K-MEANS CLASSIFIED MATHEMATICAL ANALYSIS OF NSE SHARIAH INDEX: A WEEKLY PREDICTION MODEL

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ABSTRACT
This study examines the existence of a Day of the Week effect in NSE Shariah index in Indian Stock Market; here we used K-Means classification for predicting the results. The current examination utilizes the day-by-day return information of the National Stock Exchanges (NSE) Shariah Index for the time frame running between January 2009 and March 2019. The results affirm the presence of irregularity Anomalies in NSE Shariah record stock yields in India. The outcomes are additionally solid with the Anomalies exists in the securities exchange in India, Shariah list is wasteful, and subsequently, financial backers can time their offer speculations to grow income.

Keywords: K-Means classification, Anomalies, Day of the Week Effect (DOWE), EMH, NSE Shariah and Riba rule.

I. INTRODUCTION
Islamic fund is a reasonably new phenomenon in the financial system of India. Sharia is the Islamic laws which standardize a lot of aspects of a Muslims life as well as the type of investments permitted to invest their money. For example, interests are measured according to the Riba rule hence bonds are prohibited to investors ensuing the Sharia law. A Shariah fund is an investment vehicle, and real estate fund organized by following Islamic rules. To capitalize in common stocks in firms involved in the halal companies. Firms are also screened to make sure of Shariah acquiescent accounting ethics. The normal assumption in financial theory is that the circulation of standard returns is identical for entirely weekdays, though, the stock market does not function during Weekends. This breakdown offers the chance of the DOWE in the stock market, i.e. some weekdays return is different from other weekdays in the stock market. If the DOWE occurs, some stockholders can take advantage of it to make arbitrage [1-19].

Stock market plays an important role for the economic development of a rustic, by properlychanneling the funds for productive purpose (refer fig. 1).The proposition that a well-regulated stockexchange extends significant economic services is now widely accepted and recognized by various academicians. Stock market assists economy also as individual investors bymobilizing the scarce resources and allocation inthose sectors, which employ them optimally.Stock market assists individual investors byproviding continuous marketplace for securities.From economic point of view, a well-developedstock market has been considered requisite for economic growth as well as improvements in country’s productivity. The progress of acountry can be judged by ascertaining the
A major blast has been seen in Stock Markets as of late. Countless most recent players have entered the market which conveyed significant straightforwardness in share market practices and subsequently prevailing to get.

The subject of inconsistency in the financial exchange has pulled in the consideration of analysts for quite a while. Subsequently, to fulfill financial backer's assumptions, the portfolio directors need to take a gander at the securities exchange conditions distinctly and likewise exhort financial backers and to develop a sound portfolio. Our nation is accepted to be as one of the quickest exceptional business sectors on the planet with a grounded financial exchange with a long history of coordinated exchanging protections. In the course of the most recent couple of years, cutting edge innovation and online based exchanges have modernized the stock trades while, regarding the quantity of organizations recorded and complete market capitalization, the New Delhi market is considered enormous comparative with the nation's phase of monetary turn of events.

The subject of inconsistency in the financial exchange has pulled in the consideration of analysts for quite a while because of its capability of delivering unusual returns during specific times of the year. Abnormality alludes to the normal and dull variance in a period arrangement which happen occasionally over a range of not exactly a year. The presence of an articulated occasional conduct inside the market may recommend a type of market failure. The presence of irregularity in stock returns, nonetheless, disregards a significant speculation in account, for example Proficient Market Hypothesis (EMH) in light of the fact that value costs are no longer arbitrary and might be anticipated upheld past design. The suggestion, "Stock returns are not unsurprising" was until as of late viewed as quite possibly the most solidly settled experimental scientists on the conduct of stock returns.

Notwithstanding, the non-consistency suggestion has been addressed as of late and thusly certain inconsistencies in the conduct of profits, for example, Week-of-the Month Effect, Day-of-the Week Effect, Intra-day Effect, Size Effect, Tax-year Effect, Turn-of-the Year Effect, January Effect, Monthly Effect, Turn-of-the Month Effect and Price-Earning Ratio Effect and some others have been noticed. These peculiarities discredit the presence of Efficient Market Hypothesis. In this way, in the current investigation a sincere endeavor has been made to determine whether Anomalies exists in BSE Sensex, NSE Index, BSE and NSE Sectoral files and if exists, nature of irregularity exists in Indian Stock Market. Assuming the market is effective, there exists some market proficiency peculiarities, the financial backers can acquire some unusual returns by utilizing deliberately techniques inside the market.

A major blast has been seen in Stock Markets as of late. Countless most recent players have entered the market and attempting to acknowledge piece of the pie during this quick improving business sector. Investigation of oddities help the financial backers in exploiting the inconsistency of data on the lookout. Financial backers may have opportunities to utilize the schedule inconsistencies to procure strange return. The developments of stocks during specific seasons, specifically financial exchanges can be noticed and ventures should be possible as needs be. The inconsistencies could be recognized by examining the value developments of the stock and the financial backers can contribute cunningly during these occasions to procure unusual returns. The previous 15 years of the Indian securities exchange can be considered as the main piece of the set of experiences where the market away through the post advancement time of Indian economy and saw the making of Securities and Exchange Board of India.

Which conveyed significant straightforwardness in share market practices and subsequently prevailing to get confidence of public financial backers as well as the worldwide ones. Financial exchange assumes an indispensable part for the monetary improvement of a country, by appropriately directing the assets for profitable reason. The suggestion that a very much managed financial exchange broadens huge monetary administrations is currently generally acknowledged and perceived by different academicians. Financial exchange helps economy just as individual financial backers by activating the scant assets and portion in those areas, which utilize them ideally. Financial exchange helps singular financial backers by giving consistent market to protections. Securities exchange productivity is among the most investigated zones in account. Securities exchanges are viewed as proficient enlightening. The frail type of market proficiency expresses that it is unimaginable to expect to anticipate stock cost and return developments utilizing past value information. Following Fama (1965; 1970), countless investigations were directed to test the proficient market speculation (EMH). These examinations generally have shown that stock costs carry on haphazardly. All the more as of late, notwithstanding, scientists have gathered proof restricting to the EMH.

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They have distinguished deliberate varieties in the stock returns. The significant oddities incorporate the Semi-Monthly impact and the occasional impact. The presence of the occasional impact denies the powerless type of the EMH and infers market failure. In a wasteful market financial backer would have the option to procure strange benefits, that is, returns that are not proper with hazard. The idea of Shariah-agreeable records initially came up inside the 1960s; be that as it may, they need as of late got well known. All things considered, Shariah-agreeable resources represent under 1% of overall monetary resources, predictable with proficient administrations firm PwC. Shariah-agreeable files had the opportunity to submit to Shariah standards, which means they are for the most part confined from putting resources into organizations associated with selling liquor, pork items, sexual entertainment or weapons, additionally as those with betting interests. Any pay emerging from these sources should be given to good cause. By barring these frequently unpredictable areas – large numbers of which are impacted by political choices – these ETFs will in general be less unstable than others, and have beat in the course of recent years. Muslims address a couple of quarter of the total populace, which recommends the development capability of such a contributing is huge.

The main Shariah-consistent records emerged in Malaysia inside the last part of the 1960s, trailed by the middle East inside the mid-1970s. The huge players have all presented Shariah-agreeable files, which are administered and affirmed by their separate Islamic administrative sheets. In 2009, the essential Shariah-consistent list was dispatched in South Africa, acquainting greater venture prospects with the country's enormous Muslim people group. Shariah-consistent records aren't just fascinating venture choices for Muslims, yet in addition for non-Muslim financial backers since they will be less unpredictable than different procedures[51][52]. The Bombay financial exchange (BSE) inside the Indian city of Mumbai has dispatched a substitution list which comprises of organizations that meet the Islamic code. The Tasis Shariah 50 was shaped utilizing rules from an Indian Shariah arranging board. Studies have tracked down that the lion's share Muslims in India are avoided from the country's formal monetary area. That is on the grounds that shariah doesn't permit interest in organizations that sell products like liquor, tobacco or weapons. Neither does it permit interest in organizations that infer critical exploit interest. The record is intended to be the thought for other Shariah-agreeable monetary items.

BSE chief and Chief Executive Madhu Kannan said that the new file would pull in Islamic and other "socially dependable"; financial backers both in India and abroad. This file will make expanded familiarity with money related ventures among the majority and help improve monetary consideration, he said during an assertion. Organizations included inside the list are screened by Tasis, which is predicated in Mumbai and whose board individuals incorporate Islamic researchers and legitimate specialists. Before anybody can pull in financial backers might want to put in situ institutional framework, and having a file to follow Shariah-consistent stock is crucial, MH Khathkatay, senior guide to Tasis, told the Reuters press organization. In the event that you have an ETF (trade exchanged asset), for example, you might want a record, or if abroad financial backers need to take a situation in Shariah list in India, this is regularly a call for cooperation for individuals to return and contribute. Tasis said the file would open the potential for Sharia interests in India.

The BSE has the main number of recorded Sharia-agreeable stocks inside the world said Shariq Nisar, overseer of examination and activities at Tasis. All Muslim nations of the middle East and Pakistan set up don't have as many recorded Sharia-agreeable stocks as are accessible on the BSE. Stocks will be checked on month to month to ensure they actually satisfy the guidelines – any which don't will be eliminated. A Shariah List during a document of organizations that are discovered to be consistent with the Islamic accepted law or the Shariah. Most Shariah records which are made so far off are upheld a current or a principal document. The European Islamic asset resources by house are appeared in fig 2 and 3.
Whose constituents are evaluated for consistence by a board that is knowledgeable inside the principles of the Quran. How is that the screening done? The screening is finished at two levels, relying on the portion that the corporate works in additionally as a couple of the working extents that the corporate works with, as obvious in their yearly report. For event, all organizations during a particular record whose business ranges are pork, alcohol, wagering, financials, tobacco, erotica, trading of gold and silver as money on a yielded premise additionally as publicizing and media (excepting day by day papers and a couple of different cases which are taken apart on an individual reason), would be gotten out of the list. Likewise, the amount of commitment, money and in this manner the degree of pay that is assembled from rebellious exercises is furthermore contemplated. A model, a company may be consistent if the proportion of obligation to the market cost of value is a more modest sum than 33%.

The BSE and Mumbai-base Taqwaa Admonitory and Shariah Speculation Arrangements (Tasis) has pushed India's to begin with esteem rundown of organizations that suits Sharia, the shariah, it's an undertaking to expand interest of Muslims inside the value publicize and draw in adventure from all inclusive stores that follow to shariah. The BSE Tasis Shariah 50 a few the driving organizations, tallying TCS, Reliance Industries, ONGC and Bharti Airtel. Islamic laws don't permit hypothesis in organizations that advantage from interest pay or arrangement of alcohol, tobacco and weapons. Islamic back has continued to create despite a hardship of sureness in overall money related structures. Sharia-agreeable assets rose by 8.85% from $822 billion of every 2009 to $895 billion out of 2010, agreeing to an outline of Islamic asset teach by The Investor. It's created at an accumulated yearly advancement pace of 23.46% from 2006 to 2010. The introduction of the BSE Tasis Shariah 50 File will offer help pull in pools of capital from the Gulf, Europe and South-East Asia. It'll additionally
fabricate a base for authorizing and development of Shariah consistent monetary items, including common assets, says Madhu Kannan, MD, CEO, BSE.

II. REVIEW OF LITERATURE

Muhammad Shahid Iqbal, Rehana Kouser, and Muhammad Azeem (2013) in their study discover that significant Ramadan effect, the month of the year effect, DOWE, and TOM effect in Karachi Stock Exchange. Calendar anomaly does exist in the Pakistan stock market. Silva. P. M (2010) in his study found that the calendar anomaly does exist in the Portuguese stock market. Anwar Halari a, Nongnuch Tantisantiwong, etc (2018) in their study found that calendar anomalies exit all Islamic months in Pakistan. Halari, Anwar, etc in their study found that calendar anomalies exist in Pakistan particularly Ramadan month. Nida Shah, and etc (2017) in their study found that to buy the shares in Zil-Haj month and selling the later month to earn a higher return in Pakistan.

III. OBJECTIVE OF THE STUDY

To find the Day of the Week effect in Shariah index.

IV. RESEARCH METHODOLOGY

The research is analytical’ Shariah index is computed since 2009 in NSE Nifty. Historical data collected for the period ranging between January 2009 and March 2020.

V. TOOLS FOR ANALYSIS

Investor to cautiously study the publically available evidence, because it plays a vital part in the Market Effectiveness and changes in the market. The current study would be useful for native and foreign investors, traders and arbitragers who invent the gainful trading strategy in the stock market. The collected data have been investigated by making use of Returns, Descriptive statistics, Shapiro-Wilk test and OLS Regression.

VI. SUGGESTIONS

High returns are noticed on September month; hence, investors may prefer to stocks buy on January and August and sell them on September, May and June Month. There are various other factors to be considered before investing. We also suggest that the same can be applied in minimum number stocks and expand the same on blue-chips base on the risks and rewards. The Indian investor needs to study the publicly available evidence cautiously because it plays a vital part in the Market Effectiveness and changes in the market. The current study would be useful for native and foreign investors, traders and arbitragers who invent the profitable trading strategy in the stock market.

VII. ANALYSIS AND INTERPRETATION

<table>
<thead>
<tr>
<th>DOWE – SHARIAH INDEX</th>
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<tbody>
<tr>
<td>Monday</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Std. Deviation</td>
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<tr>
<td>Variance</td>
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<td>Skewness</td>
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<td>Kurtosis</td>
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<td>ShapiroWilk</td>
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Source – Collected and computed through NSE web portal

High mean yields were seen in the Friday (0.898) and low mean returns were found in the Monday (- 0.1294). While contrasting with change, undeniable degree of unpredictability was seen in the Monday (20.017) and low degree of instability was seen on the Wednesday (0.902). Aftereffect of the Skewness test uncovers that negative worth was seen on the Monday (- 20.017), and Thursday (- 1.130) returns, which infers that a large portion of the Monday and Thursday returns were less than the normal returns. The other area day's profits stayed saw positive Skewness, which infers that a large portion of a few days ago's profits were more than the normal returns. The Kurtosis aftereffects of the NSE Shariah list returns were found platykurtic on Tuesday (2.480) and Wednesday (2.038), different days results were found leptokurtic. The Calculated P estimation of the Shapiro-Wilk trial of NSE Shariah list returns is under 0.05, it is obviously showed that the information are not typically dispersed.
Consequently, peculiarity happens NSE Shariah file returns. The accompanying table outlines the determinants of Day of the week impact on NSE Shariah file. The consequence of OLS relapse investigations reveal that the select autonomous factors altogether add to 7.92 percent variety in Friday returns [20-34].

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>DETERMINANTS OF DOWE – SHARIAH INDEX</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
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<tr>
<td>Const</td>
<td>0.10827</td>
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<tr>
<td>Tuesday</td>
<td>-0.054868</td>
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<tr>
<td>Wednesday</td>
<td>-0.0524195</td>
</tr>
<tr>
<td>Thursday</td>
<td>-0.0312111</td>
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<tr>
<td>Monday</td>
<td>0.0283911</td>
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<tr>
<td>R-squared</td>
<td>0.7923</td>
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<tr>
<td>F(4, 298)</td>
<td>0.59461</td>
</tr>
</tbody>
</table>

VIII. CONCLUSION

The results affirm the presence of Day of the Week impact in NSE Shariah list stock. The investigation raises inquiries on the EMH which situations with stock costs are arbitrary and those financial backers can't get strange benefits utilizing verifiable costs. The NSE Shariah designs consequently and instability can capable financial backers to take advantage of relatively normal market changes by manipulative and executing exchanging strategies, which justification such expectable structures. The existent speculations are lacking in displaying financial exchange. The financial exchange is brimming with abnormalities. On the off chance that the market isn't effective, financial backers can make benefit by breaking down the noteworthy information. By delving in to huge information you can uncover a lot of failure which can be to make in to significant yields. By finding these failures you can make the framework more productive.

REFERENCE

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