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THE IMPACT OF QUARTERLY EARNINGS ANNOUNCEMENTS ON STOCK RETURNS: AN EVENT STUDY APPROACH

KISHAN M. BADIYANI

**RESEARCH SCHOLAR, SARDAR PATEL UNIVERSITY, VALLABH VIDYANAGAR, ANAND; &
ASST. PROFESSOR (ACCOUNTANCY)
GOVERNMENT COMMERCE COLLEGE
JAMNAGAR**

Dr. RUPAL PATEL

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ABSTRACT

This study aimed to know the impact of quarterly earnings on stock returns and investor's wealth. For the purpose of the study researcher used event study methodology which is most sophisticated model to examine the impact of a particular event. 4 companies selected as sample from IT Index of BSE. 8 quarters of each 4 companies considered for the analysis. All the data of companies and Information Technology Index collected from official website of BSE. Study found out that quarterly earnings announcements do affect stock returns and investor's wealth. Investors gained notably for Tata Consultancy Services, Infosys Ltd. and Tech Mahindra and Investors of HCL Technology lost their wealth after the quarterly earnings announcements.

KEYWORDS

quarterly earnings announcements, event study methodology, average abnormal returns, investor's wealth, information technology index.

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1. INTRODUCTION

It is generally accepted that stock markets are most efficient in information reflection in the market. When any information arrives in the market, the stock prices reflect that particular information very quickly. It is known as efficient market hypothesis. So, fundamental or technical analysis of the stock prices cannot help investors to gain returns that are higher than any random investment in the stock market. (Fama, 1970)

There are mainly three forms that describes efficient market hypothesis. Weak form of market efficiency, semi-strong form of market efficiency and strong form of market efficiency. (Fama et al., 1969) Weak form of market efficiency means reflection of historical information in the market. It will not be useful to earn more than average returns as historical information is available to all. Researches shows that investors cannot earn returns over and above simple buy and hold strategy with predictions based on past data of the stock prices.

Semi-strong form of market efficiency depicts that market reflects all the available information in public. Information like announcement of dividends, quarterly earnings, bonus shares, etc. reflects immediately in the stock prices. Strong form of market efficiency depicts that market reflects to all the obtainable information from any source. That can be illegal too! (Fama, 1970)

The efficient market theory indicates a market where all the information immediately reflects in the stock prices when its available. There is no any fixed formula to evaluate this impact as it is largely depending upon the expectations of investors. (Grayson, n.d.)

There are various studies available that are based on information of earnings announcements. Basic purpose of earnings disclosure is to make aware the stakeholders of the companies about its performance, financial health, stability, etc. Investors will invest only if they are expecting some return on their investment. Earnings announcements will brief them about the overall position of the company. So, expectations of investors are highly influenced by the earnings announcements. (Landsman & Maydew, 2002)

Event study methodology is most used model to analyse the impact of particular market event on share prices of the companies. It can be particular event in more than one company and can be any market event in a company at different times. In short, event studies examine stock price reactions to the particular market event for a short time horizon around that particular event.

Event study methodology is most sophisticated model to measure abnormal price changes around different events. It is well developed technique and widely used to analyse particular events. (Brown & Warner, 1980).

2. REVIEW OF LITERATURE

Dsouza & Mallikarjunappa (2016) analysed the quarterly results declaration news and Indian stock market reactions. S&P BSE 500 index was base of the study. Event study methodology was used to measure the impact on stock prices. Run and sign test were also used for the analysis. They concluded that investors can predict stock returns on the basis of new information and markets are not able to reflect properly on publicly available information.

Jagłiński (2020) tried to examine reaction of investors to quarterly results announcements and to know if irregularities is there on the Warsaw stock exchange. The event study methodology used for the analysis of data from 2017 to 2019. At the end researcher concluded that there is no significant impact of quarterly results on stock prices. There were some significant changes but that was due to other reasons.

MOHAMED (2007) attempted to investigate the effect of earnings announcements on the stock prices of Nairobi stock exchange. Data was collected from 2004-2008 for the study. SPSS software used for the data analysis and critical t-value and table value compared for the results. Researcher concluded that there were negative abnormal returns around the event dates for most of the stocks.

Kundu & Banerjee (2021) examined the stock price reactions to the earnings information of the companies. Data of 67 large-cap entities were collected from 2010 to 2018 and covered 33 quarters. Panel data estimation used for the analysis of the data. This study found out that the firms who declares better earnings results in higher abnormal returns. It also indicated that market can predict whether the firms will declare better results or not. The firms whose earnings are below expectations, stock prices showed negative returns.

3. OBJECTIVES

1. To analyse the impact of quarterly results on share price before and after announcement of quarterly results.
2. To know whether the investors wealth increased or not after the quarterly results announcements.

4. RESEARCH DESIGN

4.1 HYPOTHESIS

H₀: There is no significant impact of quarterly earnings announcements on stock performance of the sample companies.

H₁: There is significant impact of quarterly earnings announcements on stock performance of the sample companies.

4.2 SAMPLING DESIGN

4 sample units has been selected by the researcher for the study which are top 4 companies on the day of 05-04-2022 in the Information Technology index of BSE in terms of volumes traded.

Sample Units

Samples considered for the study are:

1. Tata Consultancy Services
2. Infosys
3. Tech Mahindra
4. HCL Technologies

4.3 PERIOD OF THE STUDY

Present study covers the period of total 8 quarters of 2020 and 2021.

4.4 DATA COLLECTION

All the necessary data for the study is secondary in nature and collected from the official website of BSE. Sample size is 4 companies which are top 4 companies on the day of 05-04-2022 in the Information Technology index of BSE in terms of volumes traded. As this study uses Event Study Approach for the analysis, data of Information Technology index is also collected.

5. EVENT STUDY METHODOLOGY

The researcher has used most sophisticated model for analysis of a particular event, which is event study methodology. Study covers the quarterly earnings announcements of 8 quarters of each of the sample units. In the present study quarterly results declaration is an event which is to be studied. So, the quarterly results announcement dates are considered as event dates. The researcher has defined the event window of 21 days. It includes event date itself which is denoted by '0', 10 days prior to event date and 10 days after the event dates.

So, for all the sample firms, '0' indicates quarterly results announcement dates, 10 days before the event day taken as pre-announcement period and 10 days after the event day taken as post announcement period. Also, for the analysis estimation period of 90 days used. From the estimated period expected returns found out and with the comparison of actual and expected returns researcher has calculated abnormal returns of the stocks.

TABLE 1

Estimation Period (90 days)	-100	Window of 90 days before the event window (-10 th to -100 th day from the event)
Pre-Announcement Period (10 days)	-10	Window of 10 days before announcement (0 to -10 th day)
Event Day	0	Date of quarterly earnings announcement
Post Announcement Period (10 days)	+10	Window of 10 days after announcement (0 to 10 th day)

Steps for the analysis of data followed by researcher:

1. Daily stock returns and market returns:

a. Stock Returns

$$R_{it} = \frac{(P_{it} - P_{it-1})}{P_{it-1}}$$

Where,

R_{it} = time 't' return on stock 'i'

P_{it} = closing price of stock 'i' on day 't'

P_{it-1} = closing price of stock 'i' on day 't-1'

OR

$$\text{Stock Returns} = \frac{\text{closing price of stock} - \text{closing price of stock on previous close}}{\text{closing price of stock on previous close}}$$

b. Market Returns

$$R_{mt} = \frac{(I_t - I_{t-1})}{I_{t-1}}$$

Where,

R_{mt} = time 't' return of Market Index

I_t = closing price of Market index on day 't'

I_{t-1} = closing price of Market index on day 't-1'

OR

$$\text{Market Returns} = \frac{\text{closing price of Market Index} - \text{closing price of Market Index on previous close}}{\text{closing price of Market Index on previous close}}$$

2. Calculation of Expected Returns (from the estimation period)

$$E(R_{it}) = a_i + b_i R_{m,t}$$

Where,

E(R_{it}) = Expected returns

a_i and b_i = market model parameters

R_{m,t} = Return on Market index on day 't'

3. Calculation of Abnormal Returns

Abnormal returns are basically actual returns less expected returns.

$$AR_{it} = R_{it} - E(R_{i,t}), \quad t=(-10,-09,\dots,10),$$

Where,

AR_{it} = Abnormal returns of stock 'i' on day t

R_{it} = Actual Return on stock 'i' on day t

E(R_{i,t}) = Expected Returns on stock 'i' on day t

4. Calculation of Average Abnormal Returns

The Abnormal Returns are then averaged across the sample of companies using the formula:

$$\text{Average Abnormal Returns} = (1/k) \sum \text{AR}_i$$

Where,

k = Number of quarterly earnings announcements

5. Calculation of Cumulative Average Abnormal Returns

CAAR (cumulative average abnormal returns) calculated to know the cumulative effect of quarterly earnings announcements.

$$\text{CAAR}_t = \sum \text{AAR}_t$$

6. Calculation of t statistics

At the end, t-statistics calculated-

$$t \text{ statistic} = \frac{\text{Average Abnormal Returns}}{\text{Standard Error}}$$

6. PRESENTATION OF DATA AND ANALYSIS

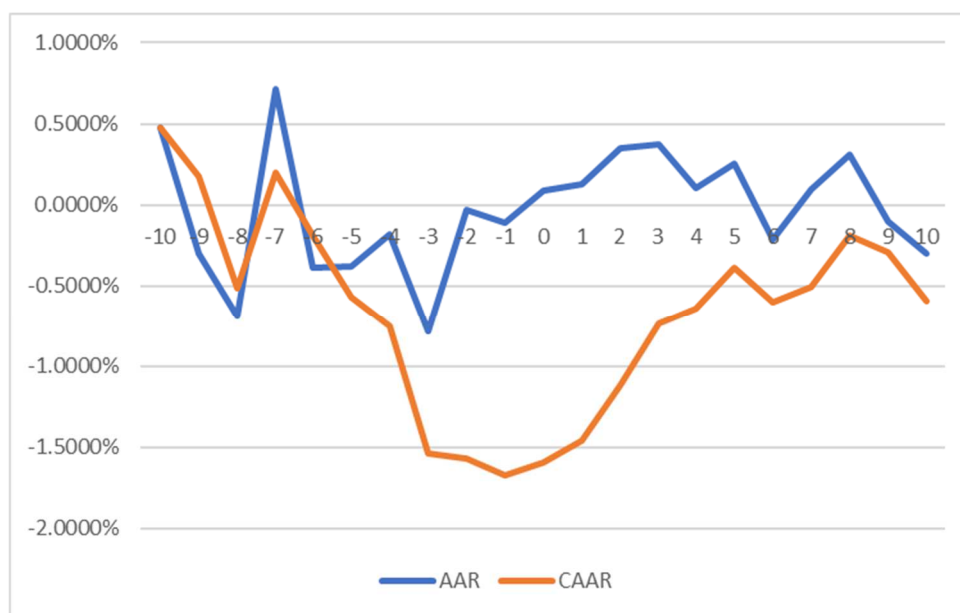
6.1 TATA CONSULTANCY SERVICES (TCS)

TABLE 1: AVERAGE ABNORMAL RETURNS, CUMULATIVE AVERAGE ABNORMAL RETURNS & T-STATISTICS FOR EVENT WINDOW OF TATA CONSULTANCY SERVICES

Days	Average Abnormal Returns (AARs)	Cumulative Average Abnormal Returns (CAARs)	t statistic (AARs/ Standard Error)	Hypothesis Selected (Level of Significance at 5%)
-10	0.4788%	0.4788%	1.51589763	Null Hypothesis
-9	-0.3010%	0.1779%	-0.95280483	Null Hypothesis
-8	-0.6928%	-0.5150%	-2.19331246	Alternative Hypothesis
-7	0.7152%	0.2003%	2.26416485	Alternative Hypothesis
-6	-0.3896%	-0.1893%	-1.23321965	Null Hypothesis
-5	-0.3818%	-0.5711%	-1.20852413	Null Hypothesis
-4	-0.1811%	-0.7522%	-0.57343699	Null Hypothesis
-3	-0.7869%	-1.5391%	-2.49101684	Alternative Hypothesis
-2	-0.0289%	-1.5679%	-0.09139305	Null Hypothesis
-1	-0.1073%	-1.6752%	-0.33971152	Null Hypothesis
0	0.0850%	-1.5902%	0.26910575	Null Hypothesis
1	0.1299%	-1.4603%	0.41119877	Null Hypothesis
2	0.3467%	-1.1137%	1.09740871	Null Hypothesis
3	0.3740%	-0.7396%	1.18413317	Null Hypothesis
4	0.1010%	-0.6387%	0.31960282	Null Hypothesis
5	0.2539%	-0.3847%	0.80392641	Null Hypothesis
6	-0.2157%	-0.6005%	-0.68294359	Null Hypothesis
7	0.0954%	-0.5051%	0.30202894	Null Hypothesis
8	0.3133%	-0.1918%	0.99167057	Null Hypothesis
9	-0.1022%	-0.2940%	-0.32339955	Null Hypothesis
10	-0.2984%	-0.5924%	-0.94460573	Null Hypothesis

*R Square of the model is 0.6935 which indicates model is better fitted.

FIGURE 1: AVERAGE ABNORMAL RETURNS AND CUMULATIVE AVERAGE ABNORMAL RETURNS OF TATA CONSULTANCY SERVICES FOR EVENT WINDOW



AARs are positive for only 2 days before announcement of quarterly announcement, rest of the days it remained negative. In which on day -8 and -3 showed significantly negative abnormal results and day -7 showed significantly positive abnormal returns. After the event date there is only 2 days where returns are negative. It is clearly seen that investors are getting abnormal returns after the result announcement. Although there is no any statistically significant returns after the event date.

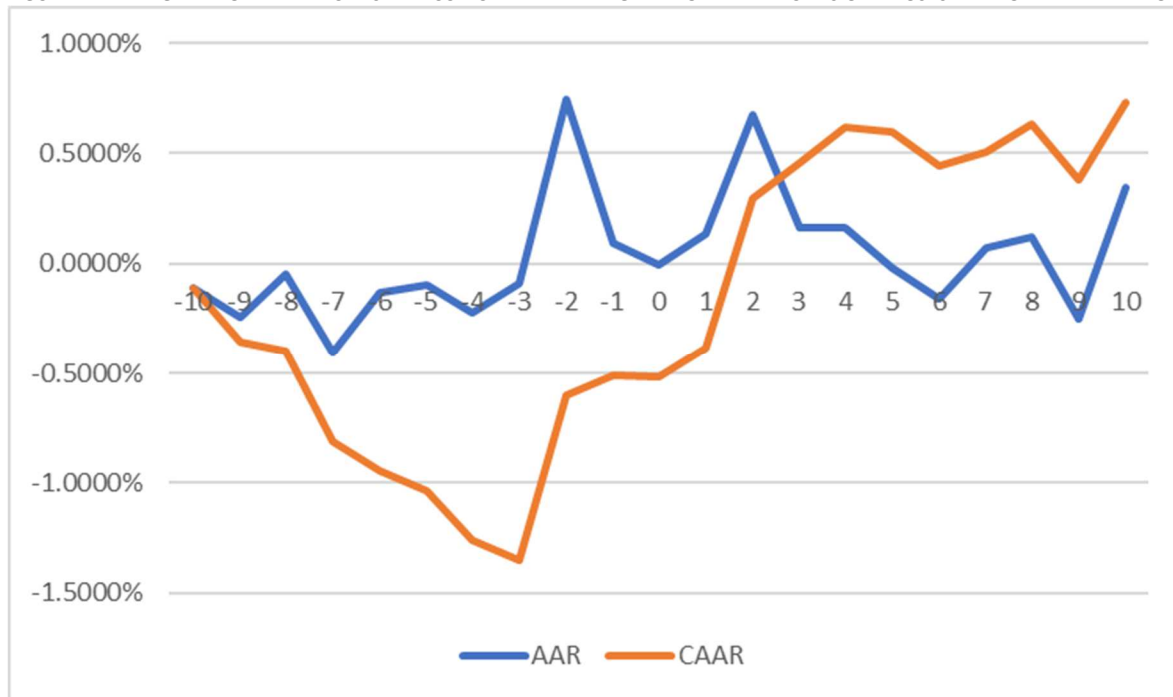
From the figure it is seen from the CAARs that investors were continuously getting negative returns but after the event date CAARs recovered gradually. It can be concluded that CAARs also indicating that results announcements affect investors returns.

TABLE 2: AVERAGE ABNORMAL RETURNS, CUMULATIVE AVERAGE ABNORMAL RETURNS AND T-STATISTICS FOR EVENT WINDOW OF INFOSYS LTD.

Days	Average Abnormal Returns (AARs)	Cumulative Average Abnormal Returns (CAARs)	t statistic (AARs/ Standard Error)	Hypothesis Selected (Level of Significance at 5%)
-10	-0.1104%	-0.1104%	-0.48486881	Null Hypothesis
-9	-0.2440%	-0.3544%	-1.07109668	Null Hypothesis
-8	-0.0462%	-0.4006%	-0.20285674	Null Hypothesis
-7	-0.4075%	-0.8081%	-1.78904438	Null Hypothesis
-6	-0.1341%	-0.9422%	-0.58878533	Null Hypothesis
-5	-0.0934%	-1.0356%	-0.40992595	Null Hypothesis
-4	-0.2233%	-1.2588%	-0.98021031	Null Hypothesis
-3	-0.0895%	-1.3484%	-0.39309284	Null Hypothesis
-2	0.7458%	-0.6025%	3.27458857	Alternative Hypothesis
-1	0.0932%	-0.5093%	0.40931849	Null Hypothesis
0	-0.0041%	-0.5134%	-0.01799165	Null Hypothesis
1	0.1324%	-0.3810%	0.58112526	Null Hypothesis
2	0.6763%	0.2953%	2.96932886	Alternative Hypothesis
3	0.1608%	0.4561%	0.70615641	Null Hypothesis
4	0.1641%	0.6202%	0.72025914	Null Hypothesis
5	-0.0214%	0.5988%	-0.09375598	Null Hypothesis
6	-0.1582%	0.4406%	-0.69460862	Null Hypothesis
7	0.0692%	0.5098%	0.30366269	Null Hypothesis
8	0.1210%	0.6308%	0.53114596	Null Hypothesis
9	-0.2477%	0.3830%	-1.08762069	Null Hypothesis
10	0.3449%	0.7279%	1.51414279	Null Hypothesis

*R Square of the model is 0.8460 which indicates model is better fitted.

FIGURE 2: AVERAGE ABNORMAL RETURNS AND CUMULATIVE AVERAGE ABNORMAL RETURNS OF INFOSYS LTD. FOR EVENT WINDOW



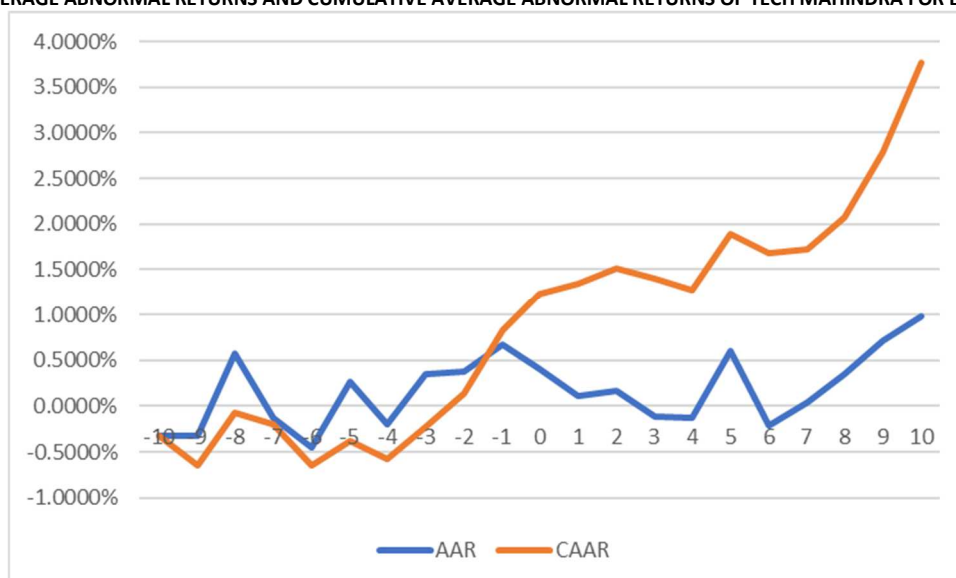
Investors are getting negative average abnormal returns almost on each day before the event date. Day -2 and -1 showed positive AARs in which -2 day shows statistically significant returns. It may indicate the expectations of investors towards results. After the event date 7 out of 10 days shows positive abnormal returns in which returns of day 2 are statistically significant. It can be analysed from AARs that there is overall positive impact of earnings announcement on stock returns. From figure 2 it can be easily seen that till the event date CAARs indicating continuously negative returns but after the event date it is turned positive. It depicts that investor were highly gained after the earnings announcement.

TABLE 3: AVERAGE ABNORMAL RETURNS, CUMULATIVE AVERAGE ABNORMAL RETURNS AND T-STATISTICS FOR EVENT WINDOW OF TECH MAHINDRA

Days	Average Abnormal Returns (AARs)	Cumulative Average Abnormal Returns (CAARs)	t statistic (AARs/ Standard Error)	Hypothesis Selected (Level of Significance at 5%)
-10	-0.3269%	-0.3269%	-0.63157653	Null Hypothesis
-9	-0.3220%	-0.6489%	-0.62212379	Null Hypothesis
-8	0.5733%	-0.0756%	1.10767962	Null Hypothesis
-7	-0.1273%	-0.2029%	-0.24595805	Null Hypothesis
-6	-0.4479%	-0.6508%	-0.86545932	Null Hypothesis
-5	0.2710%	-0.3798%	0.52364624	Null Hypothesis
-4	-0.1978%	-0.5776%	-0.38211979	Null Hypothesis
-3	0.3521%	-0.2255%	0.68028588	Null Hypothesis
-2	0.3714%	0.1459%	0.71748733	Null Hypothesis
-1	0.6768%	0.8227%	1.30771071	Null Hypothesis
0	0.4110%	1.2337%	0.79411494	Null Hypothesis
1	0.1145%	1.3483%	0.22124411	Null Hypothesis
2	0.1659%	1.5142%	0.32053730	Null Hypothesis
3	-0.1080%	1.4061%	-0.20869846	Null Hypothesis
4	-0.1259%	1.2802%	-0.24330797	Null Hypothesis
5	0.6088%	1.8890%	1.17615475	Null Hypothesis
6	-0.2072%	1.6818%	-0.40031340	Null Hypothesis
7	0.0413%	1.7231%	0.07981967	Null Hypothesis
8	0.3468%	2.0699%	0.67003750	Null Hypothesis
9	0.7163%	2.7862%	1.38390567	Null Hypothesis
10	0.9805%	3.7667%	1.89444752	Null Hypothesis

*R Square of the model is 0.5487 which indicates model is better fitted.

FIGURE 3: AVERAGE ABNORMAL RETURNS AND CUMULATIVE AVERAGE ABNORMAL RETURNS OF TECH MAHINDRA FOR EVENT WINDOW



AARs are negative for 5 days and positive for 5 days before the announcement date in which there is no statistically significant positive or negative returns. After the event date there are 7 positive and 3 negative AARs and again there is no any statistically significant returns. So, it can be said that AARs is like 'random walk', there is no clear evidence about the effect of earnings announcement.

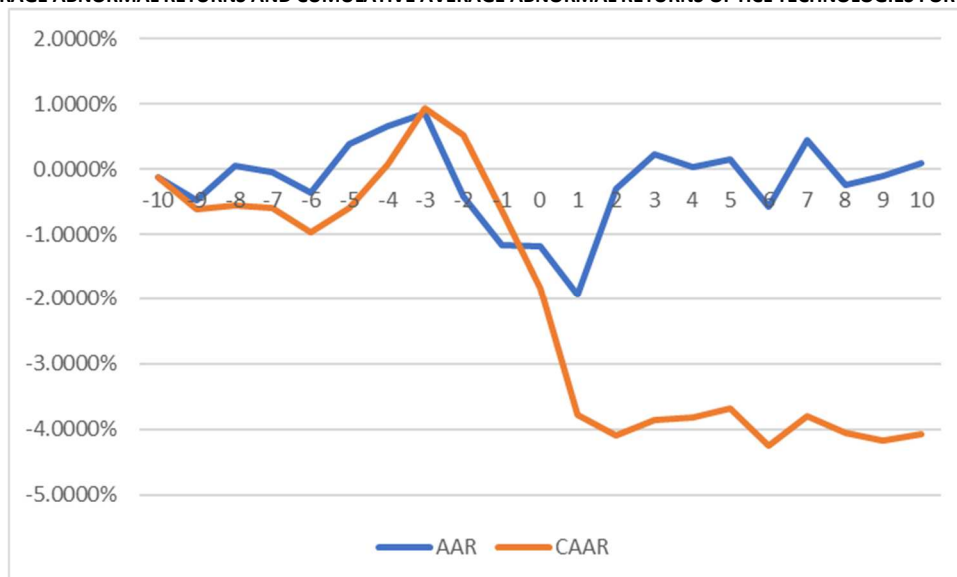
If we analyse CAARs from the figure 3 there is clear evidence that investors highly gained after the event date. CAARs were negative before the earnings announcement but after that it shows constant growth in the cumulative returns. To conclude, CAARs indicates that there is effect of earnings announcement on stock returns.

TABLE 4: AVERAGE ABNORMAL RETURNS, CUMULATIVE AVERAGE ABNORMAL RETURNS AND T-STATISTICS FOR EVENT WINDOW OF HCL TECHNOLOGIES

Days	Average Abnormal Returns (AARs)	Cumulative Average Abnormal Returns (CAARs)	t statistic (AARs/ Standard Error)	Hypothesis Selected (Level of Significance at 5%)
-10	-0.1241%	-0.1241%	-0.30747004	Null Hypothesis
-9	-0.4847%	-0.6088%	-1.20083587	Null Hypothesis
-8	0.0483%	-0.5604%	0.11969259	Null Hypothesis
-7	-0.0441%	-0.6045%	-0.10923977	Null Hypothesis
-6	-0.3669%	-0.9715%	-0.90909409	Null Hypothesis
-5	0.3777%	-0.5938%	0.93576777	Null Hypothesis
-4	0.6647%	0.0709%	1.64679227	Null Hypothesis
-3	0.8645%	0.9354%	2.14188725	Alternative Hypothesis
-2	-0.4115%	0.5238%	-1.01962939	Null Hypothesis
-1	-1.1685%	-0.6446%	-2.89505877	Alternative Hypothesis
0	-1.1897%	-1.8343%	-2.94769558	Alternative Hypothesis
1	-1.9426%	-3.7770%	-4.81320645	Alternative Hypothesis
2	-0.3073%	-4.0843%	-0.76138552	Null Hypothesis
3	0.2250%	-3.8592%	0.55756773	Null Hypothesis
4	0.0351%	-3.8241%	0.08703773	Null Hypothesis
5	0.1517%	-3.6724%	0.37592842	Null Hypothesis
6	-0.5723%	-4.2446%	-1.41790765	Null Hypothesis
7	0.4367%	-3.8079%	1.08205355	Null Hypothesis
8	-0.2383%	-4.0462%	-0.59033349	Null Hypothesis
9	-0.1166%	-4.1627%	-0.28878772	Null Hypothesis
10	0.0812%	-4.0815%	0.20129050	Null Hypothesis

*R Square of the model is 0.61992 which indicates model is better fitted.

FIGURE 4: AVERAGE ABNORMAL RETURNS AND CUMULATIVE AVERAGE ABNORMAL RETURNS OF HCL TECHNOLOGIES FOR EVENT WINDOW



There are 6 negative AARs and 4 positive AARs before the event date in which day -3 and day -1 indicates statistically significant returns. Event day itself shows significant negative returns. After the event date there are 5 negative and 5 positive AARs and day 1 showed significant negative returns. It is seen that near to event date returns are significant and negative. This may happen because of investor expectations of bad results from the company. From the figure 4 it is clearly shown that CAARs turned negative from the event date. Till the last day of event window, it remained negative. It can be concluded that investors lost their wealth after the earnings announcement.

7. CONCLUSION

Present study aimed to know whether the quarterly earnings announcements influence the stock prices of the company or not, and whether the investor’s wealth affected or not. From the empirical one can conclude that quarterly results announcements do affect the stock returns and investors wealth too. Although, it can be also stated that there are no immediate statistically significant returns around the earnings announcements but cumulative returns increase or decreases gradually over the event window period. From the 4 companies only in case of HCL Technologies it is seen that investors are losing their wealth. Investors of Tata Consultancy Services, Infosys Ltd. and Tech Mahindra gained some returns after the earnings announcement.

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