

## ANALYSIS OF STOCK MARKET CALENDAR ANOMALIES IN HOSPITALITY INDUSTRY

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**Abstract:** Indian stock market is the oldest stock market in Asia and BSE is the prime stock exchange of India. Stock Market should follow random walk in order to attract investment from within and outside country. Recently holiday business at the present end up being a huge industry in India. As per the "World Travel and Tourism Council", Holiday business in India is prone to make US \$121.4 bn of financial action by 2015, and the "Hospitality Sector " would-be to procure US \$24 bn foreign exchange by 2015. It is obvious that this sector has generated the interest of both investors and brokers. Therefore there is emergent need to study this unexplored sector of stock market for its random walk behavior. This study will contribute in the area of Stock market Efficiency by re-examining Calendar effect in Hospitality Sectors. GARCH model is used to analyze the data for the period between January 2005 and December 2015. Analysis leads to dual conclusions, firstly, Indian stock Market is not efficient and secondly, anomalies varies from company to company. Our study found that calendar anomalies change its behavior on the basis of stocks selected for analysis. Reason of difference could be the variation in investor sentiments for various stocks at different calendar movements. Therefore it can be concluded that the stock market is not homogeneous and integrated. Anomalies are still there in Indian stock market, and these anomalies are heterogeneous in nature. It is advisable that the investor should plan its investment strategy accordingly.

**Index Terms:** Stock Market Returns, Information and Market efficiency, Month of Year, Dummy variable, GARCH Model, hospitality sector.

**JEL Classification:** G120, G1, G140, Y9

### 1. INTRODUCTION

An anomaly in general means abnormal or unfamiliar happening. Wachtel (1942) conjecture that the feeling of good fellowship and cheer associated with this festive occasion may spill into the security market. They are the unexpected or anomalous regularities in security rates of return. However In other words anomalies are observed outcomes different from already existing notions of asset pricing behavior. They designate either market inefficiency or shortfalls in underlying asset pricing model. Stock market anomalies are empirical conclusions that cannot stand described through extensively recognized financial theories. It becomes extremely

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important to study stock “market anomalies” because that can highly expand the Knowledge of financial markets. In contemporary world several challenges to market efficiency came to existence, few of them are size effect, the weekend effect and momentum effect. All these challenges are known as stock market anomalies and the shortfalls in model for testing market efficiency. “Anomalies” are taken as unfamiliar or unusual event among non-investing groups however for shareholder it is condition where “stock market” performs against the efficient market hypothesis. Every examination of “Market efficiency” is a twofold one one-hand it examines the market efficiency on other hand it also test the expected model of revenue generation. Specific persistence, regular and apparent market inefficiencies are termed as “Anomalies”. Notion of Market efficiency proposes that every security is valued efficiently to fully reflect all the information in security prices. However, calendar effect leads to greater or lesser earnings based on the time series. Conclusively when stock yields exhibits certain empirical regulations which are challenging to describe using already established asset evaluation theories, they are called stock market anomalies. Bonin and Moses (1974) studied the seasonality in US stock market using data of 30 individual stocks and found seasonality in 7 stocks out of total 30. Rozeff and Kinney present (1976) presents evidence on the existence of seasonality in monthly rates of return on the New York Stock Exchange from 1901-1974. With the exception of the 1929-1940 period, there are statistically significant differences in mean returns among months due primarily to large January returns. The Month of year effect is a well-known stock market anomaly where stocks experience higher returns in a particular Month as compared to another months of the year. January Anomaly is well recognized and documented anomaly. Large number of studies around the world proved that this anomaly is present not only in particular stock at particular country. But it a universal phenomenon. Various scholarly studies have exhibited that this effect is huge not only over a wide range of classes of securities, but also in different markets of the world. Academic community had tested the turn-of-the-month effect using both parametric and non-parametric approaches, but just a couple of studies have offered the comparison of Calendar anomalies for the purpose of financial strengths of these Anomalies. These comparisons include comparison of Calendar anomalies in Small and Large Cap Stocks. Sehgal and Tripathi (2005) examined the size effect in Indian stock market using BSE-500 data for the period 1990-2003. They analyzed size premium using six alternative measures of company size. It was found that the size based investment strategy was able to provide abnormal returns to the investor. It was also identified that size effect is not the result of January anomaly. Lean *et al.*, (2007) examined the seasonality in Hong-Hong, Taiwan, Singapore, Malaysia, Thailand, Indonesia and Japan. The period of study was 1988 to 2002. They used stochastic dominance test and descriptive statistics for the examination of month of year and day of the week effect. It was found that there was a January effect in Hong-Hong. However no such pattern in other countries. It was established

that there was of the week effect in Asian stock market. They also reported presence and absence stock market anomalies as future scope of study. There were studies about international integration of all stock Market and provide the evidence that the stock markets around the world are not yet integrated. Raj and Kumari (2006) tested the efficiency of Indian stock market by examining day of week, weekend, turn of year effect and April effect. They applied ordinary least square regression and found that seasonality was there in stock market but it was different from other countries. They found reverse weekend effect that was Monday return were higher as compared to other days of week. They also found negative Tuesday effect in market. April returns were higher but March return are not among the lowest. These dissimilarity of seasonality from International market indicated that the stock market of India is not yet integrated with world market and provide the opportunities to investor for portfolio diversification. There were was tradition of comparing calendar anomalies Among Various Nations. A few scientists have studied that the turn-of-the-month effect in two different periods.

Indian stock market is the oldest stock market in Asia and BSE is the prime stock exchange of India. Stock Market should follow random walk in order to attract investment from within and outside country. Recently holiday business at the present end up being a huge industry in India. As per the "World Travel and Tourism Council", Holiday business in India is prone to make US \$121.4 bn of financial action by 2015, and the "Hospitality Sector" would-be to procure US \$24 bn foreign exchange by 2015. In recent year Indian hospitality sector has become one of important sector contributing toward the growth of service sector. Hospitality sector has contributed about 6.23 percent to GDP of country and 8.78 percent of employment in the country. The industry has seen healthy growth in recent years due to the huge inflow of foreign tourist and movement of national tourists has also increased. Hotels are important components of this industry. Hotel industry in India generally experiences extraordinary demand during October-April, followed which the monsoon months entail low demand. Generally the December and March quarters fetch maximum portion turnover for India's hoteliers. However, this trend has changed in recent past. Hotels had started offering new offers to fetch more customer in non-seasonal months. This include targeting and segmenting the market and developing the packages accordingly. It is obvious that this sector has generated the interest of both investors and brokers. Therefore there is emergent need to study this unexplored sector of stock market for its random walk behavior. This study will contribute in the area of Stock market Efficiency by re-examining Calendar effect in Hospitality Sectors.

## **2. LITERATURE REVIEW**

Keim (1982) scrutinized the "January effect" using dummy variable ordinary least square regression, Scholes-Williams betas and Dimson-beta. It was found that half

of the abnormal return of small size firms was due to the "January effect". He also found that more than half of abnormal return of January was in first week of trading year and about eleven percent was in first trading day of the year. Lakonishok and Smidt (1984) inspected the trading features of companies listed by size. They also tested performance of stocks at turn of year. It was found that there were no trades on nearly twenty five percent of the days for the smallest corporations at the end of year. However "Turn of year" was dynamic transaction period for small cap stocks. As a consequence of prices of small cap enterprises required some days to completely replicate equilibrium price changes. All those hurdles leads to create seasonal pattern in rates of return for small Cap Stocks. They also raised doubt that there may be a seasonal pattern for stocks of big corporations as well. Kato and Schallheim (1985) scrutinized January and size effect in Japanese stock exchange. It was found that "January size" effect varies depending upon the type of indices used. They raised doubt on "tax loss selling hypothesis" for "January size effect". Further they also found the presence of June effect in Japanese stock market. Wong et al., (1990) found that monthly returns were different for different types of calendar. Therefore it was established that seasonality vary across calendars. They found January effect, Chinese New Year effect and Eidilfitri effect. Possible reasons for the existence of the various types of seasonality were both economic and non-economic. It was also established that Chinese New Year effect found in Malaysia, Singapore and Hong Kong markets. They also indicated possibility that the Chinese New Year effect was peculiar to markets with a large number of Chinese investors. More research was needed. Colwell (1990) conducted a case study on Real Estate related investments. The Equity and Mortgages of REIT were considered for the period of 1964 to 1986. He used Regression and found there was January effect for Small REIT. However no such effect was found for large REIT. Further returns of Mortgages were also more as compared to returns of Equity. It was also interesting that the significant difference was found only in small and large REIT returns. Further research was suggested to find economic reasons of REIT returns. Schwert (2001) examined the January effect using Jensen's alpha, regression, ARMA and found that small firms outperform large firms in the influence of January effect. Further small-firm turn-of-the-year effect became weaker in the years after it was first documented in the academic literature, although there is some evidence that January effect still exists. Chen and Zhou (2001) examined calendar anomalies in NYSE. It was found that there was seasonality in small cap returns and also there was auto correlation in market volatility. Highest volatility was found in November, January and October. It was also documented that there was negative relationship between market volatility and size portfolio. They also documented relationship between volatility and stock returns. They suggest the investor to adjust the portfolio based on volatility in stock market. Thiripalraju (2001) examined and confirmed day of week effect in India. Rosenberg (2004) examined the monthly effect in stock returns using NYSE

value weighted index and monthly data of US business cycle expansion and contraction from National Bureau of economic research. They presented the result using GARCH model which provide improved result on problem by including Heteroskedasticity in the model. They found monthly effect was related with Macro-Economic variable. They also found the Monthly anomaly was present during the business cycle expansion and it disappear during business cycle contraction. Ng and Wang (2004) found the evidences institutional investors would sell the loser stocks extremely in the last quarter and buy many stocks in the following quarter. Hansen *et al.*, (2005) studied calendar effects in equity returns and contribute to the calendar effects literature by applying new approach to test for calendar effects. They implemented bonferroni bound test and bootstrapping methods to stock indices from 16 countries from three continents. Bootstrap p-values reveal that calendar effects was significant for returns in most of these equity markets, but end-of-the-year effects was predominant. They calendar effects had been diminishing except in small-cap stock indices. Seyyed *et al.* (2005) examined calendar anomalies in Market of Saudi Arabia. They tried to find relationship between calendar anomalies and Muslim holy month by Applying GARCH Method. It was found that the volatility had decline in the month of Ramadan. Mangala and Dhawan (2009) studied day of the week effect in both developing and developed stock markets. US, UK and Japan represent developed stock markets where as India, Brazil and Hong Kong Represent developing markets. Data was collected for period of 1994 to 2008. They applied Kruskal-Wallis test and found there was no day of the week effect in developed markets. Hence proved that developed stock markets are more efficient than developing stock market. It was also proven that volatility was more in emerging stock markets as compared to developed markets. Ali and Akbar (2009) examined the calendar anomalies in Pakistan using various tools such as one way ANOVA, ordinary least regression, ARIMA and Durbin Watson test. It was found that there was no monthly or Weekly effect in stock Market. However stock market is not fully efficient as day of the week anomaly was present in the market. Fourth and fifth day of the week gives abnormal returns which were confirmed by autoregressive modeling. Anwar and Mulyadi (2009) examined day of week effect in the stock markets of Indonesia, Singapore and Malaysia. They used data from July 2003 to June 2008. It was found and confirmed using EGARCH that there was positive Friday effect in Indonesia and Malaysia. However no such effect was there in Singapore. Further there was no positive Monday effect in any of these three countries. Li and Liu (2010) examined one of the controversial issue of monthly seasonality in stock exchange of New Zealand. They used four stock indices and sixteen industrial Indices. Results of descriptive statistics and T-test indicated that 3 industry indices had positive returns in January. They reported that half of both market and industrial indices was negative in August. Further it was also identified that 5 Indices in June gave significant positive returns. In overall, it was identified that the seasonality varies

Indices to Indices. Guidi (2010) examined day of the week effect in Italian stock Market. He used data of 17 sectoral indices from Italian stock Market. They used GARCH model and found day of the week in Volatility. However there was no such effect in returns of Italian stock Market Indices. However in general it was concluded that the stock Market doesn't follow the random walk. Kamath and Liu (2010) examined the day of the week effect in Turkish stock Market. They used the data from year 2003 to 2007 being bullish period with gain 424 percent. They used both OLS and GARCH Model. It was found that the day of the week was present only in first half of study period in second half no such effect was found. Mustafa (2011) examined Ramadan effect. It was found that Ramadan effect was there in Pakistani stock market. It was documented that there was numerous research on calendar anomalies based on Gregorian calendar. Although, there were different calendar in different countries and societies to meet their religious and social needs. Jewish, Christian, Hindu and Chinese follow Hebrew calendar, Gregorian calendar, Panchang and Han Calendar respectively which were based on solar or lunar movements. Muslim Community also follow different calendar named as Hijri Calendar based on lunar movements. Therefore it was important to conduct the study based on local calendar because only Local Calendar can reflect anomalies related to non-economic reasons. Hajieh *et al.* (2011) examined Ramadan effect in Middle East economies and established that the mean returns were significantly higher in first and last trading day of Ramadan. Ariss *et al.*, (2011) examined a presence of day-of-the-week effect in Gulf stock markets and investigated whether the month of Ramadan has a special effect on returns on day of the week anomaly. It was also found that Friday effect that occurs on the last trading day of the week was turned to Wednesday effect in Gulf as Wednesday was last trading day. It was also discovered that effect was extreme in Ramadan. Choudhry (2011) examined month of year and January effect in Germany, US and UK stock markets in Post-world-war period. He applied GARCH model and found the existence of Month of year effect in US, Germany and UK stock markets. In the same line January effect was also found present in US and UK market. However no January effect was found in Germany. It was also established that January was not a small firm phenomena. Ulussever *et al.* (2011) scrutinized the day of the week effect in Saudi Stock exchange. They used the data TADAWUL stock exchange from 2001 to 2009. The results of GARCH model confirms the day of week effect in the concerned stock exchange. Swami (2012) examined calendar anomalies in India, Sri-Lanka, Pakistan, Bangladesh and Nepal. He applied dummy variable ordinary least square regression and found the stock markets of Sri Lanka and Bangladesh indicated the presence of day of week anomaly. Indian stock market showed evidence of presence monthly and turn of month anomaly. Further it was proven that none of five countries shows abnormal return in relation to month of year effect. It was also reported that there were possibilities in the market to form portfolio to take the advantage of market anomalies. Al-Jafari (2012) examined the day of the week

effect in Muscat stock market. Data of six years had been used from December 2005 to December 2011. GARCH (1, 1), TGARCH and EGARCH was used. It was found that there was no Day of the week effect in MUSCAT stock Market. Sattayatham *et al.* (2012) examined day of the week effect in volatility and the returns of Thai Stock Market. Data of SET Index had been used for the period of 2007 to 2011. They used ARMA(3,3), GARCH, EGARCH, GJR GARCH, MRS GARCH and found Friday effect through ARMA model. Further it was also proven that MRS GARCH model was the best model for Volatility modeling. Sharma and Narayan (2012) examined the calendar anomalies in New York stock exchange using ordinary least square regression and GARCH Model. They had reported heterogeneous effect of calendar anomalies depending on Sectoral location of firm against the assumption that firm's returns were homogeneous in nature. They also reported that the effect of calendar anomalies also varies on returns depending upon size of firm. Kalidas *et al.* (2013) examined the day of the week effect in African Stock Market. They used descriptive statistics to analyze the data from 2004 to 2012. Daily index data for South Africa, Zambia, Botswana, Nigeria, and Morocco are used for the period 2004 to 2012. It was found that the day of the week effect was present in all countries except South Africa. Mangala and Lohia (2013) examined the month of year effect in the stock markets of Argentina, Malaysia, India, Brazil, China, Indonesia, Mexico, Taiwan and Russia using GARCH Model. They found that for most of countries in the study showed high returns in November, December or January whereas returns were lower in Month of August. They also documented that the volatility in market varies from country to country it means when one country show less volatility in market other country show more. It means volatility was country specific phenomena. Cheik (2013) studied the Ramadan effect in Southeast Asian stock markets where Ramadan treated as holy month. He used Generalized Autoregressive Conditional Heteroskedasticity (GARCH) Model on the data from stock indices of both Islamic and Non-Islamic Countries of Southeast Asia. It was found that the Ramadan effect was penetrated over Southeast Asian countries. It was also found that the volatility will decrease in most of stock markets in the month of Ramadan except in Singapore which shows upward trend in volatility. Białkowski *et al.*, (2013) examined the behavior of professional fund managers for stock market anomalies in the month of Ramadan. He applied GARCH model and found the performance of domestic institutional funds was higher in the month of Ramadan. However the performance of Local Index fund was found normal in the month of Ramadan. It was also established that foreign Funds investing in Turkish stock market also took the advantage of Ramadan Effect. Sen (2013) studied the day of the week effect in Indian stock Market. Data of NSE Nifty from 1997 to 2012. He studied pre and post rolling period for investigation of day of the week effect. It was found that there is significant day of the week effect in pre rolling period however this effect was not there in post rolling period. T-GARCH had also confirmed the Tuesday

effect in second sub period. Dicle and Levendis (2014) tested the efficient market hypothesis for fifty one stock markets from thirty three countries. They applied GARCH model to test whether the day of week effect was present in the given countries or not. It was found that the return were negative on Monday and positive on Friday in most of countries. It was identified that the size, spill over, liquidity and information asymmetry were the reason of day of the week seasonality. Osazee and Idolor (2014) investigated the day week effect in Nigerian stock exchange. Data for the period of April 2005 to September 2010 had been analyzed using descriptive statistics and multiple ordinary least square regression. It was found that the returns of Tuesday and Wednesday were positive and significant. Patel and Mallikarjun (2014) examined the day of the week effect in Indian stock Market for the period of 1991 to 2013. Data had been taken from BSE Sensex and NSE NIFTY for pre rolling and post rolling period. Empirical results reveals that before the introduction of T+2 Settlement Monday and Thursday returns were negative. However introduction of system leads to positive returns in all five trading days. Further GARCH Model confirms the day of the week effect in Stock returns only. Recently there were studies comparing anomalies depending on Sectoral location of firm. Few studies were conducted on Sectoral location of stock with regard to calendar anomalies. Auer and Rottmaan (2014) examined 13<sup>th</sup> Friday effect in Asia and found the presence only in Philippines. Floros and Salvador (2014) examined the presence of seasonal pattern in four stock exchanges of three countries that were Greece, United Kingdom and United states. They used data for the period of 2004 to 2011. They Regime-Switching and found that the low volatility in market leads to positive Calendar effects. However these effects changed to negative in highly volatile markets. It was also found that the calendar effect varies based to volatility situation in the market.

### 3. DATA COLLECTION AND ESTIMATION OF EMPIRICAL MODEL

Data has been taken for the period of 2005 to 2015 from Bombay Stock Exchange from Top Ten companies of hospitality industry ranked by Market capitalization. However the data for Mahindra Holidays and Resorts India is available from year 2009 to 2015 and for Speciality hotel it is available from year 2012 to 2015 respectively. These stocks include Indian Hotels Company, Hotel EIH, Mahindra Holidays and Resorts India, India Tourism Development Corporation, EIH Associated Hotels, Hotel Leela Venture, Taj GVK Hotels & Resorts, Speciality Restaurants, Oriental Hotels, Mac Charles (India).

#### 3.1. Modeling Month of Year effect

Month of year effect is examined using dummy variables in the model  $D_{jan} D_{feb} D_{mar} D_{apr} D_{may} D_{jun} D_{jul} D_{aug} D_{sep} D_{oct} D_{nov} D_{dec}$  represents January, February, March, April, May, June, July, August, September, October, November and December.



For examining the month of year effect we have taken all the months in model without Constant term. It is done to deal with problem of Dummy trap and multicollinearity. The presence of month of year effect will confirmed when coefficient of at least one of the dummy variable is statistically significant.

$$R_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \dots + \beta_{12} D_{12t} + \epsilon_i \quad (1)$$

$R_t$  is the daily logarithmic return of the index calculated as following:

$$R_t = (P_t/P_{t-1}) * 100$$

Where  $R_t$  will be the return on respective index

$P_t$  = Closing value of Index for day (t)

$D_1$ - $D_{12}$  are monthly dummy variable,  $e$  is the error term in regression equation it is normally distributed with mean zero.

Earlier researcher has used dummy variable ordinary least square regression but that statistical tool gives erroneous results and contains shortcoming of error term being not regular over the long period of time. To overcome this shortcoming Variance is modeled to deal with problem of heteroskedasticity. In 1982 Eagle developed the model to deal with the problem heteroskedasticity which is written as following equation and known as ARCH model.

$$h_t = c + \alpha \epsilon^2_{t-1} + \epsilon_i$$

Later on Bollerslev (1986) comes out with generalized Model of ARCH known as GARCH. In this study we have used GARCH model with mean equation.

$$h^2_t = c + \alpha \epsilon^2_{t-1} + \gamma h^2_{t-1} + \epsilon_i \quad (2)$$

#### 4. RESEARCH GAP

Many studies have been conducted in the area on various calendar Anomalies like there are studies on day of the week month of year and holiday effect. All those studies treat stock market as homogeneous and attempts to find single anomaly for whole stock market. However there is no attempt made to study the Calendar Anomaly individually for Hotel industry. In recent year Indian hospitality sector has become one of important sector contributing toward the growth of service sector. Hospitality sector has contributed about 6.23 percent to GDP of country and 8.78 percent of employment in the country. The industry has seen healthy growth in recent years due to the huge inflow of foreign tourist and movement of national tourists has also increased. Hotels are important components of this industry. Hotel industry in India generally experiences extraordinary demand during October–April, followed which the monsoon months entail low demand. Generally the December and March quarters fetch maximum portion turnover for India’s hoteliers. It is obvious that this sector has generated the interest of both investors and brokers. Therefore there is emergent need to study this unexplored

sector of stock market for its random walk behavior. This study will contribute in the area of Stock market Efficiency by re-examining Calendar effect in Hospitality Sectors.

## 5. EMPIRICAL RESULTS

**Table 1**  
Analysis of returns using Equation 1 and 2 from stocks of Indian Hotels Company

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	0.018296	0.141772	0.129049	0.8973
February	-0.319564	0.161503	-1.978683	0.0479
March	0.300041	0.143013	2.097993	0.0359
April	-0.047451	0.143491	-0.330692	0.7409
May	-0.322423	0.113104	-2.850678	0.0044
June	0.044208	0.148568	0.297564	0.7660
July	-0.186381	0.165286	-1.127629	0.2595
August	-0.047289	0.182369	-0.259303	0.7954
September	0.153989	0.079263	1.942762	0.0520
October	-9.953744	0.153994	-64.63742	0.0000
November	-0.662679	0.047228	-14.03159	0.0000
December	0.499461	0.166184	3.005464	0.0027
<i>Variance Equation</i>				
C	1.430481	0.097878	14.61498	0.0000
ARCH	0.723753	0.033421	21.65549	0.0000
GARCH	0.419159	0.020832	20.12095	0.0000

*Source:* Author Calculations

Table (1) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Indian Hotels Company. Returns from the month of December (0.49) is positive and significant at 1% level of significance indicating turn of ever effect in shares of Indian Hotels Company. Returns from the month of May (-0.32) and October (-9.95), November (-0.66) are found negative and statistically significant at 1% percent level of Significance which means Indian stock market does not follow random walk. There exist Month of year effect. Returns of February (0.31) and March (0.30) are also negative and significant at 5% level of significance. ARCH (0.72) and GARCH (0.41) are positive with probability value zero and summation of both is less than one indicating the absence of negative or explosive implied variances for the specification test indicating predictable returns are not affected by volatility if shocks to volatility are not explosive. On the other hand, since the summation of these two coefficients is close to one, it indicates that there is volatility clustering.

**Table 2**  
**Analysis of returns using Equation 1 and 2 from stocks of Hotel EIH**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	-0.114771	0.139264	-0.824126	0.4099
February	-0.191125	0.119429	-1.600321	0.1095
March	0.233766	0.090455	2.584346	0.0098
April	0.182523	0.126245	1.445783	0.1482
May	-0.281059	0.135909	-2.067993	0.0386
June	0.087522	0.169474	0.516429	0.6056
July	0.421283	0.058593	7.189951	0.0000
August	0.194364	0.074409	2.612112	0.0090
September	-5.824144	0.148974	-39.09516	0.0000
October	0.008594	0.209110	0.041096	0.9672
November	-0.243791	0.161518	-1.509378	0.1312
December	0.026866	0.105931	0.253623	0.7998
<i>Variance Equation</i>				
C	0.572496	0.047130	12.14719	0.0000
ARCH	0.552731	0.029938	18.46275	0.0000
GARCH	0.609072	0.013022	46.77220	0.0000

Source: Author Calculations

Table (2) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Hotel EIH. Returns from the month of March (0.23), July (0.42), August (0.19) are found positive and statistically significant at 1 percent level of Significance. However Returns of May (-0.28) and September (-5.82) is significant and negative at 5% level of significance. Which means Indian stock market does not follow random walk. There exist Month of year effect. Returns of other month follow the random walk. ARCH (0.55) and GARCH (0.60) are positive with probability value zero and summation of both is more than one indicating the explosive implied variances for the specification test. It means predictable returns are affected by volatility as shocks to volatility are explosive. It is also indicated that the today's volatility is affected both by previous period market information and previous period volatility in stocks of Hotel EIH.

Table (3) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Mahindra Holidays and Resorts India. Returns from most of the months for whole year are near about zero. However June (0.11) and July (0.78) are positive and statistically significant at 1% level of significance which means Indian stock market does not follow random walk and Month of year effect is present in the stocks of Mahindra Holidays and Resorts India . Returns of other months are Normal. ARCH (0.49) and GARCH (0.72) are positive with probability

**Table 3**  
**Analysis of returns using Equation 1 and 2 from stocks of Mahindra Holidays and Resorts India**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	0.000	0.000	14.64319	0.0000
February	-0.000291	0.0005	-15.21025	0.0000
March	-0.001308	0.000	-16.65673	0.0000
April	-0.004530	0.000250	-18.10555	0.0000
May	0.018544	0.000734	25.26346	0.0000
June	0.117331	0.003326	35.27972	0.0000
July	0.782991	0.011966	65.43381	0.0000
August	-0.008705	0.014690	-0.592535	0.5535
September	-0.001812	0.000341	-5.319905	0.0000
October	-0.000	0.000	-0.625998	0.5313
November	-0.000	0.000	-0.004736	0.9962
December	0.000	0.000	0.065857	0.9475
<i>Variance Equation</i>				
C	0.000	0.000	1.408744	0.1589
ARCH	0.493261	0.021149	23.32357	0.0000
GARCH	0.726349	0.006815	106.5843	0.0000

*Source:* Author Calculations

value zero and summation of both is more than one indicating the explosive implied variances for the specification test. It means predictable returns are affected by volatility as shocks to volatility are explosive. It is also indicated that the today's volatility is affected both by previous period market information and previous period volatility in an India stock market.

Table (4) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of India Tourism Development Corporation. Returns from most of the months for whole year are near about zero. However October (-0.07) and November (0.787) are statistically significant at 1% level of significance which means Indian stock market does not follow random walk and Month of year effect is present in the stocks of India Tourism Development Corporation. . Returns of other months are Normal. ARCH (2.017) and GARCH (0.349) are positive with probability value zero and summation of both is more than one indicating the explosive implied variances for the specification test. It means predictable returns are affected by volatility as shocks to volatility are explosive. It is also indicated that the today's volatility is affected both by previous period market information and previous period volatility in an India stock market.

**Table 4**  
**Analysis of returns using Equation 1 and 2 from stocks of India Tourism Development Corporation**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	0.000	0.000	0.168433	0.8662
February	-0.000	0.000	-13.56704	0.0000
March	-0.000	0.000	0.000	0.9957
April	-0.000	0.000	0.000	0.2670
May	-0.000	0.000	0.000	0.9974
June	0.000	0.000	1.853868	0.0638
July	-0.000	0.000	-21.13405	0.0000
August	0.000661	0.000	0.000	0.0000
September	0.006516	0.000193	33.79602	0.0000
October	-0.070679	0.001435	-49.24871	0.0000
November	0.777161	0.008095	96.00006	0.0000
December	-0.000	0.000	-0.458780	0.6464
<i>Variance Equation</i>				
C	0.000	0.000	0.970548	0.3318
ARCH	2.017240	0.046344	43.52746	0.0000
GARCH	0.349555	0.005393	64.82013	0.0000

Source: Author Calculations

**Table 5**  
**Analysis of returns using Equation 1 and 2 from stocks of EIH Associated Hotels**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	-0.180422	0.226972	-0.794910	0.4267
February	0.144680	0.153852	0.940381	0.3470
March	0.246972	0.204057	1.210310	0.2262
April	0.214132	0.205974	1.039605	0.2985
May	-0.179489	0.221406	-0.810682	0.4175
June	-0.309100	0.192408	-1.606480	0.1082
July	0.209410	0.214938	0.974279	0.3299
August	0.086157	0.206145	0.417942	0.6760
September	0.011218	0.209458	0.053560	0.9573
October	0.164601	0.185522	0.887229	0.3750
November	-0.005963	0.222882	-0.026756	0.9787
December	0.359456	0.178240	2.016700	0.0437
<i>Variance Equation</i>				
C	1.079808	0.097796	11.04144	0.0000
ARCH	0.122634	0.011746	10.44084	0.0000
GARCH	0.780830	0.016326	47.82707	0.0000

Source: Author Calculations

Table (5) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of EIH Associated Hotels. Returns from the all the months are Normal. Therefore it is proved that the stocks of EIH Associated Hotels follow random walk. There is no Month of year effect. ARCH (0.122) and GARCH (0.78) are positive with probability of zero and summation of both is less than one indicating the absence of negative or explosive implied variances for the specification test indicating predictable returns are not affected by volatility if shocks to volatility are not explosive. On the other hand, since the summation of these two coefficients is close to one, it indicates that the volatility is persistent in the stocks of EIH Associated Hotels.

**Table 6**  
**Analysis of returns using Equation 1 and 2 from stocks of Hotel Leela Venture**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	-0.150692	0.369348	-0.407995	0.6833
February	-0.121561	0.446870	-0.272028	0.7856
March	-0.135349	0.476640	-0.283964	0.7764
April	0.438953	0.480816	0.912933	0.3613
May	0.063388	0.389492	0.162745	0.8707
June	-0.215540	0.356173	-0.605155	0.5451
July	0.002180	0.425152	0.005128	0.9959
August	-0.180968	0.412643	-0.438559	0.6610
September	-0.639631	0.404444	-1.581507	0.1138
October	-0.053625	0.423136	-0.126733	0.8992
November	-0.164944	0.353536	-0.466555	0.6408
December	0.185555	0.443997	0.417919	0.6760
<i>Variance Equation</i>				
C	0.493263	0.225193	2.190396	0.0285
ARCH	-0.000652	5.70E-05	-11.42944	0.0000
GARCH	0.972006	0.013299	73.08660	0.0000

*Source:* Author Calculations

Table (6) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Hotel Leela Venture. Returns from the all the months are Normal. Therefore it is proved that the stocks of Hotel Leela Venture follow random walk. There is no Month of year effect. ARCH (0.00) and GARCH (0.78) are positive with probability of zero and summation of both is less than one indicating the absence of negative or explosive implied variances for the specification test and demonstrating predictable returns are not affected by volatility if shocks to volatility are not explosive. On the other hand, since the summation of these two coefficients is close to one, it indicates that the volatility is persistent.

**Table 7**  
**Analysis of returns using Equation 1 and 2 from stocks of Taj GVK Hotels & Resorts**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	-0.166746	0.159714	-1.044029	0.2965
February	-0.208139	0.187719	-1.108779	0.2675
March	0.177554	0.131942	1.345699	0.1784
April	0.013211	0.201352	0.065614	0.9477
May	0.082628	0.122910	0.672260	0.5014
June	-0.056935	0.173808	-0.327578	0.7432
July	-0.019369	0.167387	-0.115713	0.9079
August	-0.097528	0.168914	-0.577385	0.5637
September	0.119463	0.142789	0.836643	0.4028
October	0.123057	0.144703	0.850414	0.3951
November	-0.104551	0.148518	-0.703962	0.4815
December	0.055803	0.172394	0.323691	0.7462
<i>Variance Equation</i>				
C	0.111467	0.013094	8.513034	0.0000
RESID(-1)^2	0.077290	0.004512	17.12835	0.0000
GARCH(-1)	0.913710	0.003873	235.9112	0.0000

*Source:* Author Calculations

Table (7) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Taj GVK Hotels & Resorts. Returns from the all the months are Normal. Therefore it is proved that the stocks of Taj GVK Hotels & Resorts follow random walk. There is no Month of year effect. ARCH (0.07) and GARCH (0.91) are positive with probability of zero and summation of both is less than one indicating the absence of negative or explosive implied variances for the specification test and demonstrating predictable returns are not affected by volatility if shocks to volatility are not explosive. On the other hand, since the summation of these two coefficients is close to one, it indicates that the volatility is persistent.

Table (8) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Speciality Restaurants. Returns from most of the months for whole year are near about zero. However May (0.22) and November (-0.02) are statistically significant at 1% level of significance which means stocks of stocks of Speciality Restaurants does not follow random walk and Month of year effect is present in the stocks of Speciality Restaurants. Returns of other months are Normal. ARCH (1.33) and GARCH (0.54) are positive with probability value zero and summation of both is more than one indicating the explosive implied variances for the specification test. It means predictable returns are affected by volatility as

**Table 8**  
**Analysis of returns using Equation 1 and 2 from stocks of Speciality Restaurants**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	0.000	0.000	-14.16980	0.0000
February	0.000275	0.000	21.40955	0.0000
March	-0.002268	0.000	-28.96152	0.0000
April	-0.022031	0.000516	-42.68484	0.0000
May	0.223903	0.002655	84.32746	0.0000
June	0.000	0.000434	0.090953	0.9275
July	0.000	0.000	2.323542	0.0202
August	0.000	0.000	6.992652	0.0000
September	-0.000	0.000307	-0.000356	0.9997
October	0.000	0.000	7.081927	0.0000
November	0.000	0.000	1.106848	0.2684
December	-0.000	0.000	-1.356111	0.1751
<i>Variance Equation</i>				
C	9.67E-11	1.18E-10	0.818767	0.4129
ARCH	1.336782	0.042979	31.10316	0.0000
GARCH	0.548441	0.006237	87.93570	0.0000

Source: Author Calculations

**Table 9**  
**Analysis of returns using Equation 1 and 2 from stocks of Oriental Hotels**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	0.219874	0.169630	1.296200	0.1949
February	-0.176767	0.193958	-0.911365	0.3621
March	0.191159	0.129878	1.471832	0.1411
April	0.004448	0.154841	0.028729	0.9771
May	0.168051	0.125198	1.342286	0.1795
June	-0.105449	0.192259	-0.548473	0.5834
July	0.047846	0.144224	0.331747	0.7401
August	0.012150	0.162668	0.074691	0.9405
September	0.046840	0.153464	0.305215	0.7602
October	0.180982	0.127343	1.421221	0.1553
November	0.164598	0.136856	1.202708	0.2291
December	-7.591009	0.179292	-42.33891	0.0000
<i>Variance Equation</i>				
C	2.127197	0.161972	13.13308	0.0000
ARCH	0.823036	0.037860	21.73869	0.0000
GARCH	0.359840	0.019362	18.58439	0.0000

Source: Author Calculations



shocks to volatility are explosive. It is also indicated that the today's volatility is affected both by previous period market information and previous period volatility in an India stock market.

Table (9) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Oriental Hotels. Returns from the month of December (-7.59) are found Negative and statistically significant at 1 percent level of Significance. Returns of other months not statistically significant. Therefore it is proved that stocks of Oriental Hotels does not follow random walk. There exist Month of year effect. ARCH (0.823) and GARCH (0.359) are positive with probability of zero is summation is more than one indicating the explosive implied variances for stocks of Oriental Hotels. It means predictable returns are affected by volatility as shocks to volatility are explosive. These values also indicates the volatility clustering and today's volatility is affected both by previous period market information and previous period volatility in an India stock market in stocks of Oriental Hotels.

**Table 10**  
**Analysis of returns using Equation 1 and 2 from stocks of Mac Charles (India)**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>z-Statistic</i>	<i>Prob.</i>
January	-0.000	0.161107	-0.000	0.9999
February	0.000170	0.120153	0.001411	0.9989
March	0.010299	0.003742	2.751920	0.0059
April	-0.000	0.079919	0.000945	0.9992
May	-0.005372	0.005524	-0.972436	0.3308
June	0.003848	0.007241	0.531416	0.5951
July	0.009403	0.002242	4.194188	0.0000
August	-0.156235	0.002912	-53.64969	0.0000
September	-0.003903	0.010311	-0.378520	0.7050
October	-0.000	0.067913	-0.000129	0.9999
November	0.030847	0.003861	7.990002	0.0000
December	-0.214374	0.019465	-11.01349	0.0000
<i>Variance Equation</i>				
C	0.000295	-0.000	6.341060	0.0000
ARCH	1.200513	0.019997	60.03448	0.0000
GARCH	0.512614	0.005431	94.38043	0.0000

*Source:* Author Calculations

Table (10) exhibits the results of equation (1) equation (2) for Month of year effect in stocks of Mac Charles (India). Returns from the month of March (0.0102), November (0.03) and December (-0.21) are found positive and statistically significant at 1 percent level of Significance. Returns of August (-0.15) and December (-0.21) is Negative and statistically significant. Therefore it is proved that Indian stock market does not follow random walk. There exist Month of year effect. ARCH

(1.20) and GARCH (0.51) are positive with probability of zero is summation is more than one indicating the explosive implied variances for stocks of Mac Charles (India). These values also indicates the volatility clustering and today's volatility is affected both by previous period market information and previous period volatility in an India stock market in stocks of Mac Charles (India).

## 6. CONCLUSION

Efficient market hypothesis decides the patterns of returns from the stock Market. Therefore market efficiency is one of the decisive factor for Investment opportunities in the stock Market. There were numerous studies on market efficiency of Indian stock market. Maximum studies in the area treat the stock Market as homogeneous and try to relate the results of Base Indices with overall stock market efficiency. Jassal and Dhiman (2015) found that there is Month of year effect varies from sector to sector. However we have collected some recent International evidence that the stock market anomalies also varies at Security level. Therefore the study will contribute in the area by re-examining the phenomena of calendar anomalies for Indian stock Market by at security level. This study included has include stocks ten companies of hospitality Industry. This study included of stocks of Indian Hotels Company, Hotel EIH, Mahindra Holidays and Resorts India, India Tourism Development Corporation, EIH Associated Hotels, Hotel Leela Venture, Taj GVK Hotels & Resorts, Speciality Restaurants, Oriental Hotels, Mac Charles (India). So, that we understand and Compare the behavior of Calendar Anomalies in better way. Results are Interesting

As Month of year effect in stocks of hospitality sector. Presence of month of year effect is confirmed in Hospitality industry. However, more stimulating thing is that the calendar anomalies change its behavior from the type of stocks we selected for analysis. Returns of Indian Hotels Company from the month of May, October and November are found negative and statistically significant. However returns of February and March are positive and statistically significant. It could because of Tax loss selling Hypothesis. People might have invested in the stocks to get tax savings. Returns from stocks of Hotel EIH for the month of March, May, July, August and September are significant. Earnings from the stock India Tourism Development Corporation for October and November are statistically significant. For Mahindra Holidays and Resorts India June and July are positive and statistically significant. Returns from stocks Hotel Leela Venture, EIH Associated Hotels and Taj GVK Hotels & Resorts follow random walk behavior. Yields of May and November are statistically significant for Speciality Restaurants. Although December Returns are found Negative and statistically significant for stocks of Oriental Hotels. Returns from the month of March and November are found positive and statistically significant whereas returns of August and December is Negative and statistically significant for stocks Mac Charles (India). Therefore it

can be concluded that the stock market is not homogeneous and integrated. Anomalies are still there in Indian stock market however they were more prominent in small cap stocks and Mid Cap Stocks. Therefore there are opportunities available for investor in an Indian stock Market. Investor can plan it portfolio strategy according to the anomalies to gain Abnormal returns from Indian stock Market.

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