Chapter 4

Transaction Costs Associated with Stock Trade

Introduction

There are a number of causes that can affect an investor's entrance (buy) into or departure (sell) out of a given stock and/or area. Depending on the investor and his or her objectives and investing time frame, the importance of timing the entry will vary. Obviously, the shorter the time frame the more important the entry; particular entries matter little to long-term (five years or more) investors. All investors should be alert of some of the more common market moving powers that can shake a stock's price, so they can make better entries and catch an extra percent or two in return. The items which can substantially affect the average day's trading are discussed in this chapter.

Literature Review

Various exact reviews have observed the seasonality in all aspects of the world. This area gives an outline of the study of the literature, that have observed Day-of-the-Week effect in international context. The experimental evidence from literature demonstrates that the Day-of-the-Week effect still exists in financial markets however no hypothetical clarification has fulfilled the researchers, regardless of number of endeavors made by the academicians to clarify the Day-of-the-Week effect and Holiday Effect.

Keim and Stambaugh (1984) examine stock returns in the Standard and Poor's index in the vicinity of 1928 and 1982. In this time period the stock market would once in a while trade on Saturday. They research if the span of the weekend impacts the returns on Fridays and Mondays. Keim and Stambaugh find that Fridays trailed by one day weekends (in this manner a trading Saturday) accomplishes a drastically lower return than that of Fridays followed by two weekends. However, Mondays don't demonstrate a huge contrast in returns after a one or a two-day end of the week.

Fields (1931) proposes that the best trading day of the week is Saturday. Another imperative review on the weekend effect is by Cross (1973), who examinations the Friday-Monday data for the Standard and Poor's Composite Stock Index from January 1953 to December 1970 and finds an expansion consequently on Fridays and a diminishing consequently on Mondays. French (1980) augments the examination until 1977 and furthermore reports negative returns on Mondays. Facilitate commitments by Gibbons and Hess (1981), Keim and Stambaugh (1984), Rogalski (1984), and Smirlock and Starks (1986) likewise locate the positive-Friday/negative-Monday design. Connolly (1999) additionally takes into account heteroscedasticity yet at the same time recognizes a Monday impact from the mid-1970s. Rystrom and Benson (1989) clarify the presence of the day-of-the-week effect on the premise of the psychology of investors who believed that Monday is a ‘difficult’ day of the week and have a more positive impression of Friday. Ariel (1990) contends against an association between the weekend and the Monday effect. Agrawal and Tandon (1994) examine 19 equity markets around the globe, and discover the day-of-the -week effect in most developed markets. Sias and Starks (1995) relate the weekend effect with stocks in large portfolios of institutional investors. Research led by Fortune (1998, 1999) demonstrates that it tends to vanish and is a marvel with two parts: the first is the ‘weekend drift effect’, i.e. stock prices tend to decrease over weekends yet ascend amid the trading week; the second is the ‘weekend volatility effect’, i.e. the volatility of returns amid weekends is less every day than that over coterminous trading days.

With respect to the part of short-selling, Kazemi, Zhai, He and Cai (2013) and Chen and Singal (2003) clarify the weekend effect as coming about because of the end of speculative positions on Fridays and the building up of new short positions on Mondays by traders. Be that as it may, the aftereffects of the review by Christophe, Ferri and Angel (2007) don't bolster this conclusion. Additional proof is given by Singal and Tayal (2014) for the futures market, Olson, Chou, Mossman (2011) who complete different breakpoint and stability tests, and Racicot (2011) who utilizes spectral analysis.

Suggestions of pre-holiday strength have showed up in the academic literature. Merill (1966) finds a misappropriated recurrence of Dow Jones Industrial Average advances on days preceded by holidays amid the 1897 to 1965 period and Fosback (1976) has noted high pre-holiday returns on S&P 500 file return.

Roll (1983) discovers high returns collecting to small firms on the trading day preceding New Year's Day. Lakonishok and Smidt (1984) take note of that “prices also rise in all deciles on the last trading day before Christmas” and conclude that “the high Christmas returns of large companies might be considered ...mystery”.

Jacobs and Levy (1988), in the US stock market, watch 35 percent of the ascent in stock prices in the period 1963-1982 happened on the eight trading days before a public holiday.

Barone (1990) finds that, on the average, the rate of progress on the days went before by public holiday is higher than that for the other trading days in Italian stock market.

Ariel (1990) records that the high mean return accumulating to the CRSP (Center for Research in Security Prices for Dow Jones Industrial Average) equally and value weighted indices on the trading day before holidays is measurably huge for the US market; on average the pre-holiday return breaks even with nine to fourteen times the return collecting on non-pre-holidays.

A few authors have demonstrated the connection among days and return of the stock. This review demonstrates the connection between transaction costs which is reflected through the implementation shortfall with days of the week. Extensive study in this sector is yet to be done as there is no specifically related literature available. An attempt has been made to draw a connection with transaction cost and days through return as, return has negative relationship with transaction cost.

The findings from other relevant studies are summarized in Table **4.02.01**.

Table 4.02.01: Summarized literature review for Day-of-the-week and holiday effect

Sl #	**Authors**	**Time period**	**Market, Index**	**Observations/ Results**
1.	Keim and Stambaugh 1984	1928-1982	S & P Composite Index (US)	Friday returns were highest
2.	Rogalski 1984	1974-1984	DJIA (US)	Monday effect occurred
3.	Cornell 1985	1982-1984	S & P 500 (US)	DOW effect was found in cash market, but not in futures market.
4.	Jaffey and Wasterfield 1985	1970-1983	ND Index and S&P composite 500 stock price index (US)	(-ve) Mon. return, (+ve) Fri. return.
5.	Kato 1990	1.1978-1987 2.1982-1987	Daily returns of TOPIX Intra- day returns of TOPIX (Tokyo)	Low Tues. return, High Wed. return.

6.	Lakonishok and Maberly 1990	1962-1986	NYSE odd lot sales and purchases and NYSE block transactions (US)	Trading volume was lowest on Monday.
7.	Chang et.al., 1993	1986-1992	Intraday daily returns on 22 foreign indices and U.S. Index	Mon. effect for two weeks out of a given month.
8.	Mittal 1994	1990-1993	BSE National Index	(-ve) Tue. return, (+ve) Fri. return.
9.	Sias, Starks (1995)	1977-1991	market equity capitalization, institutional holdings, daily returns and volume of 1500 institutional investors on the NYSE	The weekend effect is driven primarily by institutional investor trading patterns
10.	Poshakwale 1996	1987-1994	BSE National Index	(-ve) Mon. return, (+ve) Wed return.

11.	Wang et al., 1997	1.1962-1993 2.1973-1993 3.1928-1993	NYSE- AMEX equally and value weighted returns indices. The Nasdaq equally and value weighted returns indices. S&P Composite Index	(-ve) Mon. return for first three weeks of the given month.
12.	Fortune (1998)	January 1980 – June 1998	daily close- to-close data for the S&P 500	The negative weekend drift appears to have disappeared although weekends continue to have low volatility
13.	Fortune (1999)	January 1980 - January 1999	daily close-to-close data of the Dow 30, the S&P 500, the Wilshire 5000, the Nasdaq Composite, and the Russell 2000	The weekend drift effect is a financial anomaly that will ultimately correct itself.

14.	Anshuman and Goswami 2000	1991-1996	70 Frequently stocks traded on BSE	(-ve) Tue. return, (+ve) Fri. return.
15.	Amanulla and Thiripalraju 2001	1990-1999	1. BSE Sensitive Index 2. BSE National Index 3. S&P CNX Nifty Index	(-ve) Tue. return, (+ve) Wed. return.
16.	Brooks and Persand 2001	1989-1996	South Korea Stock Exchange Composite Index Kuala Lumpur Composite Price Index Bangkok Weighted Price Index Taiwan Weighted Price Index Philippines Stock Exchange	Thailand and Malaysia exhibited positive returns and negative Tuesday return.

			Composite Price Index	
17.	Kiymaz and Berument 2001	1989-1997	TSE Composite Index (Canada) DAX Index (Germany) Nikkei 225 Index (Japan) FT- 100 Index (UK) NYSE Composite Index (US)	Highest volatility on Monday was found for Canada, Germany and Japan and on Friday for UK and US.
18.	Schwert (2003)	1885–1927 1928–2002	– the Dow Jones indexes portfolio; - the S&P composite portfolio	The weekend effect seems to have disappeared since the 1980-s
19.	Chen, Singal (2003)	July 1962 –Dec1999 Dec1972 - Dec1999 June 1988 - Dec1999	New York Stock (NYSE); Nasdaq - daily returns for stocks; Nasdaq and NYSE –	Speculative short sales can explain the weekend effect.

		Jan 1988 – 1999	monthly short interest data	
20.	Hsaio, Solt (2004)	Jan 1988 to Dec 2000 (678 weeks) April 1994 to Dec 2000 (332 weeks)	the 3:00 and closing values for the S&P 500 index; April 1988 to December 2000 (669 weeks) - the CREF stock, growth, and money market account; – growth account	Presence of weekend effect in the average daily returns for many of the tested portfolios till 2000.
21.	Nath and Dalvi 2004	1999-2003	S&P CNX Nifty	(+ve) Wed. return, (+ve) Fri. return.
22.	Draper and Paudyal 2005	1930-1999	S & P 500 (US)	Wednesday was four times larger than the typical pre-holiday returns and Monday effect was absent in pre-holiday returns.
23.	Mangala and Mittal 2005	1997-2003	CNX Nifty Junior	(+ve) Wed. return, (-ve) Fri. return.

24.	Boynton et al., 2006	1975-2001	Pacific Basin Capital Markets Research Center (Japan)	Monday exhibited losses and decrease in volume as well.
25.	Hu et al ., 2006	1991-2004	TWSE (Taiwan)	Stronger Monday effect and highest positive Friday returns were found.
26.	Christophe, Ferri, Angel (2007)	September 2000 - July 2001	daily 9:30 am-4:00 pm data on NASDAQ- listed stock	Speculative short-selling does not explain the Monday-Friday difference in returns
27.	Olson, Chou, Mossman, (2011)	1973 – 2007	the Dow-Jones 30 Industrials, Standard and Poor's 500, Standard & Poor's Midcap 400, Standard & Poor's Smallcap 600, NASDAQ	The weekend effect may have already gone through its entire involving identification, exploitation, decline, reversal, and disappearance. There is no significant

			100, American Stock Exchange (AMEX) Composite indices	weekend effect in U.S. small stocks after about mid 2003
28.	Racicot (2011)	1970-1973	S&P 500 index	Spectral analysis confirms the Monday effect.
29.	Kazemi, Zhai, He and Cai (2013)	January 1980 – present time	60 market indices from 59 countries (For all countries, except US, major stock index is used. For the US both the Dow Jones Index and the S&P 500 were used)	During the period from 1980 to 1994, short sales can explain the weekend effect. During the period from 1995 to 2007, the cross-sectional weekend effect cannot be explained by short sales.
30.	Singal and Tayal (2014)	1990 – 2012	eight futures: Crude oil, Heating Oil, Soybeans, Sugar, S&P 500 Index, British Pound, 10-	Evidence of the weekend effect in futures markets shows that security prices will generally

			Year Treasury Note, and Gold	be biased upwards, with greater overvaluation for more volatile securities. Unconstrained short selling is not a sufficient condition for unbiased prices

(AMEX BSE= Bombay Stock Exchange, DAX=Deutsche Aktien Indexe, DJIA = Dow Jones Industrial Average, FT=Financial Times, ND = Nikkei-Dow, NYSE= New York Stock Exchange, TOPIX= Tokyo Stock Price Index, TSE=Tokyo Stock Exchange, TWSE= Taiwan Stock Exchange, S & P = Standard and Poor).

The Week-End impact keeps on persevering notwithstanding when market balanced returns are considered for equities and treasury bills (Gibbons and Hess 1981). Anshuman and Goswami (2000) infer that settlement procedures, badla trading and measurement error don't have any huge effect on Day-of-the-Week effect. In any case, Cornell (1985) discovers measurement error and transactions costs as a reason for the specific impact. There is an inversion in Monday impact in Indian stock market after 2000, reliable with Amanulla and Thiripalraju (2001). Wednesday is reported with most elevated positive returns in the period after 2000 (Nath and Dalvi 2004; Mangala and Mittal 2005). Short seller's exercises are considered as a reason for the impact in Taiwan stock market (Hu et al. 2006). Payment of dividend and information hypothesis are additionally viewed as in charge of Day of the week effect and further unexpected changes in exchange rates, the term structure, default risk premiums and arrival of new information on certain trading days may be viewed as a reason for the impact (Draper and Paudyal 2005).

Objective and Hypothesis

Objective

The main objective of this chapter is to identify the transaction costs associated with stock trade in stock market. To achieve this objective the following objective has been framed. To identify market timing of trade of transaction cost analysis.

Hypothesis

The following hypothesis is tested in this chapter

There is no significant association between transaction cost (measured by implementation shortfall) and market timing of the transaction.

Research question

The answer to the following research question is sought in this chapter.

Does any particular time of the trading day affect Transaction cost differently?

In this research question, the impact on transaction cost (IS or, Implementation Shortfall) by the trade timing if trade timing is identified into three time zones such as First Phase Timing (from 09:30 am to 12:00 pm), Mid Phase Timing (from 12:00 pm to

14:00 pm), and Last Phase Timing (from 14:00 pm to 16:00 pm) is addressed. It is notable that in USA stock market is open at 09:30 am and close at 16:00 pm EST (Eastern Standard Time).

Research methodology

The study is conducted using the following research methodology:

Types of Research

It is an empirical research with hypothesis testing.

Universe of the Study

The universe of the study comprises of S&P 500 companies listed in USA.

The Data

The study conducts an empirical analysis based on secondary data collected from US stock market. Intraday trading data of S&P 500 Companies are selected from the US stock exchange. An appropriate sample size of 81 Stock at 95% confidence level, and 10% confidence interval are taken for the study using fair representation of all the sectors proportionately that are part of S & P 500. The review considers six months back to back intraday traded data of a trader. Not all traders can engage in short selling as a result the only focus was on buy side transaction and its analysis.

Data Analysis Tools and Techniques

Initially collected print data rearranged and the required field calculated by using JAVA platform computer software. Microsoft excel, E-views and other statistical packages are also used in conducting analysis.

Analysis and findings

The analysis and findings of this chapter are reported under following paragraph:

Association between IS with Five Transaction Days (Monday to Friday): IS = C + B_1(MON) + ε

Table 4.06.01.01: Effect of Monday trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:53
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.21235	3.507386	3.196783	0.0014
MON	-6.830034	8.222313	-0.830671	0.4062

R-squared	0.000078	Mean dependent var	9.969549
Adjusted R-squared	-0.000035	S.D. dependent var	299.1318
S.E. of regression	299.1370	Akaike info criterion	14.23991
Sum squared resid	7.96E+08	Schwarz criterion	14.24150
Log likelihood	-63308.62	Hannan-Quinn criter.	14.24045
F-statistic	0.690014	Durbin-Watson stat	1.953465
Prob(F-statistic)	0.406182		

Sources: Own calculation

$$IS = C + B_1(TUE) + \varepsilon$$

Table 4.06.01.02: Effect of Tuesday trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:55
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.984772	3.567965	1.957635	0.0503
TUE	14.23090	7.790779	1.826634	0.0678

R-squared	0.000375	Mean dependent var	9.969549
Adjusted R-squared	0.000263	S.D. dependent var	299.1318
S.E. of regression	299.0925	Akaike info criterion	14.23961
Sum squared resid	7.95E+08	Schwarz criterion	14.24120
Log likelihood	-63307.30	Hannan-Quinn criter.	14.24015
F-statistic	3.336592	Durbin-Watson stat	1.953795
Prob(F-statistic)	0.067788		

Sources: Own calculation

$$IS = C + B_1(WED) + \varepsilon$$

Table 4.06.01.03: Effect of Wednesday trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:55
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.653870	3.627063	2.385917	0.0171
WED	5.597614	7.481379	0.748206	0.4544

R-squared	0.000063	Mean dependent var	9.969549
Adjusted R-squared	-0.000050	S.D. dependent var	299.1318
S.E. of regression	299.1392	Akaike info criterion	14.23992
Sum squared resid	7.96E+08	Schwarz criterion	14.24152
Log likelihood	-63308.69	Hannan-Quinn criter.	14.24046
F-statistic	0.559813	Durbin-Watson stat	1.953575
Prob(F-statistic)	0.454356		

Sources: Own calculation

IS = C + B_1(THU) + ε

Table 4.06.01.04: Effect of Thursday trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:56
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.689518	3.510170	2.760413	0.0058
THU	1.528564	8.201010	0.186387	0.8521

R-squared	0.000004	Mean dependent var	9.969549
Adjusted R-squared	-0.000109	S.D. dependent var	299.1318
S.E. of regression	299.1481	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.95	Hannan-Quinn criter.	14.24052
F-statistic	0.034740	Durbin-Watson stat	1.953365
Prob(F-statistic)	0.852145		

Sources: Own calculation

IS = C + B_1(FRI) + ε

Table 4.06.01.05: Effect of Friday trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:56
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.15158	3.524161	3.731833	0.0002
FRI	-16.74238	8.083736	-2.071119	0.0384

R-squared	0.000482	Mean dependent var	9.969549
Adjusted R-squared	0.000370	S.D. dependent var	299.1318
S.E. of regression	299.0765	Akaike info criterion	14.23950
Sum squared resid	7.95E+08	Schwarz criterion	14.24110
Log likelihood	-63306.82	Hannan-Quinn criter.	14.24004
F-statistic	4.289534	Durbin-Watson stat	1.954385
Prob(F-statistic)	0.038376		

Sources: Own calculation

Interpretation: From table **4.06.01.01** to **4.06.01.05** a regression analysis is done by considering implementation shortfall as dependent variable and days are considered separately as independent variables. Among five days only Friday and Tuesday have significant association with implementation shortfall. For the rest of the days, the null hypothesis meaning that Monday, Wednesday, and Thursday has no special impact on implementation shortfall, cannot be rejected. When one observe the nature of coefficient Friday and Monday offer negative coefficient whereas if one transact in Tuesday, Wednesday and Thursday implementation shortfall would be increased but they are not statistically significant.

Association between IS with Three Time slots: IS = C + B1(FPT) + ε

Note: Here, FPT= First Phase Time (from 09:30 am to 12:00 pm).

Table 4.06.02.01: Effect of First Phase Time (FPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:57
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.43949	3.858447	2.705621	0.0068
FPT	-1.450455	6.778610	-0.213975	0.8306

R-squared	0.000005	Mean dependent var	9.969549
Adjusted R-squared	-0.000107	S.D. dependent var	299.1318
S.E. of regression	299.1479	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.94	Hannan-Quinn criter.	14.24052
F-statistic	0.045785	Durbin-Watson stat	1.953333
Prob(F-statistic)	0.830571		

Sources: Own calculation

$$IS = C + B_1(MPT) + \varepsilon$$

Note: Here, MPT= Mid Phase Time (from 12:00 pm to 14:00 pm);

Table 4.06.02.02: Effect of Mid Phase Time (MPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:57
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.02973	3.809598	2.895248	0.0038
MPT	-3.458226	6.880435	-0.502617	0.6152

R-squared	0.000028	Mean dependent var	9.969549
Adjusted R-squared	-0.000084	S.D. dependent var	299.1318
S.E. of regression	299.1444	Akaike info criterion	14.23995
Sum squared resid	7.96E+08	Schwarz criterion	14.24155
Log likelihood	-63308.84	Hannan-Quinn criter.	14.24050
F-statistic	0.252624	Durbin-Watson stat	1.953321
Prob(F-statistic)	0.615246		

Sources: Own calculation

$$IS = C + B_1(LPT) + \varepsilon$$

Note: Here, LPT= Last Phase Time (from 14:00 am to 16:00 pm)

Table 4.06.02.03: Effect of Last Phase Timing (LPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:58
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.299865	3.994940	2.077595	0.0378
LPT	4.519583	6.572676	0.687632	0.4917

R-squared	0.000053	Mean dependent var	9.969549
Adjusted R-squared	-0.000059	S.D. dependent var	299.1318
S.E. of regression	299.1407	Akaike info criterion	14.23993
Sum squared resid	7.96E+08	Schwarz criterion	14.24153
Log likelihood	-63308.73	Hannan-Quinn criter.	14.24047
F-statistic	0.472838	Durbin-Watson stat	1.953243
Prob(F-statistic)	0.491702		

Sources: Own calculation

Interpretation: To identify the impact of time of transaction on Implementation shortfall total transaction hour is divide into three parts i.e., from 09:30 am to before 12:00 pm is the First Phase Time (FPT), from 12:00 pm to before 14:00 pm is the Mid Phase Time (MPT) and from 14:00 pm to16:00 pm is the Last Phase Time (LPT). By observing p values from table **4.06.02.01** to **4.06.02.03,** it can be concluded that execution time has no association with Implementation shortfall. It is observed that the trading implementation shortfall decreases in FPT and MPT getting negative relation whereas LPT shows positive relation.

Association between IS with five days' Time slot: IS = C + B_1(MONFPT) + ε

Note: Here, MONFPT= Monday First Phase Time

Table 4.06.03.01: Effect of Monday First Phase Time (MONFPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:59
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.46393	3.270534	3.199457	0.0014
MONFPT	-8.357529	13.44700	-0.621516	0.5343

R-squared	0.000043	Mean dependent var	9.969549
Adjusted R-squared	-0.000069	S.D. dependent var	299.1318
S.E. of regression	299.1421	Akaike info criterion	14.23994
Sum squared resid	7.96E+08	Schwarz criterion	14.24154
Log likelihood	-63308.77	Hannan-Quinn criter.	14.24048
F-statistic	0.386282	Durbin-Watson stat	1.953407
Prob(F-statistic)	0.534276		

Sources: Own calculation

IS = C + B_1(MONMPT) + ε

Table 4.06.03.02: Effect of Monday Mid Phase Time (MONMPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 20:59
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.12253	3.263972	3.101291	0.0019
MONMPT	-2.764790	13.87598	-0.199250	0.8421

R-squared	0.000004	Mean dependent var	9.969549
Adjusted R-squared	-0.000108	S.D. dependent var	299.1318
S.E. of regression	299.1480	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.95	Hannan-Quinn criter.	14.24052
F-statistic	0.039701	Durbin-Watson stat	1.953358
Prob(F-statistic)	0.842072		

Sources: Own calculation

IS = C + B_1(MONLPT) + ε

Table 4.06.03.03: Effect of Monday Last Phase Time (MONLPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:00
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.40601	3.285118	3.167620	0.0015
MONLPT	-6.468319	12.64664	-0.511465	0.6090

R-squared	0.000029	Mean dependent var	9.969549
Adjusted R-squared	-0.000083	S.D. dependent var	299.1318
S.E. of regression	299.1442	Akaike info criterion	14.23995
Sum squared resid	7.96E+08	Schwarz criterion	14.24155
Log likelihood	-63308.83	Hannan-Quinn criter.	14.24050
F-statistic	0.261597	Durbin-Watson stat	1.953414
Prob(F-statistic)	0.609038		

Sources: Own calculation

IS = C + B_1(TUEFPT) + ε

Table 4.06.03.04: Effect of Tuesday First Phase Time (TUEFPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:00
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.95732	3.288697	3.331811	0.0009
TUEFPT	-14.18942	12.46460	-1.138378	0.2550

R-squared	0.000146	Mean dependent var	9.969549
Adjusted R-squared	0.000033	S.D. dependent var	299.1318
S.E. of regression	299.1268	Akaike info criterion	14.23984
Sum squared resid	7.95E+08	Schwarz criterion	14.24143
Log likelihood	-63308.32	Hannan-Quinn criter.	14.24038
F-statistic	1.295904	Durbin-Watson stat	1.953656
Prob(F-statistic)	0.254993		

Sources: Own calculation

IS = C + B_1(TUEMPT) + ε

Table 4.06.03.05: Effect of Tuesday Mid Phase Time (TUEMPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:01
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.768150	3.276081	2.981657	0.0029
TUEMPT	3.232562	13.12500	0.246290	0.8055

R-squared	0.000007	Mean dependent var	9.969549
Adjusted R-squared	-0.000106	S.D. dependent var	299.1318
S.E. of regression	299.1476	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.93	Hannan-Quinn criter.	14.24052
F-statistic	0.060659	Durbin-Watson stat	1.953379
Prob(F-statistic)	0.805463		

Sources: Own calculation

IS = C + B_1(TUELPT) + ε

Table 4.06.03.06: Effect of Tuesday Last Phase Time (TUELPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:07
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.619966	3.301089	2.005389	0.0450
TUELPT	43.04117	11.83325	3.637309	0.0003

R-squared	0.001486	Mean dependent var	9.969549
Adjusted R-squared	0.001374	S.D. dependent var	299.1318
S.E. of regression	298.9263	Akaike info criterion	14.23850
Sum squared resid	7.94E+08	Schwarz criterion	14.24009
Log likelihood	-63302.35	Hannan-Quinn criter.	14.23904
F-statistic	13.23002	Durbin-Watson stat	1.955327
Prob(F-statistic)	0.000277		

Sources: Own calculation

IS = C + B_1(WEDFPT) + ε

Table 4.06.03.07: Effect of Wednesday First Phase Time (WEDFPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:09
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.790021	3.302836	2.661356	0.0078
WEDFPT	15.20052	11.85666	1.282024	0.1999

R-squared	0.000185	Mean dependent var	9.969549
Adjusted R-squared	0.000072	S.D. dependent var	299.1318
S.E. of regression	299.1210	Akaike info criterion	14.23980
Sum squared resid	7.95E+08	Schwarz criterion	14.24139
Log likelihood	-63308.14	Hannan-Quinn criter.	14.24034
F-statistic	1.643586	Durbin-Watson stat	1.953968
Prob(F-statistic)	0.199868		

Sources: Own calculation

IS = C + B_1(WEDMPT) + ε

Table 4.06.03.08: Effect of Wednesday Mid Phase Time (WEDMPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:10
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.06658	3.294115	3.055928	0.0023
WEDMPT	-1.337639	12.23091	-0.109365	0.9129

R-squared	0.000001	Mean dependent var	9.969549
Adjusted R-squared	-0.000111	S.D. dependent var	299.1318
S.E. of regression	299.1484	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24158
Log likelihood	-63308.96	Hannan-Quinn criter.	14.24052
F-statistic	0.011961	Durbin-Watson stat	1.953349
Prob(F-statistic)	0.912915		

Sources: Own calculation

IS = C + B_1(WEDLPT) + ε

Table 4.06.03.09: Effect of Wednesday Last Phase Time (WEDLPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:12
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.960337	3.316308	3.003441	0.0027
WEDLPT	0.108489	11.38102	0.009532	0.9924

R-squared	0.000000	Mean dependent var	9.969549
Adjusted R-squared	-0.000112	S.D. dependent var	299.1318
S.E. of regression	299.1486	Akaike info criterion	14.23998
Sum squared resid	7.96E+08	Schwarz criterion	14.24158
Log likelihood	-63308.97	Hannan-Quinn criter.	14.24053
F-statistic	9.09E-05	Durbin-Watson stat	1.953354
Prob(F-statistic)	0.992395		

Sources: Own calculation

IS = C + B_1(THUFPT) + ε

Table 4.06.03.10: Effect of Thursday First Phase Time (THUFPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:13
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.726756	3.270197	2.974364	0.0029
THUFPT	4.120069	13.47125	0.305842	0.7597

R-squared	0.000011	Mean dependent var	9.969549
Adjusted R-squared	-0.000102	S.D. dependent var	299.1318
S.E. of regression	299.1471	Akaike info criterion	14.23997
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.92	Hannan-Quinn criter.	14.24052
F-statistic	0.093539	Durbin-Watson stat	1.953397
Prob(F-statistic)	0.759732		

Sources: Own calculation

IS = C + B_1(THUMPT) + ε

Table 4.06.03.11: Effect of Thursday Mid Phase Time (THUMPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:14
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.41641	3.261199	3.194042	0.0014
THUMPT	-8.312681	14.06575	-0.590987	0.5545

R-squared	0.000039	Mean dependent var	9.969549
Adjusted R-squared	-0.000073	S.D. dependent var	299.1318
S.E. of regression	299.1428	Akaike info criterion	14.23994
Sum squared resid	7.96E+08	Schwarz criterion	14.24154
Log likelihood	-63308.79	Hannan-Quinn criter.	14.24049
F-statistic	0.349266	Durbin-Watson stat	1.953343
Prob(F-statistic)	0.554544		

Sources: Own calculation

IS = C + B_1(THULPT) + ε

Table 4.06.03.12: Effect of Thursday Last Phase Time (THULPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:14
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.514372	3.290478	2.891486	0.0038
THULPT	6.455228	12.39153	0.520939	0.6024

R-squared	0.000031	Mean dependent var	9.969549
Adjusted R-squared	-0.000082	S.D. dependent var	299.1318
S.E. of regression	299.1441	Akaike info criterion	14.23995
Sum squared resid	7.96E+08	Schwarz criterion	14.24155
Log likelihood	-63308.83	Hannan-Quinn criter.	14.24050
F-statistic	0.271377	Durbin-Watson stat	1.953325
Prob(F-statistic)	0.602422		

Sources: Own calculation

IS = C + B_1(FRIFPT) + ε

Table 4.06.03.13: Effect of Friday First Phase Time (FRIFPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:15
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.23516	3.269803	3.130208	0.0018
FRIFPT	-4.524594	13.49541	-0.335269	0.7374

R-squared	0.000013	Mean dependent var	9.969549
Adjusted R-squared	-0.000100	S.D. dependent var	299.1318
S.E. of regression	299.1468	Akaike info criterion	14.23997
Sum squared resid	7.96E+08	Schwarz criterion	14.24157
Log likelihood	-63308.91	Hannan-Quinn criter.	14.24051
F-statistic	0.112405	Durbin-Watson stat	1.953393
Prob(F-statistic)	0.737430		

Sources: Own calculation

IS = C + B_1(FRIMPT) + ε

Table 4.06.03.14: Effect of Friday Mid Phase Time (FRIMPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:15
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.25404	3.276659	3.129420	0.0018
FRIMPT	-4.541707	13.09192	-0.346909	0.7287

R-squared	0.000014	Mean dependent var	9.969549
Adjusted R-squared	-0.000099	S.D. dependent var	299.1318
S.E. of regression	299.1466	Akaike info criterion	14.23997
Sum squared resid	7.96E+08	Schwarz criterion	14.24156
Log likelihood	-63308.90	Hannan-Quinn criter.	14.24051
F-statistic	0.120346	Durbin-Watson stat	1.953361
Prob(F-statistic)	0.728668		

Sources: Own calculation

IS = C + B_1(FRILPT) + ε

Table 4.06.03.15: Effect of Friday Last Phase Time (FRILPT) trading on IS

Dependent Variable: IS
Method: Least Squares
Date: 03/16/17 Time: 21:16
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.18215	3.286129	3.707143	0.0002
FRILPT	-32.20038	12.53614	-2.568605	0.0102

R-squared	0.000742	Mean dependent var	9.969549
Adjusted R-squared	0.000629	S.D. dependent var	299.1318
S.E. of regression	299.0377	Akaike info criterion	14.23924
Sum squared resid	7.95E+08	Schwarz criterion	14.24084
Log likelihood	-63305.67	Hannan-Quinn criter.	14.23978
F-statistic	6.597732	Durbin-Watson stat	1.955065
Prob(F-statistic)	0.010227		

Sources: Own calculation

Interpretation: From table **4.06.03.01** to **4.06.03.15** our target is to find out whether any period of a certain day has an association with implementation shortfall. By running a regression analysis, it is found that TUEMPT (first session of Tuesday) and FRILPT (last session of the Friday) have substantial association with the transaction cost. Both are significant at 5%. But the nature of coefficient is different. If one transact in TUESLPT implementation short fall will be increased whereas involving a transaction in FRILPT may reduce the implementation shortfall. In case of the rest of the period of the remaining days, there is not enough evidence to reject the null hypothesis meaning that they have no association with implementation shortfall.

Association between Total Execution Costs with 5 Transaction Days:

Total Execution Cost = C + B_1(MON) + ε

Table 4.06.04.01: Effect of Monday trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 18:58
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29026.01	2391.316	12.13809	0.0000
MON	-4624.373	5605.926	-0.824908	0.4094

R-squared	0.000077	Mean dependent var	28184.56
Adjusted R-squared	-0.000036	S.D. dependent var	203946.3
S.E. of regression	203949.9	Akaike info criterion	27.28936
Sum squared resid	3.70E+14	Schwarz criterion	27.29096
Log likelihood	-121326.5	Hannan-Quinn criter.	27.28990
F-statistic	0.680473	Durbin-Watson stat	1.870896
Prob(F-statistic)	0.409446		

Sources: Own calculation

Total Execution Cost = C + B_1(TUE) + ε

Table 4.06.04.02: Effect of Tuesday trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 18:58
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25993.99	2432.544	10.68593	0.0000
TUE	10444.26	5311.548	1.966330	0.0493

R-squared	0.000435	Mean dependent var	28184.56
Adjusted R-squared	0.000322	S.D. dependent var	203946.3
S.E. of regression	203913.4	Akaike info criterion	27.28900
Sum squared resid	3.70E+14	Schwarz criterion	27.29060
Log likelihood	-121324.9	Hannan-Quinn criter.	27.28955
F-statistic	3.866455	Durbin-Watson stat	1.871274
Prob(F-statistic)	0.049292		

Sources: Own calculation

Total Execution Cost = C + B_1(WED) + ε

Table 4.06.04.03: Effect of Wednesday trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 18:59
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26904.50	2472.829	10.88005	0.0000
WED	5446.037	5100.592	1.067726	0.2857

R-squared	0.000128	Mean dependent var	28184.56
Adjusted R-squared	0.000016	S.D. dependent var	203946.3
S.E. of regression	203944.7	Akaike info criterion	27.28931
Sum squared resid	3.70E+14	Schwarz criterion	27.29091
Log likelihood	-121326.3	Hannan-Quinn criter.	27.28985
F-statistic	1.140040	Durbin-Watson stat	1.871227
Prob(F-statistic)	0.285673		

Sources: Own calculation

Total Execution Cost = C + B_1(THU) + ε

Table 4.06.04.04: Effect of Thursday trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:00
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29418.50	2393.022	12.29345	0.0000
THU	-6735.556	5590.954	-1.204724	0.2283

R-squared	0.000163	Mean dependent var	28184.56
Adjusted R-squared	0.000051	S.D. dependent var	203946.3
S.E. of regression	203941.1	Akaike info criterion	27.28927
Sum squared resid	3.70E+14	Schwarz criterion	27.29087
Log likelihood	-121326.1	Hannan-Quinn criter.	27.28982
F-statistic	1.451360	Durbin-Watson stat	1.871153
Prob(F-statistic)	0.228342		

Sources: Own calculation

Total Execution Cost = C + B_1(FRI) + ε

Table 4.06.04.05: Effect of Friday trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:00
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29436.59	2403.138	12.24923	0.0000
FRI	-6587.628	5512.329	-1.195072	0.2321

R-squared	0.000161	Mean dependent var	28184.56
Adjusted R-squared	0.000048	S.D. dependent var	203946.3
S.E. of regression	203941.3	Akaike info criterion	27.28928
Sum squared resid	3.70E+14	Schwarz criterion	27.29087
Log likelihood	-121326.1	Hannan-Quinn criter.	27.28982
F-statistic	1.428196	Durbin-Watson stat	1.871134
Prob(F-statistic)	0.232091		

Sources: Own calculation

Interpretation: Above tables **4.06.04.01**, **4.06.04.02**, **4.06.04.03**, **4.06.04.04** and **4.06.04.05** are calculated to determine the association ship between days and total execution costs. Durbin-Watson model proves the residuals are not serially correlated. Observing p values of five models only one model (Tuesday) is significant and the null hypothesis cannot be accepted. This indicates Tuesday has an association with total execution cost. The relation is positive and if anyone wants to buy he/she has to spend more for total execution costs will be enhanced. Except Tuesday rest four days have no association with total execution cost as there is not enough evidence to reject the null hypothesis.

Association between Total Execution Costs with Three Time slots:

Total Execution Cost = C + B_1(FPT) + ε

Table 4.06.05.01: Effect of FPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:02
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30662.06	2630.268	11.65739	0.0000
FPT	-7646.633	4620.915	-1.654787	0.0980

R-squared	0.000308	Mean dependent var	28184.56
Adjusted R-squared	0.000195	S.D. dependent var	203946.3
S.E. of regression	203926.3	Akaike info criterion	27.28913
Sum squared resid	3.70E+14	Schwarz criterion	27.29073
Log likelihood	-121325.5	Hannan-Quinn criter.	27.28967
F-statistic	2.738322	Durbin-Watson stat	1.870938
Prob(F-statistic)	0.098003		

Sources: Own calculation

Total Execution Cost = C + B_1(MPT) + ε

Table 4.06.05.02: Effect of MPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:02
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29317.91	2597.307	11.28781	0.0000
MPT	-3696.927	4690.942	-0.788099	0.4307

R-squared	0.000070	Mean dependent var	28184.56
Adjusted R-squared	-0.000043	S.D. dependent var	203946.3
S.E. of regression	203950.6	Akaike info criterion	27.28937
Sum squared resid	3.70E+14	Schwarz criterion	27.29096
Log likelihood	-121326.5	Hannan-Quinn criter.	27.28991
F-statistic	0.621100	Durbin-Watson stat	1.870941
Prob(F-statistic)	0.430660		

Sources: Own calculation

Total Execution Cost = C + B_1(LPT) + ε

Table 4.06.05.03: Effect of LPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:03
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24282.19	2722.947	8.917616	0.0000
LPT	10563.11	4479.929	2.357874	0.0184

R-squared	0.000625	Mean dependent var	28184.56
Adjusted R-squared	0.000513	S.D. dependent var	203946.3
S.E. of regression	203894.0	Akaike info criterion	27.28881
Sum squared resid	3.70E+14	Schwarz criterion	27.29041
Log likelihood	-121324.1	Hannan-Quinn criter.	27.28936
F-statistic	5.559572	Durbin-Watson stat	1.871391
Prob(F-statistic)	0.018401		

Sources: Own calculation

Interpretation: To justify whether different time slot of a day has any impact on total execution cost or not the three regression (table **4.06.05.01**, **4.06.05.02** and **4.06.05.03**) was conducted. It is found that FPT and LPT has an association with total cost execution. The relation is also significant as both are statistically proved at 10% and 5% respectively. Beta coefficient negative for FPT which indicates that if one trade at first session (from 09:30 am to before 12:00 pm) s/he has to pay less execution cost. But the scenario is reverse for LPT. So, it is not worthy to trade at the last session of the day.

Association between Total Execution Costs with Five Days' Time slots:

Total Execution Cost = C + B_1(MONFPT) + ε

Table 4.06.06.01: Effect of MONFPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:04
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29064.33	2229.549	13.03597	0.0000
MONFPT	-14872.54	9166.928	-1.622413	0.1048

R-squared	0.000296	Mean dependent var	28184.56
Adjusted R-squared	0.000184	S.D. dependent var	203946.3
S.E. of regression	203927.5	Akaike info criterion	27.28914
Sum squared resid	3.70E+14	Schwarz criterion	27.29074
Log likelihood	-121325.5	Hannan-Quinn criter.	27.28969
F-statistic	2.632223	Durbin-Watson stat	1.871413
Prob(F-statistic)	0.104750		

Sources: Own calculation

Total Execution Cost = C + B_1(MONMPT) + ε

Table 4.06.06.02: Effect of MONMPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:04
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28681.14	2225.249	12.88896	0.0000
MONMPT	-8974.865	9460.100	-0.948707	0.3428

R-squared	0.000101	Mean dependent var	28184.56
Adjusted R-squared	-0.000011	S.D. dependent var	203946.3
S.E. of regression	203947.4	Akaike info criterion	27.28934
Sum squared resid	3.70E+14	Schwarz criterion	27.29093
Log likelihood	-121326.4	Hannan-Quinn criter.	27.28988
F-statistic	0.900045	Durbin-Watson stat	1.870881
Prob(F-statistic)	0.342795		

Sources: Own calculation

Total Execution Cost = C + B_1(MONLPT) + ε

Table 4.06.06.03: Effect of MONLPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:05
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27532.03	2239.648	12.29302	0.0000
MONLPT	9670.443	8621.918	1.121612	0.2621

R-squared	0.000141	Mean dependent var	28184.56
Adjusted R-squared	0.000029	S.D. dependent var	203946.3
S.E. of regression	203943.3	Akaike info criterion	27.28930
Sum squared resid	3.70E+14	Schwarz criterion	27.29089
Log likelihood	-121326.2	Hannan-Quinn criter.	27.28984
F-statistic	1.258012	Durbin-Watson stat	1.871071
Prob(F-statistic)	0.262058		

Sources: Own calculation

Total Execution Cost = C + B_1(TUEFPT) + ε

Table 4.06.06.04: Effect of TUEFPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:06
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28238.34	2242.376	12.59304	0.0000
TUEFPT	-772.5985	8498.903	-0.090906	0.9276

R-squared	0.000001	Mean dependent var	28184.56
Adjusted R-squared	-0.000112	S.D. dependent var	203946.3
S.E. of regression	203957.6	Akaike info criterion	27.28944
Sum squared resid	3.70E+14	Schwarz criterion	27.29103
Log likelihood	-121326.8	Hannan-Quinn criter.	27.28998
F-statistic	0.008264	Durbin-Watson stat	1.870803
Prob(F-statistic)	0.927570		

Sources: Own calculation

Total Execution Cost = C + B_1(TUEMPT) + ε

Table 4.06.06.05: Effect of TUEMPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:06
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28126.19	2233.618	12.59221	0.0000
TUEMPT	936.7778	8948.573	0.104685	0.9166

R-squared	0.000001	Mean dependent var	28184.56
Adjusted R-squared	-0.000111	S.D. dependent var	203946.3
S.E. of regression	203957.6	Akaike info criterion	27.28944
Sum squared resid	3.70E+14	Schwarz criterion	27.29103
Log likelihood	-121326.8	Hannan-Quinn criter.	27.28998
F-statistic	0.010959	Durbin-Watson stat	1.870799
Prob(F-statistic)	0.916628		

Sources: Own calculation

Total Execution Cost = C + B_1(TUELPT) + ε

Table 4.06.06.06: Effect of TUELPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:07
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26312.43	2251.211	11.68812	0.0000
TUELPT	24056.28	8069.804	2.981024	0.0029

R-squared	0.000999	Mean dependent var	28184.56
Adjusted R-squared	0.000886	S.D. dependent var	203946.3
S.E. of regression	203855.9	Akaike info criterion	27.28844
Sum squared resid	3.69E+14	Schwarz criterion	27.29003
Log likelihood	-121322.4	Hannan-Quinn criter.	27.28898
F-statistic	8.886505	Durbin-Watson stat	1.872075
Prob(F-statistic)	0.002881		

Sources: Own calculation

Total Execution Cost = C + B_1(WEDFPT) + ε

Table 4.06.06.07: Effect of WEDFPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:08
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28446.19	2252.040	12.63130	0.0000
WEDFPT	-3371.641	8084.464	-0.417052	0.6767

R-squared	0.000020	Mean dependent var	28184.56
Adjusted R-squared	-0.000093	S.D. dependent var	203946.3
S.E. of regression	203955.7	Akaike info criterion	27.28942
Sum squared resid	3.70E+14	Schwarz criterion	27.29101
Log likelihood	-121326.8	Hannan-Quinn criter.	27.28996
F-statistic	0.173932	Durbin-Watson stat	1.870768
Prob(F-statistic)	0.676650		

Sources: Own calculation

Total Execution Cost = C + B_1(WEDMPT) + ε

Table 4.06.06.08: Effect of WEDMPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:09
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28264.20	2245.907	12.58476	0.0000
WEDMPT	-1097.970	8338.955	-0.131668	0.8953

R-squared	0.000002	Mean dependent var	28184.56
Adjusted R-squared	-0.000111	S.D. dependent var	203946.3
S.E. of regression	203957.5	Akaike info criterion	27.28944
Sum squared resid	3.70E+14	Schwarz criterion	27.29103
Log likelihood	-121326.8	Hannan-Quinn criter.	27.28998
F-statistic	0.017336	Durbin-Watson stat	1.870785
Prob(F-statistic)	0.895250		

Sources: Own calculation

Total Execution Cost = C + B_1(WEDLPT) + ε

Table 4.06.06.09: Effect of WEDLPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:09
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26770.07	2260.453	11.84279	0.0000
WEDLPT	16659.03	7757.497	2.147475	0.0318

R-squared	0.000518	Mean dependent var	28184.56
Adjusted R-squared	0.000406	S.D. dependent var	203946.3
S.E. of regression	203904.8	Akaike info criterion	27.28892
Sum squared resid	3.70E+14	Schwarz criterion	27.29051
Log likelihood	-121324.5	Hannan-Quinn criter.	27.28946
F-statistic	4.611650	Durbin-Watson stat	1.871761
Prob(F-statistic)	0.031782		

Sources: Own calculation

Total Execution Cost = C + B_1(THUFPT) + ε

Table 4.06.06.10: Effect of THUFPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:10
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28175.01	2229.612	12.63673	0.0000
THUFPT	162.0737	9184.667	0.017646	0.9859

R-squared	0.000000	Mean dependent var	28184.56
Adjusted R-squared	-0.000112	S.D. dependent var	203946.3
S.E. of regression	203957.7	Akaike info criterion	27.28944
Sum squared resid	3.70E+14	Schwarz criterion	27.29103
Log likelihood	-121326.8	Hannan-Quinn criter.	27.28998
F-statistic	0.000311	Durbin-Watson stat	1.870802
Prob(F-statistic)	0.985922		

Sources: Own calculation

Total Execution Cost = C + B_1(THUMPT) + ε

Table 4.06.06.11: Effect of THUMPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:11
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28765.13	2223.350	12.93774	0.0000
THUMPT	-10800.10	9589.450	-1.126248	0.2601

R-squared	0.000143	Mean dependent var	28184.56
Adjusted R-squared	0.000030	S.D. dependent var	203946.3
S.E. of regression	203943.2	Akaike info criterion	27.28930
Sum squared resid	3.70E+14	Schwarz criterion	27.29089
Log likelihood	-121326.2	Hannan-Quinn criter.	27.28984
F-statistic	1.268435	Durbin-Watson stat	1.871055
Prob(F-statistic)	0.260091		

Sources: Own calculation

Total Execution Cost = C + B_1(THULPT) + ε

Table 4.06.06.12: Effect of THULPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:11
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28687.53	2243.372	12.78768	0.0000
THULPT	-7133.145	8448.260	-0.844333	0.3985

R-squared	0.000080	Mean dependent var	28184.56
Adjusted R-squared	-0.000032	S.D. dependent var	203946.3
S.E. of regression	203949.6	Akaike info criterion	27.28936
Sum squared resid	3.70E+14	Schwarz criterion	27.29095
Log likelihood	-121326.5	Hannan-Quinn criter.	27.28990
F-statistic	0.712898	Durbin-Watson stat	1.871133
Prob(F-statistic)	0.398506		

Sources: Own calculation

Total Execution Cost = C + B_1(FRIFPT) + ε

Table 4.06.06.13: Effect of FRIFPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:12
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28784.45	2229.191	12.91251	0.0000
FRIFPT	-10218.94	9200.507	-1.110693	0.2667

R-squared	0.000139	Mean dependent var	28184.56
Adjusted R-squared	0.000026	S.D. dependent var	203946.3
S.E. of regression	203943.6	Akaike info criterion	27.28930
Sum squared resid	3.70E+14	Schwarz criterion	27.29089
Log likelihood	-121326.2	Hannan-Quinn criter.	27.28984
F-statistic	1.233639	Durbin-Watson stat	1.870755
Prob(F-statistic)	0.266731		

Sources: Own calculation

Total Execution Cost = C + B_1(FRIMPT) + ε

Table 4.06.06.14: Effect of FRIMPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:12
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27916.03	2233.993	12.49603	0.0000
FRIMPT	4286.728	8925.938	0.480255	0.6311

R-squared	0.000026	Mean dependent var	28184.56
Adjusted R-squared	-0.000087	S.D. dependent var	203946.3
S.E. of regression	203955.1	Akaike info criterion	27.28941
Sum squared resid	3.70E+14	Schwarz criterion	27.29101
Log likelihood	-121326.7	Hannan-Quinn criter.	27.28996
F-statistic	0.230645	Durbin-Watson stat	1.870723
Prob(F-statistic)	0.631058		

Sources: Own calculation

Total Execution Cost = C + B_1(FRILPT) + ε

Table 4.06.06.15: Effect of FRILPT trading on Total Execution Costs

Dependent Variable: COST_EXECUTION_TOTAL
Method: Least Squares
Date: 03/18/17 Time: 19:13
Sample: 1 8892
Included observations: 8892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28937.38	2241.087	12.91221	0.0000
FRILPT	-10956.02	8549.442	-1.281490	0.2001

R-squared	0.000185	Mean dependent var	28184.56
Adjusted R-squared	0.000072	S.D. dependent var	203946.3
S.E. of regression	203938.9	Akaike info criterion	27.28925
Sum squared resid	3.70E+14	Schwarz criterion	27.29085
Log likelihood	-121326.0	Hannan-Quinn criter.	27.28980
F-statistic	1.642215	Durbin-Watson stat	1.871225
Prob(F-statistic)	0.200055		

Sources: Own calculation

Interpretation: From table **4.06.06.01** to **4.06.06.15**, observing the p value (.002881 and 0.031782) in table **4.06.06.06** and **4.06.06.09** it is found that last session of the Tuesday or last session of Wednesday has great impact on total execution cost. Beta coefficient of TUELPT and WEDLPT shows they have positive relation meaning that if one wants to trade at the last session of both Tuesday and Wednesday total cost will be higher than that of other time slot in other days. Durbin-Watson model also justifies that data is free from serial correlation.

Note: Here, *IS= Implementation Shortfall; MON= Monday; TUE= Tuesday; WED=Wednesday; THU= Thursday; FRI= Friday; FPT= First Phase Time (from 09:30 am to 12:00 pm); MPT= Mid Phase Time (from 12:00 pm to 14:00 pm); LPT= Last Phase Time (from 14:00 am to 16:00 pm)* **.**

Conclusion:

In this study, at first, the effective days for transactions are revealed. Here effectiveness is measured based on the less implementation shortfall and high returns from transactions. This study reveals that there is a significant association between implementation shortfall and several trading days. The result shows that Friday and Monday are significantly affecting negatively on the transaction cost. It implies that if anybody wants to acquire more profit/less transaction cost it is better to trade on Fridays and Mondays. However, since the coefficient for Monday is not significant, it is difficult to argue in its favor as opposed to Fridays. Ergo, transaction on Friday will be the best to maximize return and subsequently minimize transaction cost. The other days, though get positive relationship with transaction cost, only Tuesday's coefficient is significant and it means that transaction on Tuesday may impact adversely on transaction cost. Wednesday and Thursday also may cause more transaction cost but the coefficients are not significant.

After finding out the effective day, the target was to determine the best hours to transact with less transaction cost. So, all days are divided into three time slots namely; FPT (First Phase Time), MPT (Mid Phase Time), LPT (Last Phase Time) to find out the best time slot to transact. Though it is found that transaction on Friday to be important to reduce transaction cost but not all time slots of Fridays turn out be significant, only last slot LPT (from 14:00 to 16:00) is significant to reduce the transaction cost. It clearly implies that the best time to execute the stock transaction on Friday is LPT. It is observed in other trading days that it is better not to trade in the last session of Tuesday because it has positive relation with transaction cost. On Monday, Thursday and Friday total execution costs are little and has negative relationship with transaction cost. So, it can be concluded that transaction at eleventh hour on Friday is highly desirable as it gives the lowest transaction cost and possibly improves return as a result. This finding is consistent with the literature on days-of-the-week effect that support the hypothesis that trading return on Fridays are higher than other trading days.