An Examination of the Weekdays' Anomaly in the Trading Behavior of Institutional Investors in the Post-Demonetization and GST Regime in India

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Abstract

This study analyzed the trading activities of foreign portfolio investors (FPIs) and Indian mutual funds (IMFs) across weekdays. The present study aimed to enrich the literature related to the efficient market hypothesis and day-of-the-week anomaly present in the trading behavior of FPIs and IMFs across weekdays. The study examined the daily purchasing, selling, and net investing activities of FPIs and IMFs in equity instruments of the Indian capital market for 3.1 years, beginning November 1, 2016 and ending November 30, 2019. During this period, the Indian capital markets adjusted to the up-and-down sentiments of market players in the context of demonetization and GST regimes. This study aimed to achieve two objectives, that is, examining the day-of-the-week effect on trading activities of FPIs and IMFs and comparing the trading patterns of FPIs and IMFs on individual trading days with the rest of the weekdays with the help of autoregressive dummy variable regression, ANOVA, and independent-sample *t* - test. It was empirically determined by the present study that there was a day-of-the-week effect present in the behaviors of both foreign and domestic institutional investors. Monday, Thursday, and Friday were ascertained to have the most significant impact on the trading activities of institutional investors. Hence, individual investors can avail the opportunities to reap extraordinary returns from the Indian capital markets by closely monitoring institutional investors' trading activities.

Keywords : **anomaly, day-of-the-week anomaly, efficient market hypothesis (EMH), FPIs, IMFs, trading activities**

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Institutional investors significantly impact markets and companies in which they invest, irrespective of their country of origin. They have the edge over individual investors in moving the markets and company returns due to their considerable volume of financial assets, professional research, and the expertise of professional portfolio managers who guide their investment decisions. Indian capital markets are no exception. India is suffering from an unsteady economic scenario regarding its continually declining gross domestic product (GDP) growth rate over the past five quarters, reaching 4.5% in the second quarter of 2019 – 2020. India should have well-structured capital markets to meet its long-term financing needs along with commercial banks. Undoubtedly, institutional investors such as mutual funds, sovereign wealth funds, pension funds, and insurance companies have the greatest potential to fulfill the long-term financial needs of any economy.

According to a report by Nasscom, India has become the third biggest start-up base globally, with 1,400 new start-ups and above 4,750 technology start-ups being set up in 2016. India acquired net investments from FPIs of $19.788 million from April – December 2017. In FY 2017–2018, FIIs' net investments in Indian capital

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markets reached extreme highs, supported by positive beliefs in fast economic recovery, increased earnings outlook, and declining interest rates. FPIs' net investments in Indian capital markets reached $183.69 billion from April 2000 – December 2016.

India-based (ETFs) exchange-traded funds and offshore funds observed an inpouring of $ 6.5 billion in 2017. Equity mutual funds witnessed a record US$ 20.02 billion inflows in 2017, backed by strong retail participation, low bank deposit rates, and awareness campaigns by AMFI. The total (M-cap) market capitalization of all S&P Bombay Stock Exchange-listed companies reached an extremely high level of $2.19 trillion in FY 2017–18. FIIs bought net assets worth $2 billion in January 2018 ; however, in February 2018, FIIs were net sellers of up to $8 billion. FIIs purchased net assets amounting to $1.8 billion in March 2018; whereas, FIIs sold net assets worth $2.3 billion in April and May. India has become a significant player in deals related to mergers and acquisitions, which reached $46.8 billion in 2017. Due to these recent initiatives, India is considered to have a tremendous capacity to grow in the future and is viewed as a potential opportunity by investors, backed by tremendous support from the Indian government. FII net investments have been very high and are anticipated to increase further. Due to these immense opportunities for investors present in Indian financial markets, they are attracting individual and institutional investors, both domestic and international.

The difference between FPIs and DIIs is that, for FPIs, India is the same as any other market for investment. They appraise India in the context of rival countries continuously to determine and understand India's risks and rewards relative to other countries at a given time. Hence, FPIs will not hesitate to shift their investments to other countries' capital markets if those foreign financial markets offer better risk-reward profiles. However, for DIIs, the Indian stock market is only one investment destination. Thus, a significant concern is whether these institutional investors (i.e., FPIs and IMFs) regulate the Indian financial markets individually or together.

These institutional investors' investment strategies have become another prominent issue for investors and researchers. Many researchers earlier examined the day-of-the-week anomaly in stock returns of Indian capital markets or foreign capital markets. But a research gap is found post rigorous literature review related to the concerned research area. No research has been found that is focused on examining the day-of-the-week anomaly in the trading behavior of institutional investors who can contribute immense volatility in stock returns, stock market movements, and amendment in various investment-related policies of the country in the selected period of the study. Thus, the present research compares the trading behavior of FPIs and IMFs across weekdays to measure the presence, if any, of a day-of-the-week anomaly in their trading activities, specifically post demonetization and GST regime. Hence, the present study enriches the views related to this topic via novel findings, consequently benefiting investors and the financial economy.

Literature Review

The present study provides a detailed review of the literature related to the day-of-the-week anomaly. Khanna (2014) analyzed the effects of trading days in India's stock market from 2006 – 2010. It was ascertained that the day-of-the-week anomaly was present in the Indian stock market. Pandya (2014) examined the market efficiency of the Indian stock market. The study concluded that a budget that carries the potential to bring positive changes in macroeconomic variables could bring volatility in stock returns. Ryaly et al. (2014) evidenced the weak-form of market efficiency in five Asian countries' equity markets, namely India, Japan, South Korea, Hong Kong, and Singapore. The study results also revealed the future opportunities to reap extraordinary returns created by such weak-form market efficiency of these five Asian countries' stock markets. Srinivasan and Kalaivani (2014) examined the day-of-the-week effect on the volatility of Indian stock markets and stock returns from 1997 – 2012. The study revealed that Monday and Wednesday effects on the Nifty and SENSEX market returns were positive ; however, Tuesday was found to have a negative impact on the volatility of stock markets. Aziz and Ansari (2015)

examined the day-of-the-week effect in the NSE and BSE from 1990 – 2013. A positive Monday effect was found in Sensex, and a positive Wednesday effect in Nifty was present during the entire sample period. Dadhich et al. (2015) examined the volatility in the Indian stock market by FIIs during 2004 – 2014. The study results established that volatility in FIIs' gross purchase could lead to high volatility in stock indices relative to volatility in FIIs' gross sales.

Mitra (2016) investigated the significant day of the week effect in the Indian stock market (BSE and NSE) using daily closing prices from January 2000 – December 2015. It was inferred that the volatility on Tuesday was statistically significant to explain the expected stock return changes. Sudarvel and Velmurugan (2016) studied the existence of anomalies in the Indian stock market (Nifty Index) in daily returns from April 2011 – March 2016. The study's findings confirmed the presence of seasonal anomalies in Indian stock returns and stock markets. The results of the study also confirmed that the Indian stock market (Nifty) was inefficient. Verma (2016) examined the day of the week effect in BSE BANKEX from April 1, 2005 – March 31, 2015, by considering the returns in BSE BANKEX. It was concluded that there was no day of the week effect in returns of BSE BANKEX, which indicated that the markets were efficient in the day of the week effect anomaly. Khuntia and Pattanayak (2017) examined the Indian foreign exchange market's market efficiency using the adaptive market hypothesis. The results established the presence of market efficiency in different market conditions, and it was suggested to follow active portfolio management strategies to earn returns from the exchange market. Raghuram (2017) confirmed the inefficiency of Indian stock markets by identifying the presence of the month of the year effect. The study observed the presence of the "February" effect during January 01, 1990 – December 31, 1998 ; "November" effect during January 01, 1999 – December 31, 2006 ; and "April" effect during January 01, 2007 – April 01, 2015. Ryaly et al. (2017) confirmed the Indian stock market to be a weak form of market efficiency during 2009 – 2015. The results of the study provided hope to investors for gaining extraordinary returns from the Indian stock market.

Varughese and Mathew (2017) examined the impact of FPIs and leverage effect on stock market volatility. The study's findings evidenced the presence of leverage effect and volatility clustering in the Indian stock market. It was concluded that FPIs' investment activities had a significant impact on the Indian stock market volatility. Mohanasundaram et al. (2018) developed an autoregressive model to forecast FIIs' investment flows by taking stock market returns as the independent variable. It was concluded that stock market returns significantly explained the variations in FIIs' investment flows in the Indian equity market. Sahoo (2018) analyzed the behavior of Indian stock markets by choosing NIFTY during the weekend from January 1, 2000 – December 31, 2013. It was concluded that a specific trading rule could be followed, that is, buying the scrips on Monday (buy low) and selling the scrips on Wednesday (sell high). However, this strategy needs to be exercised with caution.

Ashraf and Baig (2019) examined the efficient market hypothesis for the Indian stock market using an event study methodology. The study revealed the Indian stock market as inefficient and suggested the Budget as an important event for the Indian stock market in the short run. The study suggested that investors can earn excess returns around the date of announcing the Budget. Sehdev and Tamboli (2019) confirmed that Monday, Friday, and Thursday had the most significant effects on institutional investors' trading activities from January 1, 2001 – June 30, 2018. Sehdev and Bhatnagar (2019) examined the trading activities of FIIs and IMFs across weekdays. The study results confirmed that India's stock markets were not efficient and that there is a scope for achieving extraordinary returns by closely monitoring the activities of institutional investors. Wats (2019) confirmed that Indian stock markets are inefficient. The results revealed the existence of patterns in stock markets. Anjum (2020) examined the impact of three market anomalies: day-of-the-week effect, weekend effect, and monthly effect (January and July effects) on Pakistani stock markets before and after establishing PSX. The results indicated the presence of market anomalies in the stock markets of Pakistan. Hence, investors can gain extraordinary returns by investing in the same. Woo et al. (2020) reviewed the literature on market anomalies

and efficiency, explained various market theories/anomalies, and discussed various models to determine market anomalies in different stock markets.

Research Objectives

(1) To examine the day of week anomaly on the trading behavior of FPIs and IMFs from November 1, 2016 – November 30, 2019.

(2) To compare FPIs' and IMFs' trading activities on individual days and the rest of the weekdays from November 1, 2016 – November 30, 2019.

Period and Scope of the Study

Data on FPIs' purchase, FPIs' sales, net FPIs' investment, IMFs' purchase, IMFs' sales, and net IMFs' investment in equity instruments were obtained daily to fulfill the study's objectives. The period for determining the trading pattern of FPIs and IMFs is considered from November 1, 2016 – November 30, 2019, that is, 3.1 years, which is the period post-demonetization and GST regime in India by the BJP government. The Government of India announced the demonetization of ₹ 500 and ₹1,000 notes in November of 2016. The GOI further announced the introduction of the Goods and Services Tax regime in March 2017. It was implemented on July 1, 2017. Many financial analysts and researchers hold that the financial markets reacted to this information very quickly. The period of financial markets' reaction to macro and micro-level information varies from microseconds to years. Thus, in the present study, I have extended the research to the next 30 months post-June 2017 to examine the day-of-the-week effect on institutional investors' trading activities post-demonetization and the GST regime in India.

Moreover, news related to the spread of COVID-19 in China started airing in mid of December 2019, and the first case of COVID-19 was formally reported from Wuhan, China, on December 31, 2019. Later on, the cases of COVID-19 increased and were confirmed from various other countries around the world, and COVID-19 turned into the COVID-19 pandemic. The COVID-19 pandemic has disturbed the integrated financial markets' behavior worldwide and pockets & accounts of individuals and business houses. Thus, the present study period is limited to November 2019, as the exceptional period of the COVID-19 pandemic could have distorted the study results due to sentiments of insecure individual and institutional investors, lockdowns in various countries, and inadequate business income of multiple industries.

Research Methodology

The present study requires data based on FPIs' purchase, FPIs' sales, net FPIs' investment, IMFs' purchase, IMFs' sales, and net IMFs' investment. All these data are secondary. The required data were taken from the SEBI website. Autoregressive dummy variable regression has been used to test whether the mean of the variables (purchase, sales, and net investments of FPIs and IMFs) vary significantly across the days of the week. Kruskal – Wallis is equivalent to one-way ANOVA and is also used to determine the robustness of the autoregressive dummy variable regression results. The Kruskal – Wallis test is applied to find more tangible and pairwise differences among the weekday trading activities of FPIs and IMFs. The Mann –Whitney *U* test is used to determine the presence, if any, of differences between the means of the variables (like purchase, sales, and net investments) of institutional investors (FPIs and IMFs) of an individual weekday from the mean of the rest of the weekdays taken together.

The Kruskal – Wallis and Mann – Whitney *U* tests are applied to statically check for the presence of difference

among the means of identified variables to confirm the presence of day-of-the-week anomaly on the trading activities of institutional investors and to corroborate the results of an econometric model (AR model). The data series of selected variables must be stationary as a foremost prerequisite for applying autoregressive dummy variable regression. Thus, the augmented Dickey – Fuller test statistics have been used to confirm the data series' stationarity of the present study's numerous variables. The initial condition for applying the parametric tests such as one-way ANOVA and independent sample *t*-test is that the data series should be normally distributed. Thus, Kolmogorov–Smirnov and Shapiro – Wilk have been used to check the normality of the data in the present study. Many other researchers, such as Khanna (2014), Verma (2016), and Sahoo (2018) followed the same kind of research methodology to fulfill similar objectives in their research work; thus, the study authenticates the applicability of the identified research methodology to achieve the purposes of the present study.

Data Analysis and Results

Augmented Dickey – Fuller Test Statistics

The Augmented Dickey – Fuller test results in Table 1 confirm that all variables' original data series have initially been stationary at a 5% level of significance.

The autoregressive model is applied to the original stationary series of considered variables of FPIs and IMFs as follows (refer to Table 2 – Table 7) for the following hypotheses.

- **H01 :** A significant day-of-the-week effect is not present in the trading behavior of FPIs & IMFs.
- **Ha1 :** A significant day-of-the-week effect is present in the trading behavior of FPIs & IMFs.

Table 1. ***Unit Root Testing : Augmented Dickey – Fuller Test Statistics***

Period	Variables (Daily)	Original Series		
		***t*-Statistic**	**Probability**	**Result**
November 1, 2016	Foreign Portfolio Investors' Gross Purchase	–11.48155	0.0000	**Stationary**
to November	Foreign Portfolio Investors' Gross Sales	–17.56001	0.0000	**Stationary**
30, 2019	Foreign Portfolio Investors' Net Investment	–7.786533	0.0000	**Stationary**
	Indian Mutual Funds' Gross Purchase	–8.356937	0.0000	**Stationary**
	Indian Mutual Funds' Gross Sales	–4.896425	0.0000	**Stationary**
	Indian Mutual Funds' Net Investment	–17.05268	0.0000	**Stationary**

Table 2. ***Foreign Portfolio Investors' (FPIs) Gross Purchase***

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	–984.9694	414.8194	–2.374454	**0.0181**
Tuesday	–724.0252	407.0601	–1.778669	0.0761
Wednesday	–91.48144	404.6908	–0.226053	0.8213
Thursday	124.5252	408.2832	0.304997	0.7605
Friday	5897.058	291.4107	20.23625	**0.0000**
R-squared	0.027921	*F*-statistic		2.843556
Adjusted *R*-squared	0.018102	Prob(*F*-statistic)		0.023973

Table 2 shows the coefficients of various days. It is directly inferred that Friday (coefficient value = 5897.05) has the most significant effect on FPIs' gross purchase, followed by Monday, which also significantly affects the purchasing activities of FPIs, thus rejecting the H01 at a 5% level of significance. However, the nature of the relationship between Monday and FPIs' gross purchase is negative.

Table 3 indicates that Friday has a significant and robust effect on FPIs' gross sales in the given period. Hence, H01 is rejected.

Considering the *p*-values of each trading day presented in Table 4, it is found that Friday has a significant effect on the investment decisions of FPIs, and H01 is rejected at a 5% level of significance. The relation is weak but significant, as its *p*-value (0.05) is just on margin.

From the statistics depicted in Table 5, it is inferred that Friday (coefficient value = 2435.80) has the most

Table 3. ***Foreign Portfolio Investors' (FPIs) Gross Sales***

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	–653.2607	364.9999	–1.789756	0.0743
Tuesday	–496.3679	358.1725	–1.385835	0.1666
Wednesday	168.5165	356.0877	0.473244	0.6363
Thursday	394.9394	359.2487	1.099348	0.2723
Friday	5615.739	256.4125	21.90119	**0.0000**
R-squared	0.029988	*F*-statistic		3.060612
Adjusted *R*-squared	0.020190	Prob(*F*-statistic)		0.016713

Table 4. ***Foreign Portfolio Investors' (FPIs) Net Investment***

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	–331.7087	209.7639	–1.581343	0.1146
Tuesday	–227.6573	205.8402	–1.105990	0.2694
Wednesday	–259.9979	204.6422	–1.270500	0.2047
Thursday	–270.4142	206.4587	–1.309773	0.1910
Friday	281.3192	147.3592	1.909071	**0.0507**
R-squared	0.007499	*F*-statistic		0.748009
Adjusted *R*-squared	–0.002526	Prob(*F*-statistic)		0.559785

Table 5. ***Indian Mutual Funds' (IMFs) Gross Purchase***

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	–174.9405	153.3080	–1.141105	0.2545
Tuesday	87.23755	151.9251	0.574214	0.5661
Wednesday	159.5535	150.2123	1.062186	0.2888
Thursday	367.3248	151.9251	2.417801	**0.0161**
Friday	2435.801	108.7455	22.39910	**0.0000**
R-squared	0.033206	*F*-statistic		3.494797
Adjusted *R*-squared	0.023705	Prob(*F*-statistic)		0.008038

Table 6. *Indian Mutual Funds' (IMFs) Gross Sales*

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	–195.8435	149.3557	–1.311255	0.1905
Tuesday	34.80899	148.0085	0.235182	0.8142
Wednesday	82.71647	146.3399	0.565235	0.5722
Thursday	345.5639	148.0085	2.334757	**0.0200**
Friday	1972.358	105.9420	18.61734	**0.0000**
R-squared	0.033169	*F*-statistic		3.490701
Adjusted *R*-squared	0.023667	Prob (*F*-statistic)		0.008094

Table 7. *Indian Mutual Funds' (IMFs) Net Investment*

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Monday	20.90297	110.3284	0.189461	0.8498
Tuesday	52.42855	109.3332	0.479530	0.6318
Wednesday	76.83701	108.1006	0.710792	0.4776
Thursday	21.76084	109.3332	0.199032	0.8423
Friday	463.4425	78.25889	5.921915	**0.0000**
R-squared	0.001545	*F*-statistic		0.157436
Adjusted *R*-squared	–0.008268	Prob (*F*-statistic)		0.959580

significant effect on IMFs' gross purchase, followed by Thursday, which also significantly affects the purchasing activities of IMFs. Hence, H01 is rejected.

Table 6 indicates that Friday has the most substantial significant effect on the IMFs' gross sales in the given period, followed by Thursday ; thus, H01 is rejected. Both days are positively associated with IMFs' selling activities in the given period.

From statistics depicted in Table 7, Friday is found to have a significant effect on the investment decisions of IMFs. Hence, H01 is rejected.

Kolmogorov – Smrinov and Shapiro – Wilk Tests

↳ **H02 :** Data series (gross purchase/gross sales/net investment) of FPIs & IMFs for a particular weekday is normally distributed.

↳ **Ha2 :** Data series (gross purchase/gross sales/net investment) of FPIs & IMFs for a particular weekday is not normally distributed.

The initial condition for applying the parametric tests, one-way ANOVA and independent sample *t*-test is that the data series should be normally distributed. The *p*-value of each variable is 0.000 as per the Kolmogorov – Smirnov and Shapiro–Wilk tests. Thus, H02 is rejected at a 5% level of significance (refer to Table 8). Therefore, the equivalent non-parametric tests instead of one-way ANOVA, that is, Kruskal – Wallis and Mann – Whitney *U* tests in place of independent sample *t*-test are used to fulfill the study's objectives. The one-way

Table 8. ***Tests of Normality of FPIs and IMFs Day-Wise Trading Activities***

Dependent Variables	Days	Kolmogorov – Smirnov			Shapiro – Wilk		
		Statistic	*Df*	Sig.	Statistic	*Df*	Sig.
Foreign Portfolio Investors'	Monday	0.129	840	0.000	0.835	840	0.000
(FPIs) Gross Purchase	Tuesday	0.116	848	0.000	0.858	848	0.000
	Wednesday	0.108	849	0.000	0.886	849	0.000
	Thursday	0.116	834	0.000	0.877	834	0.000
	Friday	0.131	806	0.000	0.844	806	0.000
Foreign Portfolio Investors'	Monday	0.13	840	0.000	0.852	840	0.000
(FPIs) Gross Sales	Tuesday	0.109	848	0.000	0.895	848	0.000
	Wednesday	0.11	849	0.000	0.901	849	0.000
	Thursday	0.124	834	0.000	0.865	834	0.000
	Friday	0.129	806	0.000	0.858	806	0.000
Foreign Portfolio Investors'	Monday	0.163	840	0.000	0.77	840	0.000
(FPIs) Net Investment	Tuesday	0.156	848	0.000	0.659	848	0.000
	Wednesday	0.138	849	0.000	0.835	849	0.000
	Thursday	0.134	834	0.000	0.855	834	0.000
	Friday	0.142	806	0.000	0.817	806	0.000
Indian Mutual Funds'	Monday	0.174	840	0.000	0.764	840	0.000
(IMFs) Gross Purchase	Tuesday	0.18	848	0.000	0.739	848	0.000
	Wednesday	0.17	849	0.000	0.771	849	0.000
	Thursday	0.187	834	0.000	0.737	834	0.000
	Friday	0.161	806	0.000	0.804	806	0.000
Indian Mutual Funds'	Monday	0.14	840	0.000	0.817	840	0.000
(IMFs) Gross Sales	Tuesday	0.148	848	0.000	0.792	848	0.000
	Wednesday	0.152	849	0.000	0.784	849	0.000
	Thursday	0.177	834	0.000	0.724	834	0.000
	Friday	0.159	806	0.000	0.757	806	0.000
Indian Mutual Funds'	Monday	0.155	840	0.000	0.829	840	0.000
(IMFs) Net Investment	Tuesday	0.17	848	0.000	0.812	848	0.000
	Wednesday	0.15	849	0.000	0.856	849	0.000
	Thursday	0.148	834	0.000	0.811	834	0.000
	Friday	0.156	806	0.000	0.736	806	0.000

ANOVA/Kruskal – Wallis test with post - hoc test are applied to the data of FPIs and IMFs to obtain more concrete results.

Kruskal – Wallis Test

Kruskal – Wallis Test on FPIs' Trading Activities

↳ **H03 :** FPIs' daily trading activities are not significantly different across weekdays.

Table 9. ***Kruskal – Wallis Test for Foreign Portfolio Investors (FPIs)***

Test Statistics	Gross Purchase	Gross Sales	Net Investment
Chi-Square	19.537	15.311	4.635
Df	4	4	4
Asymp. Sig.	**.001**	**.004**	.327
a. FPIs			
b. Kruskal Wallis Test			
c. Grouping Variable: Days			

↳ **Ha3 :** FPIs' daily trading activities are significantly different across weekdays.

The results in Table 9 confirm the rejection of H03 for FPIs' purchase and sales activities and signify that FPIs' purchase and sales activities are not similar among the weekdays. However, FPIs' investment activities are uniform across weekdays, and the Ha3 is rejected. To attain more specific information, the post - hoc test is applied.

Post - Hoc Test

Looking at Table 10, it is clear that FPIs' purchase is significantly different in the three sub-groups, that is, "Monday & Wednesday," "Monday & Friday," and "Monday & Thursday" at a 5% level of significance, confirming that the purchase on Monday is significantly different from the purchase on Wednesday, Friday, and Thursday.

Table 10. ***Post - Hoc Test of Gross Purchase by Foreign Portfolio Investors (FPIs)***

Sample1 - Sample2	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Monday - Tuesday	–29.897	18.371	–1.627	.104	1.000
Monday - Wednesday	–57.395	18.212	–3.152	.002	**.016**
Monday - Friday	–62.206	18.601	–3.344	.001	**.008**
Monday - Thursday	–70.161	18.427	–3.808	.000	**.001**
Tuesday - Wednesday	–27.498	17.914	–1.535	.125	1.000
Tuesday - Friday	–32.308	18.310	–1.765	.078	.776
Tuesday - Thursday	–40.263	18.133	–2.220	.026	.264
Wednesday - Friday	–4.811	18.150	–.265	.791	1.000
Wednesday - Thursday	–12.765	17.971	–.710	.477	1.000
Friday - Thursday	7.955	18.365	.433	.665	1.000

The results presented in Table 11 signify that Monday sales are significantly different from the sales on Thursday and Wednesday. Thus, for these two groups, "Monday & Thursday" and "Monday & Wednesday," the null hypothesis is rejected, and it is confirmed that there is a day-of-the-week effect on FPIs' sales activities.

Table 11. ***Post - Hoc Test of Gross Sales by Foreign Portfolio Investors (FPIs)***

Sample1-Sample2	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Monday-Tuesday	–33.577	18.371	–1.828	.068	.676
Monday-Friday	–48.492	18.601	–2.607	.009	.091
Monday-Thursday	–59.099	18.427	–3.201	.001	**.013**
Monday-Wednesday	–62.801	18.212	–3.448	.001	**.006**
Tuesday-Friday	–14.914	18.310	–.815	.415	1.000
Tuesday-Thursday	–25.522	18.133	–1.407	.159	1.000
Tuesday-Wednesday	–29.224	17.914	–1.631	.103	1.000
Friday-Thursday	10.607	18.363	.578	.564	1.000
Friday-Wednesday	14.310	18.150	.788	.430	1.000
Thursday-Wednesday	3.702	17.971	.206	.837	1.000

Kruskal – Wallis Test on IMFs' Trading Activities

↳ **H04 :** IMFs' daily trading activities are not significantly different across weekdays.

↳ **Ha4 :** IMFs' daily trading activities are significantly different across weekdays.

As specified in Table 12, the results confirm that IMF trading (purchase, sales, and investment) activities are the same across weekdays. Thus, H04 is rejected for trading activities of IMFs.

Table 12. ***Indian Mutual Funds' (IMFs) Kruskal – Wallis Test***

Test Statistics	Gross Purchase	Gross Sales	Net Investment
Chi-Square	8.686	8.731	.901
Df	4	4	4
Asymp. Sig.	.069	.068	.924
a. IMFs			
b. Grouping Variable: Days			

Mann – Whitney U Test

↳ **H05 :** There are significant differences between the mean values of the FPIs' & IMFs' variables (purchase, sales, and net investments) for a particular weekday from the mean of the rest of the weekdays.

↳ **Ha5 :** There are significant differences between the mean values of the FPIs' & IMFs' variables (purchase, sales, and net investments) for a particular weekday from the mean of the rest of the weekdays.

Foreign Portfolio Investors (FPIs)

As per Table 13, FPIs' purchase and sales on Monday are significantly different from the gross purchase and sales of the rest of the weekdays. Thus, H05 is rejected for FPIs' Monday purchase and sales activities. However, Ha5 is rejected for FPIs' Monday net investment.

Table 13. *Monday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	8866.500	9093.500	11242.500
Wilcoxon *W*	11792.500	12019.500	14168.500
Z	–3.735	–3.484	–1.101
Asymp. Sig. (2-tailed)	**.000**	**.000**	.271
a. FPIs			
b. Grouping Variable: Monday			

Table 14. *Tuesday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	11669.000	12209.000	12472.000
Wilcoxon *W*	14990.000	15530.000	15793.000
Z	–1.266	–.681	–.397
Asymp. Sig. (2-tailed)	.206	.496	.692
a. FPIs			
b. Grouping Variable: Tuesday			

Table 15. *Wednesday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	12091.000	11386.000	12337.000
Wilcoxon *W*	61546.000	60841.000	15907.000
Z	–1.171	–1.924	–.909
Asymp. Sig. (2-tailed)	.241	.064	.363
a. FPIs			
b. Grouping Variable: Wednesday			

Table 16. *Thursday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	10654.000	11300.000	12115.000
Wilcoxon *W*	61375.000	62021.000	62836.000
Z	–2.246	–1.544	–.658
Asymp. Sig. (2-tailed)	**.025**	.123	.511
a. FPIs			
b. Grouping Variable: Thursday			

The results of Table 14 confirm the absence of significant differences in FPIs' trading activities between Tuesday and the rest of the weekdays by rejecting the Ha5 for FPIs' Tuesday trading activities.

The results depicted in Table 15 confirm the absence of significant differences between FPIs' trading activities on Wednesday and the rest of the weekdays by rejecting the Ha5 for FPIs' Wednesday trading activities.

Table 17. *Friday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	10982.500	11808.500	10752.500
Wilcoxon *W*	62663.500	63489.500	62433.500
Z	–1.518	–.607	–1.772
Asymp. Sig. (2-tailed)	.129	.544	.076
a. FPIs			
b. Grouping Variable: Friday			

Looking at the Mann – Whitney *U* test results depicted in Table 16, Thursday's FPIs' purchase has been confirmed to be significantly different from FPIs' purchase on the rest of the weekdays. Thus, H05 is rejected for FPIs' Thursday purchase activities.

The results of Table 17 confirm the absence of significant differences between FPIs' trading activities on Friday and the rest of the weekdays. Thus, Ha5 is rejected for FPIs' Friday trading activities.

Indian Mutual Funds (IMFs)

According to Table 18, IMFs' purchase and sales on Monday are significantly different from the gross purchase and sales on the rest of the weekdays. Thus, H05 is rejected for IMFs' Monday purchase and sales activities.

The results of Table 19 confirm the rejection of Ha5 for IMFs' Tuesday trading activities. Thus, there is an absence of significant differences between IMFs' trading activities on Tuesday and the rest of the weekdays.

The results of Table 20 confirm the rejection of Ha5 for IMFs' Wednesday trading activities. Examining the

Table 18. *Monday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	9841.000	10107.500	12034.500
Wilcoxon *W*	12767.000	13033.500	14960.500
Z	–2.655	–2.360	–.223
Asymp. Sig. (2-tailed)	**.008**	**.018**	.823
a. IMFs			
b. Grouping Variable: Monday			

Table 19. *Tuesday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	12804.000	12545.500	12739.500
Wilcoxon *W*	63207.000	62948.500	63142.500
Z	–.037	–.317	–.107
Asymp. Sig. (2-tailed)	.970	.751	.915
a. IMFs			
b. Grouping Variable: Tuesday			

Table 20. *Wednesday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	12666.000	13150.000	12777.000
Wilcoxon *W*	62121.000	62605.000	62232.000
Z	–.557	–.041	–.439
Asymp. Sig. (2-tailed)	.577	.968	.661
a. IMFs			
b. Grouping Variable: Wednesday			

Table 21. *Thursday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	11024.000	10644.500	11980.000
Wilcoxon *W*	61745.000	61365.500	15220.000
Z	–1.844	–2.257	–.805
Asymp. Sig. (2-tailed)	.065	**.024**	.421
a. IMFs			
b. Grouping Variable: Thursday			

Table 22. *Friday and Rest of the Weekdays*

	Gross Purchase	Gross Sales	Net Investment
Mann – Whitney *U*	12216.000	12080.500	11927.000
Wilcoxon *W*	63897.000	15083.500	63608.000
Z	–.157	–.307	–.476
Asymp. Sig. (2-tailed)	.875	.759	.634
a. IMFs			
b. Grouping Variable: Friday			

Mann – Whitney *U* test results in Table 21, Thursday's IMFs' sales are confirmed to be significantly different from IMFs' sales on the rest of the weekdays. Thus, H05 is rejected for IMFs' Thursday sales activities.

The results in Table 22 confirm the absence of significant differences between IMFs' trading activities on Friday and the rest of the weekdays.

Discussion

↳ In the context of purchasing activities, Friday has been determined to have the most significant effect on FPIs' gross purchase, followed by Monday, which also significantly affects the purchasing activities of FPIs. On the other hand, Friday is found to have the most significant effect on IMFs' gross purchase, followed by Thursday, which also significantly affects the purchasing activities of IMFs. Thus, it is inferred that Friday does substantially affect foreign and domestic institutional investors' purchasing activities.

↳ Concerning selling and investing activities, Friday has been found to have a strong significant effect on the FPIs' and IMFs' gross sales in the given period, implying that Friday is impacting the selling decisions of FPIs and IMFs. However, Thursday along with Friday has also been found to affect the selling activities of IMFs significantly.

↳ For purchase activities, FPIs' purchase activities are found to be significantly different in the three sub-groups, that is, "Monday & Wednesday," "Monday & Friday," and "Monday & Thursday," confirming that Monday does affect purchasing activities of FPIs in the period of the study. However, purchase activities of IMFs are the same across weekdays.

↳ For sales activities, FPIs' Monday sales are confirmed to be significantly different from sales on Thursday and Wednesday, proving that there is a day-of-the-week effect for FPIs' sales activities. However, IMFs' sales activities are found to be the same across all weekdays.

↳ Concerning net daily trading position, foreign and domestic institutional investors exhibit similar behavior, and it has been found that there is no day-of-the-week effect on the investing activities of FPIs and IMFs.

↳ Both FPIs' and IMFs' trading (purchase and sales) activities on Monday are found to be significantly different from the rest of the weekdays' trading (purchase and sales) activities during the present study period. However, it has been ascertained that the net investments of both FPIs and IMFs on Monday are significantly similar to the net investments on the rest of the weekdays.

↳ It is determined that FPIs' and IMFs' trading (purchase, sales, and net investment) activities on Tuesday are significantly similar to the trading activities on the rest of the weekdays at a 5% significance level.

↳ FPIs' and IMFs' trading (purchase, sales, and net investment) activities on Wednesday are observed to be significantly identical to the trading activities on the rest of the weekdays (from November 1, 2016, to November 30, 2019).

↳ FPIs' purchase on Thursday is proven to be significantly different from the rest of the week at a 5% level of significance. On the other hand, the IMFs' sales on Thursday have been observed to be significantly different from sales on the rest of the weekdays at a 5% significance level in the present study period.

↳ FPIs' and IMFs' trading (purchase, sales, and net investment) activities on Friday are evidenced not to be significantly different from the rest of the weekday trading activities for the period of this study.

Managerial & Policy Implications and Conclusion

In the post-demonetization and GST regime phase of India, Friday is determined to be the most significant independent variable affecting FPIs' and IMFs' trading activities in India. Thus, Indian financial markets experienced the day-of-the-week anomaly with the Friday effect with respect to institutional investors' trading behaviors, irrespective of their country of origin. Along with Friday, Monday in the case of FPIs, and Thursday in the case of IMFs, are also found to be significant. It again proves the inefficiencies of the Indian financial markets during the study period. According to the Kruskal – Wallis test results, domestic institutional investors displayed indifferent trading behavior across weekdays. It is found that the IMFs' trading activities are significantly

similar across weekdays in the study period. However, foreign institutional investors showed different trading behaviors across weekdays. In the context of net daily trading position, foreign and domestic institutional investors exhibited similar behavior. No day-of-the-week effect has been found in the net investing activities of FPIs and IMFs. It has further been determined that institutional investors' trading activities are quite similar across weekdays in the present study period. In the context of the trading (purchase and sale) activities of overseas and domestic institutional investors, Monday and Thursday are significantly different from the rest of the weekdays. However, the Tuesday, Wednesday, and Friday trading activities of both institutional investors are similar to the rest of the weekday trading activities at a 5% level of significance. Based upon the results of various statistical techniques used in the present study, it may be concluded that the Indian securities markets are inefficient, as day-of-the-week effects, specifically "Monday," "Thursday," and "Friday," are present in the purchasing and selling activities of foreign and domestic institutional investors in the Indian equity market.

The findings of various researchers have also corroborated the results of the present study. They also confirmed the presence of the day-of-the-week anomaly in Indian stock markets (Aziz & Ansari, 2015 ; Sehdev & Bhatnagar, 2019 ; Sehdev & Tamboli, 2019 ; Wats, 2019).

The present study contributes to the existing literature related to the efficient market hypothesis through its findings and results. The present study also provides relevant recommendations for individual investors who lack expertise in investment management. Individual investors can earn extraordinary profits by meticulously observing institutional investors' trading activities and following their investment strategies. If these individual investors still lack the confidence to invest their hard-earned funds in capital markets themselves, then they can invest through mutual funds and earn a substantial quantum of returns on their funds. The AR model used in the present study is an acceptable model as forecast errors were minimal, and it captured the trends of institutional investors' trading activities correctly. Forecasting foreign and domestic institutional investors' trading activities can help in better policy formulation and help make strategic decisions in the stock market. Thus, the present study's findings would help individual investors make investment decisions for reaping extraordinary returns from inefficient markets. The results may help to formulate policies related to foreign institutional investments by Indian stock market regulatory bodies.

Limitations of the Study and Scope of Further Research

The present study has a few limitations, which are discussed below :

- The present study is confined to the daily trading activities of the FPIs and IMFs in equity instruments only. Institutional investors' trading activities in debt instruments have not been considered in the present study.

- In the present study, mutual funds are presumed to depict the behavior of all domestic institutional investors. Other domestic institutional investors like pension funds, insurance companies, reinsurance companies, etc., have been ignored.

The present study can be extended to examine the day-of-the-week anomaly in other countries' stock markets and commodity markets. Researchers can also investigate the other market anomalies in Indian and other countries' stock markets. The present research can also be extended to explore the day of the week anomaly for different periods, such as the post spread of COVID-19.

Author's Contribution

Dr. Razia Sehdev conceived the idea and developed qualitative and quantitative design to undertake the empirical study. Dr. Razia Sehdev is the single author and has solely worked on the manuscript.

Conflict of Interest

The author certifies that she has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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