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Impact of Seasonal Variations in Nifty 50 and Nifty 500 Shariah Indices of National Stock Exchange of India

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Abstract: The present study compares the impact of seasonal variations in Nifty 50 index and Shariah index by using Shapiro-Wilk test and t- test. The result shows that there isn't any significant variation in the daily returns of the two indices under consideration. Butmore variations in the returns of Nifty 50 index can be seen in the seasons of Winter, Summer and Rainy (i.e. first, second and third quarters of a year especially in the months of January, March, May, June and August) and it is Rainy, Autumn and Winter seasons for Shariah index (i.e., third, fourth and first quarters of a year especially in the months of January, July, August, September, October and November). Therefore, seasonal anomalies can be seen commonly in both the indices in winter and rainy seasons which proves the existence of seasonal variations in Nifty 50 and Shariah indices of NSE.

Key words: *Nifty 50 index, Nifty 500 Shariah Index and Seasonal Variations*

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1.1Introduction

The Efficient Market Hypothesis holds that the present prices at the stock market will reflect entire past and current information. One of the implications of EMH is that the returns which are expected from an asset must be disseminated uniformly through any part of time. However the experiential works on the behaviors of stock returns have released some irregularities where inconsistencies in asset returns are seen to belinked with the piece of time (Bandhani (2004)). This informs the securities market participants to establish new methods to maximize the returns with respect to market trends.

Prior studies have initiated the actuality of seasonal anomalies in both developed and developing markets. The seasonal variations in stock exchanges of India were also inspected by numerous investigators (eg. Chaudhury (1991and 2000) Poshakwala (1996) Bhattacharya, Sarkar and Mukhopadhyay (2003)). They examine the seasonality outline in Indian indices. However study concerning seasonal arrangement on Shariah index is partial. Henceforth, the aim of this research is to open up the seasonal anomalies in Nifty 50 and Nifty 500 Shariah indicies of NSE during the time period of 1st January 2015 - 31st December 2018.

Review of Literature

Albaity and Ahmad (2008) and Ahmad (2002) established the insignificant return variance in addition to long run bidirectional association between KLSI and KLCI of Malaysia. Dash (2011) provides the confirmation about the seasonality in the stock markets of India. Additionally, the work put forward that the prevalence of stock market crashes lessens the seasonal impact. Higher and lower returns are attained during different times, days, weeks, or months of the year (Kuria & Riro, (2013)). Desai et.al. (2012) established that there is a chance to get additional profit by the investors due to seasonal anomaly. Seasonality in stock returns makes it difficult for the investors to predict equity prices based on past patterns and it is considered as the weak form of market efficiency (Kuria & Riro, (2013). Kuria et.al (2013) recognized that the stock exchanges in Kenya are not restricted from seasonal irregularities in spite of the enlarged usage of IT and plentiful governing expansions. Study from Norvaisiene et.al. (2015) verified that Halloween effect occurs in stock exchange of Estonia besides the existence of Monthly effect in both the markets of Estonia and Lithuania.

Generally, the prevailing literatures' relating to Islamic indices is narrow. Majority of the literatures are related to the developed stock markets. Comparable studies in the arena of Islamic index in developing stock markets like India are rarely made. The present study analyses the performance of Nifty 50 and Nifty 500 Shariah indices of National Stock Exchange of India during various time intervals for a period of four years.

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Research Methodology

The study uses the closing values of Nifty 50 and Shariah (Islamic index in India) indices for the time period. It compares the impact of seasonal variations in Nifty 50 index and Shariah index by using Shapiro-Wilk test and two sample t –test.

Results

Analysis of Daily Returns

The study tests the following hypotheses.

1. H0 = Daily returns of the Nifty 50 and Shariah indices are distributed normally.
2. H0 = There is no significant difference between daily returns of the Nifty 50 and Shariah indices.

According to the tables 1and 2, the return of Nifty 50 index on Wednesday is lesser than the other week days while the mean returns of the Shariah index is higher on Friday and Wednesday than the rest of the days. The results of Shapiro-Wilk test displays that the daily returns are not distributed normally for the entire week days other than Wednesdays and hence the null hypothesis is overruled for all the days other than Wednesday. The study analyzed that the purchasing activities of the stock market traders are less in Wednesdays.

The table 3 discloses that both the indices are moderately correlated for the entire week days excluding Friday. As per the t-test, there is certainly no difference between the daily returns of the Shariah index and Nifty 50 index. Hence, this study backup the null hypothesis.

Analysis of Monthly Returns

The following hypotheses are tested in this section.

1. H0 = Monthly returns of the Nifty 50 and Shariah indices are distributed normally.
2. H0 = There is no significant difference between monthly returns of the Nifty 50 and Shariah indices.

The tables 4 and 5 disclose that the normal return of the Nifty 50 index is more in July as well as in May while that of Shariah Index is higher in July in addition to December . The results of Shapiro-Wilk test displays that the Monthly returns of the Nifty 50 Index is not distributed normally except for the months of February, April, July, September,

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October, November and December and in case of Shariah Index, it is not distributed normally for the months of January, July, August, September, October and November . Therefore the null hypothesis is overruled for the months of January, March, May, June and August for Nifty 50 index and January, July, August, September, October and November for Shariah Index .

As per the table 6, there exist a high correlation between Shariah and Nifty 50 Indices. The t-test suggests a significant difference between the monthly returns of the Shariah and Nifty 50 indices in January and December and discards the null hypothesis. The January Effect prevailing in the stock exchange is the reason behind this. January effect influence the market returns at NSE. Many investors sell low value shares during the end of the year, that is, in December. The selling of the low value shares at lower prices decreases the prices of the stock. However, when December comes to an end, people close their accounts until January and they start acquiring shares, resulting into stock prices bouncing back to the normal prices.

The null hypothesis is accepted for the remaining months indicating that there isn't any significant difference between the monthly returns of the Shariah and Nifty 50 indices during the study period.

Analysis of Quarterly Returns

The following hypotheses are tested in this section.

The following hypotheses are tested in this section.

1. H0 = Quarterly returns of the Nifty 50 and Shariah indices are distributed normally.
2. H0 = There is no significant difference between Quarterly returns of the Nifty 50 and Shariah indices.

The table 7 discloses that the return of the Nifty 50 index is increasing till Second Quarter and thereafter it starts decreasing. The results of Shapiro-Wilk test displays that the quarterly returns of the Nifty 50 index is not distributed normally for all the quarters other than Fourth Quarter. . The normality exists in this Quarter due to the October Effect. As a result, less trading happens in that month. The other reason is, it is a year-end quarter in which investors eagerly waiting for the beginning of a New Year for making fresh investments and they use cash bonuses for investments in the New Year. Both are the reasons behind the normality of the quarter from October to December. Therefore, the null hypothesis is disallowed for the entire quarters other than the Fourth Quarter

The mean quarterly returns of the Shariah index are increasing till Third Quarter and thereafter it starts decreasing. The results of Shapiro-Wilk test displays that the quarter return distribution of the Nifty 500 Shariah index is not normally distributed for all the quarters other than the Second Quarter. The reason behind this normality is that these three months are the months of Siyam

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(fasting) for Muslims. These are the months in which they give more importance to prayers and sacrifices than making trading and investments in stock market. Therefore, the null hypothesis is disallowed for the entire quarters other than the Second Quarter.

Table 8 discloses that the quarterly returns of the indices are highly correlated except for First Quarter. Additionally, there isn't any significant variation between quarterly returns of the Shariah index and Nifty 50 index for all the four quarters and it supports the null hypothesis.

5. Summary of the study

The study relates the impact of seasonal variations in Nifty 50 and Shariah indices by using Shapiro-Wilk test and t- test. The result shows Wednesdays are least preferred by the investors to invest in the stock market. The day-wise returns of both the indices during the study period are equal. In case of month wise returns, Nifty 50 index is not normally distributed for January, March, May, June and August and monthly returns of Nifty 500 Shariah Index is also not normally distributed for the months of January, July, August, September, October and November. There exist a significant variation in the month-wise returns of the indices during January and December. This is due to the January Effect prevailing in the stock exchange. The quarter return distribution of Nifty 50 index is normal only for the Fourth Quarter due to the October Effect. In case of Nifty 500 Shariah index the distribution is normal only for the Second Quarter due to Siyam (fasting) effect. The quarter mean returns of the indices are equal in the study period.

Thus, this study reveals that there exist seasonal variations in Nifty 50 and Shariah indices of NSE. More variations in the returns of Nifty 50 index can be seen in the seasons of Winter, Summer and Rainy (i.e. first, second and third quarters of a year especially in the months of January, March, May, June and August) and it is Rainy, Autumn and Winter seasons for Shariah index (i.e., third, fourth and first quarters of a year especially in the months of January, July, August, September, October and November). Therefore, seasonal anomalies can be seen commonly in both the indices in winter and rainy seasons of first and third quarters of a year particularly in the months of January and August.

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Annexure

Table1: Descriptive Statistics of Day-wise returns of Nifty 50 index

Parameters	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Mean	0.00059677	-0.0003299	0.00021692	0.00035717	0.00057
Median	0.00147322	-0.00000668	-0.00019863	0.00041369	0.00085
Maximum	0.026071	0.033669	0.02401	0.026167	0.02324
Minimum	-0.059151	-0.029964	-0.027364	-0.033171	-0.0269
Std. Dev.	0.009632507	0.008286245	0.007770866	0.00839451	0.00863
Skewness	-1.214	-0.28	0.048	-0.434	-0.409
Kurtosis	6.92	2.44	0.697	1.708	0.877
Shapiro-Wilk test	0.932	0.956	0.99	0.976	0.979
Probability	.000*	.000*	0.171	.002*	.006*

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Observations	198	196	203	197	193

*Significant at 5 per cent level

Table2: Descriptive Statistics of Day-wise returns of Nifty 500 Shariah index

Parameters	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Mean	0.00043309	0.00001063	0.00060505	-5.614E-05	0.00077
Median	0.00223248	0.00121869	0.000161	0.00051772	0.00141
Maximum	0.025759	0.026536	0.02491	0.019445	0.02226
Minimum	-0.066865	-0.027011	-0.02339	-0.030408	-0.0327
Std. Dev.	0.010569639	0.007899814	0.007368335	0.00777988	0.00831
Skewness	-2.188	-0.446	0.117	-0.727	-0.531
Kurtosis	11.48	0.93	0.738	1.943	1.692
Shapiro-Wilk test	0.858	0.972	0.992	0.966	0.976
Probability	.000*	.001*	0.354	.000*	.003*
Observations	191	187	194	188	184

*Significant at 5 % level

Table 3: Results of Correlation and Two sample mean‘t’ test between the Day-wise Returns of Nifty 50 index and Nifty500 Shariah index

Parameters	**MONDAY**	**TUESDAY**	**WEDNESDAY**	**THURSDAY**	**FRIDAY**
Correlation	.578	.534	.587	.573	.364
p-value	.000*	.000*	.000*	.000*	.000*
t-value	0.135	-0.667	-1.241	0.864	-0.348
p-value	0.893	0.506	0.216	0.389	0.729

*Significant at 5 per cent level

Table 4: Descriptive Statistics of Month-wise returns of Nifty 50 index

Month	**Mean**	**SD**	**Skw**	**Kurt**	**Shapiro-Wilk test**	**P**	**Obs**
Jan	0.00114804	0.009382176	-0.505	1.82	0.956	.010*	84
Feb	-0.00100423	0.00973962	-0.318	1.151	0.982	0.363	78
Mar	0.00072396	0.009370605	0.524	1.622	0.966	.041*	82

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April	0.000704	0.007652634	-0.26	0.598	0.985	0.497	76
May	0.00131941	0.00872626	-0.155	1.633	0.955	.009*	86
Jun	0.00008834	0.007036127	-0.888	2.21	0.944	.002*	86
July	0.00192646	0.006427034	-0.581	1.258	0.973	0.101	86
August	-0.00069928	0.010072894	-2.377	14.301	0.818	.000*	85
Sept	-0.00114032	0.009304398	-0.294	-0.318	0.983	0.428	79
Oct	-0.00014254	0.009051356	-0.265	1.217	0.974	0.115	79
Nov	-0.00067764	0.008409768	-0.543	0.902	0.975	0.133	82
Dec	0.00041168	0.00793316	-0.089	-0.35	0.988	0.704	84

*Significant at 5 per cent level

Table 5: Descriptive Statistics of Month-wise returns of Nifty 500 Shariah index

Month	**Mean**	**SD**	**Skw**	**Kurt**	**Shapiro -Wilk test**	**P**	**Obs**
Jan	-0.00046203	0.010558892	-2.117	8.606	0.839	.000*	84
Feb	-0.00071781	0.009966572	-0.284	0.689	0.982	0.377	78
Mar	0.00114304	0.008091598	0.497	0.401	0.98	0.267	82
April	0.00094919	0.007495586	-0.365	0.183	0.984	0.463	76
May	0.00052868	0.007657791	-0.123	0.4	0.991	0.897	86
Jun	0.00056357	0.006748602	-0.37	0.49	0.983	0.426	86
July	0.00187105	0.006079886	-0.698	0.356	0.961	.021*	86
August	-0.0001033	0.01071681	-3.177	19.386	0.761	.000*	85
Sept	-0.00089243	0.009241948	-0.502	-0.226	0.961	.019*	79
Oct	0.00013229	0.009186355	-0.658	3.12	0.937	.001*	79
Nov	-0.00067408	0.00887311	-1.152	2.016	0.924	.000*	82
Dec	0.00120733	0.00811233	0.003	0.091	0.993	0.948	84

*Significant at 5 %level

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Table 6: Results of Correlation and Two sample mean‘t’ test between the Month-wise Returns of Nifty 50 index and Nifty500 Shariah index

	Correlation	p-value	t-value	p-value
JANUARY	0.729	0.00*	2.271	0.026*
FEBRUARY	0.907	0.00*	-0.775	0.441
MARCH	0.913	0.00*	-1	0.32
APRIL	0.883	0.00*	-0.582	0.562
MAY	0.888	0.00*	1.964	0.053
JUNE	0.897	0.00*	-0.696	0.488
JULY	0.846	0.00*	-0.097	0.923
AUGUST	0.93	0.00*	-1.485	0.141
SEPTEMBER	0.889	0.00*	-0.307	0.76
OCTOBER	0.893	0.00*	-0.754	0.453
NOVEMBER	0.877	0.00*	0.386	0.701
DECEMBER	0.933	0.00*	-2.38	0.02*

*Significant at 5 per cent level

Table 7: Descriptive Statistics of Quarter -wise returns of Nifty 50 index and Nifty 500 Shariah index

Quarter / Parameters	I		II		III		IV	
	Nifty	Shariah	Nifty	Shariah	Nifty	Shariah	Nifty	Shariah
Mean	0.00030678	-0.0000417	0.00081383	0.00052682	0.00057	0.000629	-0.0000067	0.0004133
Median	0.00030255	0.00079655	0.00075415	0.00049591	0.00102	0.001377	0.00024898	0.0013234
Maximum	0.033669	0.026536	0.02401	0.018721	0.02016	0.017649	0.02324	0.02491
Minimum	-0.033171	-0.054386	-0.027364	-0.02339	-0.0592	-0.06687	-0.026913	-0.032725
Std. Dev.	0.009012006	0.009399352	0.008123427	0.00729405	0.00866	0.008671	0.00865683	0.0087809
Skewness	0.017	-0.959	-0.349	-0.214	-1.721	-2.222	-0.185	-0.6
Kurtosis	1.408	4.698	1.194	0.2	10.091	14.378	0.672	1.901
Shapiro-Wilk test	0.983	0.949	0.979	0.995	0.904	0.873	0.989	0.964

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Probability	.013*	.000*	.003*	0.629	.000*	.000*	0.118	.000*
Obs	213	244	248	248	250	250	245	245

*Significant at 5 per cent level

Table 8: Results of Correlation and Two sample mean‘t’ test between the Quarter-wise Returns of Nifty 50 index and Nifty500 Shariah index

	Q1	**Q2**	**Q3**	**Q4**
Correlation	-0.056	0.886	0.902	0.899
p-value	0.419	0.00*	0.00*	0.00*
t-value	0.316	0.576	-1.097	-1.289
p-value	0.752	0.565	0.274	0.198

*Significant at 5 per cent level

