MINING BASED PARAMETRIC ANALYSIS AND PATTERN CLASSIFICATION OF NSE SHARIAH INDEX: A MONTHLY PREDICTION MODEL

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ABSTRACT
This study examines the Persistence of a Turn of the Month Effect (TOM) in NSE Shariah index in Indian Stock Market using data mining. The current investigation utilizes the everyday return information of the National Stock Exchanges (NSE) Shariah Index for the time frame reaching out 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 likewise solid with the Anomalies exists in the financial exchange in India, Shariah file is wasteful, and thus, financial backers can time their offer ventures to grow profit.

Keywords: Data Mining, Anomalies, Turn of the Month Effect (TOME), Efficient Market Hypothesis, NSE Shariah and Riba rule, Parametric Analysis, and Pattern Classification.

I. INTRODUCTION
The movement of stock prices to upsurge during the last two days and the first three days of each month, is called TOM Effect. For the persistence of this study, the average return on the last two trading days of the preceding month, and the first three days of the subsequent month were calculated and related with the mean return for the rest of the days in the subsequent month. Islamic fund is a reasonably new phenomenon in the financial system of India. Shariah is the Islamic laws which standardize a lot of aspects of a Muslim's 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. Stock market plays an important role for the economic development of a rustic, by properly channeling the funds for productive purpose.

The suggestion that an all around managed stock trade broadens critical monetary administrations is currently generally acknowledged and perceived by different academicians. Financial exchange helps economy likewise as individual financial backers by preparing the scant assets and designation in those areas, which utilize them ideally. Financial exchange helps singular financial backers by giving persistent commercial center to protections. According to monetary perspective, an all around created securities exchange has been viewed as essential for financial development just as enhancements in nation's profitability. The advancement of a nation can be decided by discovering the securities exchange pointers like liquidity, resource estimating and turnover. Moreover, by guaranteeing a free and reasonable exchanging of stocks and execution of valuing instrument, by guaranteeing a fitting profit from speculation will guarantee feasible venture openings, in the securities exchanges goes about as a main impetus for diverting reserve funds into productive speculation and subsequently, guarantees an ideal allotment of capital. As of late, there has been more noteworthy trouble amidst investors, portfolio administrators and scientists worried about the conduct of securities exchange costs. The financial backers are anxious to acquire a higher pace of profit from their speculations. Subsequently, to fulfill financial backer's assumptions, the portfolio chiefs need to take a gander at the securities exchange conditions acutely and appropriately 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. Throughout the most recent couple of years, cutting edge innovation and online based exchanges have modernized the stock trades though, regarding the quantity of organizations recorded and complete market capitalization, the New Delhi market is considered huge 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 scientists for quite a while because of its capability of creating unusual returns during specific times of the year. Irregularity alludes to the normal and monotonous change in a period arrangement which happen intermittently 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, in any case, abuses a significant speculation in money, for example Effective Market Hypothesis (EMH) on the grounds that value costs are no longer irregular 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 exact analysts on the conduct of stock returns.

Which conveyed considerable straightforwardness in share market practices and accordingly prevailing to get confidence of public financial backers as well as the worldwide ones. Securities exchange assumes a fundamental part for the monetary improvement of a country, by appropriately diverting the assets for gainful reason. The recommendation that a very much controlled financial exchange expands critical 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 assignment in those areas, which utilize them ideally. Financial exchange helps singular financial backers by giving persistent market to protections. Securities exchange effectiveness is among the most investigated regions in money. Financial exchanges are viewed as productive educational. The frail type of market effectiveness expresses that it is preposterous to expect to anticipate stock cost and return developments utilizing past value information. Following Fama (1965; 1970), a colossal number of studies were directed to test the proficient market speculation (EMH). These investigations generally have shown that stock costs act arbitrarily. All the more as of late, notwithstanding, specialists have gathered proof restricting to the EMH.

They have distinguished deliberate varieties in the stock returns. The significant inconsistencies incorporate the Semi-Monthly impact and the occasional impact. The presence of the occasional impact denies the feeble type of the EMH and infers market failure. In a wasteful market financial backer would have the option to acquire strange benefits, that is, returns that are not suitable with hazard. The idea of Shariah-consistent files originally came up inside the 1960s; notwithstanding, they need as of late got famous. In any case, 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 limited from putting resources into organizations engaged with selling liquor, pork items, sexual entertainment or weapons, likewise as those with betting interests. Any pay emerging from these sources should be given to good cause. By barring these regularly unpredictable areas – a large number of which are affected by political choices – these ETFs will in general be less unstable than others, and have outflanked 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 primary Shariah-agreeable files 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-consistent files, which are regulated and affirmed by their separate Islamic administrative sheets. In 2009, the essential Shariah-agreeable file was dispatched in South Africa, acquainting greater speculation prospects with the country's enormous Muslim people group. Shariah-agreeable files aren't just fascinating venture alternatives for Muslims, yet additionally for non-Muslim financial backers since they will be less unpredictable than different procedures. The Bombay securities exchange (BSE) inside the Indian city of Mumbai has dispatched a substitution record which comprises of organizations that meet the Islamic code. The Tasis Shariah 50 was framed utilizing rules from an Indian Shariah arranging board. Studies have tracked down that the greater part Muslims in India are rejected from the country's formal monetary area. That is on the grounds that shariah doesn't permit interest in organizations that sell merchandise like liquor, tobacco or weapons. Neither does it permit interest in organizations that determine huge exploit interest. The list is intended to be the thought for other Shariah-agreeable monetary items[52][53].

BSE chief and Chief Executive Madhu Kannan said that the new record would pull in Islamic and other "socially dependable"; financial backers both in India and abroad. This record will make expanded familiarity with money related speculations among the majority and help improve monetary consideration, he said during an assertion.
Organizations included inside the file 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 record to follow Shariah-agreeable stock is essential, MH Khatkhatay, senior consultant to Tasis, told the Reuters press organization.

On the off chance that you have an ETF (trade exchanged asset), for example, you might want a file, or if abroad financial backers need to take a situation in Shariah record in India, this is frequently a call for cooperation for individuals to return and contribute. Tasis said the record 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 exploration and tasks 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 inspected month to month to ensure they actually satisfy the guidelines – any which don't will be taken out. A Shariah List during a record of organizations that are discovered to be agreeable with the Islamic authoritative law or the Shariah. Most Shariah records which are made so far off are upheld a current or an essential document. The Overview of Global Islamic Banking and Finance resources in fig 2 and by house in fig 3 and 4.

![Global Islamic Fund Assets Trend](https://ebctv.net)

**Fig. 2 Global Islamic Fund Assets (Source: https://ebctv.net)**


**Fig. 3 Global Islamic Finance Assets (Source: https://islamicfinance.com)**
Whose constituents are evaluated for consistency by a board that is knowledgeable inside the norms 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 likewise as a couple of the working extents that the corporate works with, as clear 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 surrendered premise likewise as publicizing and media (notwithstanding every day papers and a couple of different cases which are analyzed on an individual reason), would be gotten out of the list. Essentially, the amount of commitment, money and subsequently the degree of pay that is assembled from resistant exercises is furthermore thought about. A model, a partnership may be agreeable if the proportion of obligation to the market cost of value is a more modest sum than 33%.

The BSE and Mumbai-based Taqwaa Admonitory and Shariah Speculation Arrangements (Tasis) has impelled India's to begin with esteem rundown of organizations that suits Sharia, the shariah, it's an undertaking to build investment of Muslims inside the value promote and pull in adventure from general stores that follow to shariah. The BSE Tasis Shariah 50 two or three 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 disaster of sureness in overall financial 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.

Nonetheless, the non-consistency suggestion has been addressed as of late and subsequently certain irregularities 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 abnormalities discredit the presence of Efficient Market Hypothesis. In this manner, in the current investigation a sincere endeavor has been made to find out whether Anomalies exists in BSE Sensex, NSE Index, BSE and NSE Sectoral records and if exists, nature of abnormality exists in Indian Stock Market. On the off chance that the market is proficient, there exists some market productivity inconsistencies, the financial backers can acquire some unusual returns by utilizing deliberately methodologies inside the market. A major blast has been seen in Stock Markets as of late.

An enormous number of most recent players have entered the market and attempting to acknowledge piece of the overall industry during this quick improving business sector. Investigation of abnormalities help the financial backers in exploiting the anomaly of data on the lookout. Financial backers may have opportunities to utilize the schedule inconsistencies to acquire strange return. The developments of stocks during specific seasons, specifically securities exchanges can be noticed and speculations should be possible in like manner. The peculiarities could be distinguished by considering the value developments of the stock and the financial backers can contribute shrewdly during these occasions to acquire strange returns.

Organizations additionally are screened on other monetary boundaries like: (a) a company shouldn't have revenue based getting very 33% of its market capitalization. (b) Interest acquiring shouldn't be very 5% of its complete pay (c) Receivable (current + long haul) shouldn't be very 45% of the whole resources
II. REVIEW OF LITERATURE

Ashish Garg, and etc (2010) in their study found that the TOM effect does exist both at Indian stock market and US market. Archana. S, and etc (2014) found that the TOM effect is marginally observable but not statistically confirmed for the analysed period. Eleftherios Giovanis (2009) in his Study found that the TOM effect is still preserving only in two stock indices, in Yugoslavia and Sweden. Reason for TOM effect the transaction cost, which are too high for the investors to profit from this calendar anomaly, as the investors cannot exploit the pattern. Lan Liu (2013) in his study found that the TOM does exist in US. Investment made on days before the TOM performs better than those made during the turn-of-the-month. Nageswari. P and etc (2011) in their study prove that the TOM Effect does not exists in Indian Stock Market. Hence, the Indian Stock Market cannot be treated as fully efficient till now. Neeraj Amarnani and etc (2014) in their study found that the TOM effect does exists in both Sensex and Nifty in India.

Prajapati. B. A, Ashwin Modi and Jay Desai (2013) in their study proves that the TOM effect does exists in selected indices, also confirms that all the markets tested in the research are not efficient and there exists opportunities for superior returns. Silva. PM (2010) in his study initiate that the TOM effect does exists in the Portuguese stock market. Van der Gugten and etc. (2010) in their study found that TOM effect still present when macro-economic news announcement days are not considered. The significance of the TOM effect is practically the same for non-announcement days and for all trading days. Vesna Karadzic and Tamara Backovic Vulic (2011) in their study proves that TOM effect does exists in Montenegrin capital market. Muhammad Shahid Iqbal, Rehana Kouser, and Muhammad Azeem (2013) in their study discover that significant Ramadan effect, 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 [1-28].

III. OBJECTIVE OF THE STUDY

To find the turn of the month effect in Shariah index.

IV. RESEARCH METHODOLOGY

The research is analytical in nature’ Shariah index is computed since 2009 in NSE Nifty. Historical data collected for the period ranging between January 2009 and March 2019 [29-33].

V. TOOLS FOR ANALYSIS

The collected figures have been investigated by making use of Returns, Descriptive statistics, Shapiro-Wilk test and Paired t-test.
VI. ANALYSIS AND INTERPRETATION

TABLE I
TURN OF THE MONTH EFFECT – SHARIAH INDEX

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>ShapiroWilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Half (FH)</td>
<td>0.209</td>
<td>0.178</td>
<td>0.448</td>
<td>0.20</td>
<td>-0.12</td>
<td>-0.34</td>
<td>0.00</td>
</tr>
<tr>
<td>Rest of the Month (ROM)</td>
<td>0.046</td>
<td>0.027</td>
<td>0.310</td>
<td>0.09</td>
<td>0.69</td>
<td>1.79</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source – Collected and computed through NSE web portal

High mean yields were perceived in the FH month (0.2095) and low mean yields were found in the ROM (0.0463). Whereas compare to variance, High instability was noted in the FH month (0.20) and low instability was perceived on the ROM (0.096). Skewness test revealed that adverse value noted throughout the FH month (-0.125) yields, the ROM (0.695) returns was perceived positive Skewness. Kurtosis of the Shariah index earnings were initiate platykurtic on together the FH month (-0.342) and the ROM (1.794).

The Calculated P value of the ShapiroWilk test of Shariah index returns is fewer than 0.05, it is evidently showed that the figures are not normally scattered. Hence, anomaly occurs in Shariah index returns.

TABLE II
TOM EFFECT – SHARIAH INDEX

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Paired t value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Half</td>
<td>0.209</td>
<td>0.44894</td>
<td>2.655</td>
<td>0.010</td>
</tr>
<tr>
<td>Rest of the Month</td>
<td>0.046</td>
<td>0.31046</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source – Collected and computed through NSE web portal

The calculated P value is fewer than 0.05, it is inferred that the Shariahindex earnings varies between the first half and rest of the month.

VII. SUGGESTIONS

Significant yields are seen on FH of the month; subsequently, financial backers may like to stocks purchase on rest of the month and sell them on FH of the month. There are different variables to be considered prior to contributing. We likewise propose that the equivalent can be applied in least number stocks and grow something similar on blue-chips base on the dangers and prizes. It is fundamental for the Indian financial backer to warily contemplate the freely accessible proof, since it has an imperative impact in the Market Effectiveness and changes on the lookout. The current examination would be valuable for local and unfamiliar financial backers, merchants and arbitragers who imagine the profitable exchanging procedure the securities exchange [29-33].

VIII. CONCLUSION

The results affirm the presence of Turn of the Month Effect in Shariah list. The investigation raises questions on the EMH which situations with stock costs are arbitrary and those financial backers can't get peculiar benefits utilizing verifiable costs. The NSE Shariah designs consequently and instability can capable financial backers to take advantage of similarly ordinary market changes by manipulative and executing exchanging strategies, which justification such expectable structures. The existent speculations are lacking in demonstrating securities exchange. The financial exchange is brimming with oddities. In the event that the market isn't productive, financial backers can make benefit by breaking down the memorable information. By delving in to huge information you can uncover a lot of failure which can be to make in to exceptional yields. By finding these failures you can make the framework more productive.

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