solved most of the problems of the stock market. There are so many Positives but at the same time a lot of data is needed to make it more sensitive and sound in terms of quality. This is a general assumption in the market that if we use time based data than a sentimental based data may provide a better direction and the result. But is important to note that the set assumption is applied only in some of the cases. The work Believes that any factor that has power to influence the company's share value in the market that is made public as a part of news even on some of the financial Portals, on the other hand there are others factors that reach in the public domain vary late due to various issues.

REFERENCES

- Ali, A., Durtschi, C., Lev, B. and Trombley, M. (2004), "Changes in Institutional Ownership and Subsequent Earnings Announcement Abnormal Returns", *Journal of Accounting, Auditing & Finance*, Vol. 19, No. 3, pp. 221–248.
- Ali, S. and Akbar, M. (2009), "Calendar effects in Pakistani stock market", *International Review of Business Research Papers*, Vol. 5, No. 1, pp. 389–404. Almonte, C.K.S. (2012a), "Testing for the quarter-of-the-year effect in ten Asian stock indices", *International Journal of Information Technology and Business Management*, Vol. 6, No. 1, pp. 31–36.
- Almonte, C.K.S. (2012b), "The day-of-the-week effect in selected balanced funds in the Philippines", *International Journal of Information Technology and Business Management*, Vol. 3, No. 1, pp. 40–49.
- Alshimmiri, T. (2011), "Calendar Anomalies in Kuwait Stock Exchange: Anomalous Evidence", *Journal of Business & Economics Research (JBER)*, Vol. 2, No. 1, pp. 37–50
- Amanulla, S. and Thiripalraju, M. (2001), "Week-end effect: New evidence from the Indian stock market", *Vikalpa*, Vol. 26, No. 2, pp. 33–50.
- Anuradha, N. and Rajendran, G., (2014), Does month matter? Calendar effect in foreign institutional investment. *Journal of Business Studies Quarterly*, Vol.6, No.1, pp. 133–155
- Bajaj, A., Natchimuthu, N. and Mary, L. (2019), "Calendar anomalies in the Indian stock markets: monsoon effect", *Academy of Accounting and Financial Studies Journal*, Vol.23, No.2.
- Bampinas, G., Fountas, S. and Panagiotidis, T. (2016), "The day-of-the-week effect is weak: Evidence from the European real estate sector", *Journal of Economics and Finance*, Vol. 40, No. 3, pp. 549–567.
- Barone, E. (1990), "The Italian stock market", *Journal of Banking & Finance*, Vol. 14, No. 2–3, pp. 483–510.
- Chan, M.L., Khanthavit, A. and Thomas, H. (1996), "Seasonality and cultural influences on four Asian stock markets", *Asia Pacific Journal of Management*, Vol. 13, No. 2, pp. 1–24. Chang, T., Nieh, C.-C., Yang, M.J. and Yang, T.-Y. (2006), "Are stock market returns related to the weather effects? Empirical evidence from Taiwan", *Physica A: Statistical Mechanics and Its Applications*, Vol. 364, pp. 343–354.
- Deepak, R. and Viswanath, N.S. (2012), "Seasonality and Sensitivity Of NSE Nifty– An Econometric Analysis", *International Journal of Research in Management, Economics and Commerce*, Vol. 2, No. 11, pp. 202–224.

- Diaconasu, D.-E., Mehdian, S. and Stoica, O. (2012), "An Examination of the Calendar Anomalies in the Romanian Stock Market", *Procedia Economics and Finance*, Vol. 3, pp. 817–822.
- Gama, P.M. and Vieira, E.F. (2013), "Another look at the holiday effect", *Applied Financial Economics*, Vol. 23, No. 20, pp. 1623–1633. Gbeda, J.M. and Peprah, J.A. (2018), "Day of the week effect and stock market volatility in Ghana and Nairobi stock exchanges", *Journal of Economics and Finance*, Vol. 42, No. 4, pp. 727–745.
- Jones, S.T. and Banning, K. (2009), "US elections and monthly stock market returns", *Journal of Economics and Finance*, Vol. 33, No. 3, pp. 273–287.
- Kaplanski, G. and Levy, H. (2017), "Seasonality in Perceived Risk: A Sentiment Effect", *Quarterly Journal of Finance*, Vol. 07, No. 01, p. 1650015.
- Larsen, R.J. and Kasimatis, M. (1990), "Individual differences in entrainment of mood to the weekly calendar", *Journal of Personality and Social Psychology*, Vol. 58, No. 1, pp. 164–171.
- Lauterbach, B. and Ungar, M. (1991), "Stock Return Regularities: Evidence from the Israeli Stock Market", *RBER, Review of Business and Economic Research*, Vol. 26, No. 2, p. 70.
- Rehman, M. (2021). Impact of corporatr governance on the financial reporting. *Journal of Hunan University (Natural Sciences)* , 48 (5), 223-240.
- Rehman, M. (2019). Relationship between Indian stock market and Commodity Market. *Journal of Emerging Technologies and Innovative Research* , 6 (1).
- Wiley, J.A. and Zumpano, L. (2009), "Institutional Investment and the Turn-of-theMonth Effect: Evidence from REITs", *The Journal of Real Estate Finance and Economics*, Vol. 39, No. 2, pp. 180–201.
- Yuan, T. and Gupta, R. (2014), "Chinese Lunar New Year effect in Asian stock markets, 1999-2012", *The Quarterly Review of Economics and Finance*, Vol. 54, No. 4, pp. 529–537. Zafar, N., Urooj, S.F., Chughtai, S. and Amjad, S. (2012), "Calendar anomalies: Case of Karachi stock exchange", *African Journal of Business Management*, Vol. 6, No. 24, pp.7261-7271. Zarour, B.A. (2007), "The Halloween effect anomaly: Evidence from some Arab countries equity markets", *Studies in Business and Economics*, Vol. 13, No. 1.