


**TESTING OF SEMI-STRONG FORM OF EFFICIENCY: AN EMPIRICAL STUDY ON STOCK MARKET REACTION AROUND DIVIDEND ANNOUNCEMENT**

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ARTICLE INFO	<u>ABSTRACT</u>
<p><b>Article history:</b></p> <p><b>Received</b> 30 Dezember 2021</p> <p><b>Accepted</b> 07 February 2022</p>	<p><b>Purpose:</b> The purpose of this study is to examine the efficiency of the Indian stock market of the Nifty IT index over the dividend announcement for five years from 2016 to 2020.</p>
<p><b>Keywords:</b></p> <p>Nifty IT index; Dividend announcement; Semi-strong form; Event window; Abnormal return; Event study methodology; Efficient market hypothesis; Indian stock market; Daily share price.</p>	<p><b>Theoretical framework:</b> A reward procured by the shareholders on their equities is, of course, the dividend. A leading area of concern is the dividend announcement. According to the theory of efficient markets, stock prices accurately reflect all available information. This demonstrates that the prices are correct and fair. The market should therefore respond immediately to an event in this instance the dividend announcement. Therefore, depending on publicly available information will not provide investors with the possibility to consistently generate extraordinary returns.</p>
	<p><b>Design/ methodology/ approach:</b> The study attempts to validate the event study approach while investigating the semi-strong form of efficiency. Daily share prices of five companies out of ten of the Nifty IT index were observed to test the Efficient Market Hypothesis. 31 days event window has been employed to calculate the abnormal returns of the selected sample around dividend issue announcements also t-test was applied to assess the level of significance.</p>
	<p><b>Findings:</b> The study found that the stock market was efficient in its semi strong form and the investors could not make excess returns over the dividend announcement of the Nifty IT index.</p>
	<p><b>Research, Practical &amp; social implications:</b> This study eliminates the possibility for investors to beat the average market returns. It is significant since it affects stock market investment choices.</p>
	<p><b>Originality/ Values:</b> The majority of studies are only able to analyse the overall average abnormal return and cumulative average abnormal return of chosen companies; it is difficult to locate studies that focus on the abnormal return for each individual company. The t test for each company-wise abnormal returns, overall average abnormal returns, and cumulative average abnormal returns were acquired and tested at the 5% level of significance in order to determine the significance.</p>
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## TESTE DA FORMA SEMI-FORTE DE EFICIÊNCIA: UM ESTUDO EMPÍRICO SOBRE A REACÇÃO DO MERCADO BOLSISTA EM TORNO DO ANÚNCIO DE DIVIDENDOS

### RESUMO

**Objectivo:** O objectivo deste estudo é examinar a eficiência da bolsa de valores indiana do índice Nifty IT durante cinco anos, de 2016 a 2020, no que respeita ao anúncio de dividendos.

**Quadro teórico:** Uma recompensa obtida pelos accionistas sobre as suas acções é, evidentemente, o dividendo. Uma das principais áreas de preocupação é o anúncio dos dividendos. De acordo com a teoria dos mercados eficientes, os preços das acções reflectem com precisão toda a informação disponível. Isto demonstra que os preços são correctos e justos. O mercado deve, portanto, responder imediatamente a um evento neste caso, o anúncio de dividendos. Por conseguinte, dependendo da informação disponível ao público, não dará aos investidores a possibilidade de gerar rendimentos extraordinários de forma consistente.

**Concepção/ metodologia/abordagem:** O estudo tenta validar a abordagem do estudo do evento enquanto investiga a forma semi-forte de eficiência. Os preços diários das acções de cinco das dez empresas do índice Nifty IT foram observados para testar a Hipótese de Mercado Eficiente. A janela de eventos de 31 dias foi utilizada para calcular os retornos anormais da amostra seleccionada em torno de anúncios de emissão de dividendos também foi aplicado o teste t para avaliar o nível de significância.

**Conclusões:** O estudo constatou que o mercado de acções era eficiente na sua forma semi forte e que os investidores não podiam fazer retornos em excesso em relação ao anúncio de dividendos do índice Nifty IT.

**Investigação, implicações práticas e sociais:** Este estudo elimina a possibilidade de os investidores ultrapassarem os retornos médios do mercado. É significativo uma vez que afecta as escolhas de investimento na bolsa de valores.

**Originalidade/ Valores:** A maioria dos estudos só é capaz de analisar o retorno anormal médio global e o retorno anormal médio acumulado das empresas escolhidas; é difícil localizar estudos que incidam sobre o retorno anormal para cada empresa individual. O teste t para cada empresa - retorno anormal, retorno anormal médio global e retorno anormal médio acumulado foram adquiridos e testados ao nível de 5% de significância, a fim de determinar a significância.

**Palavras-chave:** Índice de TI sofisticado, Anúncio de dividendos, Forma semi-firme, Janela do evento, Retorno anormal, Metodologia de estudo de eventos, Hipótese de mercado eficiente, Bolsa de valores indiana, Preço diário das acções.

## PRUEBA DE LA FORMA SEMIFUERTE DE EFICIENCIA: UN ESTUDIO EMPÍRICO SOBRE LA REACCIÓN DEL MERCADO DE VALORES EN TORNO AL ANUNCIO DE DIVIDENDOS

### RESUMEN

**Objetivo:** El propósito de este estudio es examinar la eficiencia del mercado de valores indio del índice Nifty IT sobre el anuncio de dividendos durante cinco años desde 2016 hasta 2020.

**Marco teórico:** La recompensa que obtienen los accionistas sobre sus acciones es, por supuesto, el dividendo. Una de las principales áreas de interés es el anuncio de dividendos. Según la teoría de los mercados eficientes, los precios de las acciones reflejan con exactitud toda la información disponible. Esto demuestra que los precios son correctos y justos. Por lo tanto, el mercado debería responder inmediatamente a un acontecimiento, en este caso el anuncio de dividendos. Por lo tanto, depender de la información disponible públicamente no proporcionará a los inversores la posibilidad de generar sistemáticamente rendimientos extraordinarios.

**Diseño/ metodología/ enfoque:** El estudio trata de validar el enfoque del estudio de eventos al tiempo que investiga la forma semifuerte de la eficiencia. Se han observado los precios diarios de las acciones de cinco de las diez empresas del índice Nifty IT para comprobar la hipótesis del mercado eficiente. Se empleó una ventana de eventos de 31 días para calcular los rendimientos anormales de la muestra seleccionada en torno a los anuncios de emisión de dividendos y se aplicó una prueba t para evaluar el nivel de significación.

**Resultados:** El estudio encontró que el mercado de valores era eficiente en su forma semi-fuerte y que los inversores no podían obtener rendimientos excesivos sobre el anuncio de dividendos del índice Nifty IT.

**Investigación, implicaciones prácticas y sociales:** Este estudio elimina la posibilidad de que los inversores superen los rendimientos medios del mercado. Es significativo ya que afecta a las opciones de inversión en bolsa.

**Originalidad/ Valores:** La mayoría de los estudios sólo pueden analizar la rentabilidad anormal media global y la rentabilidad anormal media acumulada de las empresas elegidas; es difícil localizar estudios que se centren en la rentabilidad anormal de cada empresa individual. Se adquirió la prueba t para los rendimientos anormales de cada empresa, los rendimientos anormales medios globales y los rendimientos anormales medios acumulados y se probó al nivel de significación del 5% para determinar la significación.

**Palabras clave:** Índice Nifty IT, Anuncio de dividendos, Forma semi-fuerte, Ventana de eventos, Rendimiento anormal, Metodología de estudio de eventos, Hipótesis de mercado eficiente, Mercado de valores indio, Precio diario de las acciones.

## INTRODUCTION

A part of corporate returns distributed among the share holders of the company as per the decision of the directorate is known as dividend. In the investors' perspective dividend is a source of income. It is also treated as an indicator for future performance of the firm (Anjali and Raju, 2017) When the management of a business generates net income, it accumulates retained earnings. These earnings are either reinvested in the business itself or disbursed as dividends to the shareholders, which is based on the company's dividend policy. From the investors' point of view, dividends are not only the source of income but also are treated as an eminent factor for analyzing the firm's valuation (Gupta et al., 2012). The capital market never concedes any investors to predict the share price movement, whether they used any tool or technique. There are numerous market participants and technical experts who have attempted to study the tendency of stock price. But no can understand the secret behind it (Raja, 2012). In a volatile market, security prices are supposed to track and adjust in response to the release of new information. The new information could come in the shape of political chaos, a media prediction of a corporate action, or news reportage of popular upheaval. The 'Efficiency' of the markets is determined by the rate at which fresh and relevant information is integrated into asset market prices (Marisetty and Madasu, 2021). Due to capital market efficiency, none of the investors can beat the market and make an excess profit. Market efficiency means the market is fast and rightly absorbs all publicly available information which is replicated on the stock price immediately. Efficient market hypothesis states that every information and the capacity of the firms' future earnings are reflected by the current share price. Hence no one can defeat the market by earning abnormal returns (Ghatak, 2011).

Eugene Fama in the year 1970 categorized the market efficiency into three forms viz.,

1. Weak form of efficiency, 2. Semi - strong form of efficiency and 3. Strong form of efficiency.

Weak form of efficiency describes that the current market prices of the stocks have already been reflected by all the past and historical data. It intimates that no abnormal return is possible based on historical price information. Any investor intends to predict the future price of the stock as per the past information is totally worthless because the price follows random walk pattern (Naveen and Satyanarayana, 2019).

Semi strong form of efficiency states that stock prices incorporate not only the historical prices but also all the publicly available information namely the announcement of company reports, any information content of dividend policies, bonus and the right issue of shares, stock split, merger and acquisition. The semi strong form of efficiency becomes truth, if the publically available information does not make any changes in the security price (Rohit et al., 2016). In accordance with this hypothesis, any analyst will find it impossible to estimate stock prices in the future since he will not be able to obtain superior and consistent information from any company on a constant basis (Theckanathukaduppil, 2021).

Strong form of efficiency explains that historical prices, publicly available information and insider information also speedily reflected on the stock price (Nadig, 2015). If a strong form of efficiency exists, no market participants can make a superior return for a prolonged period (Manzoor, 2015).

The highlight of the study is to analyse that the significant level of abnormal return of selected individual company over the dividend announcements for a period of five years from 2016 to 2020.

## **Litrature Review**

Matharu and Changle (2015) investigated the stock price reaction in the context of the announcement of dividends by applying event study methodology and 61 days event study window was used. They used the market model to measure the security return and CAPM to find expected return for selected 25 companies in BSE Sensex. The influence of dividend announcement around the security prices was tested by Paired t – test approach. It was concluded that the significant impact of dividend announcement on the share price movement of selected stocks. So the investors must consider the dividend announcement while making an investment decision.

Anjali and Raju (2017) pointed out that the objective of the study was to find out the impact of dividend announcement on the stock price of selected companies in different service sectors listed in BSE. The service sectors were banking, healthcare, IT and realty sector. Totally 193 companies and 2436 dividend announcements were used for the study. The researchers developed the Null hypothesis, which stated that the Indian stock market was efficient in strong form of market efficiency. They calculated abnormal returns by applying event study methodology. The study had been conducted from 2000 to 2016. The study concluded that the Null hypothesis was rejected. The banking healthcare and IT sector were statistically significant at 5% level. But they couldn't statistically validate the realty sector.

Ramya and Bhuvaneshwari (2018) tested the effect of right issue announcement on the stock prices of NSE CNX 500 stocks for the period from 2006 to 2013. They followed event study methodology to find abnormal return. Average abnormal return and Cumulative average abnormal return had been calculated. Also t test was adopted to find the significant level. The result of the study revealed that there was a significant negative impact on the prices of stocks in NSE CNX 500 companies around the right issue announcement.

Goyal and Gupta (2019) have analysed the semi strong form of stock market efficiency and market reaction around dividend announcement on BSE Sensex. They have applied the event study methodology technique to check the market efficiency. The study concluded that the market is efficient in case of dividend announcement and the investors could not earn abnormal returns because of market absorbed information quickly.

Shanthaamani and Usha (2019) examined the impact of dividend announcement on stock returns and market efficiency in India. They have examined the share market reaction towards dividend announcement and also tested the strong form of market efficiency of selected companies in BSE SENSEX. This study computed the Cumulative Annual Return and Average Abnormal Return to test the market efficiency. Finally it was concluded that the dividend announcement was favorable to the investors and the market was efficient in strong form.

### **Statement of the Problem**

From the investor's point of view, dividend issue announcement is favorable news. But if there is no dividend for any particular year, they get disappointed with the companies. The Efficient market hypothesis explains that the stock prices observe the new and publicly available information quickly and no one can earn an abnormal profit. With this perspective the current study is conducted to examine the stock market efficiency of the NSE Nifty IT index around the dividend issue announcement.

### **Scope of the Study**

The study evaluates the semi-strong form of market efficiency of the Indian stock market. It is confined to only the final dividend announcements made by the NSE India Limited. Though there are different sectoral indices in NSE India Limited, this study covers only the Nifty IT Index. This study was conducted only for five years from 2016 to 2020.

### The Objective of the Study

- i. To analyze the impact of dividend announcement on stock prices of Nifty IT Index and,
- ii. To examine whether there are any significant abnormal returns about the dividend announcement of the Nifty IT Index.

### Hypothesis

#### *Null Hypothesis:*

H<sub>0</sub>: Nifty IT Index possesses a semi-strong form of efficiency that is the investors cannot make abnormal returns in the event of dividend announcements.

#### *Alternative Hypothesis:*

H<sub>1</sub>: Nifty IT Index does not possess a semi-strong form of efficiency that is the investors can make abnormal returns in the event of dividend announcements.

### RESEARCH METHODOLOGY

A sample of six final dividend announcements made by 5 companies out of 10 companies in the Nifty IT Index of NSE India Ltd., were used in this paper. The data related to Dividend announcements and Historical share price of Nifty IT Index had been gathered from the website of [www.nseindia.com](http://www.nseindia.com) and <http://in.finance.yahoo.com>. This study was carried for a period of five years. It analysed the share price reaction towards dividend announcement from the year 2016 to 2020. To analyse and interpret the data, the study used statistical tools such as standard deviation, coefficient of variation, regression analysis, and the T test.

The most prominent market model of event study methodology was used to ascertain the impact of corporate event announcements. The following steps of the event study methodology were followed in order to assess the influence of dividend announcement on stock prices.

#### *Step 1: Identification of event day*

Final dividend announcement day was treated as an event day, i.e. 0 day as the event day. Only the trading days had been analysed.

#### *Step 2: Event window & Estimation window*

31 days Event study window has been selected. That is -15 days to +15 days. The Pre-event announcement period is -15 day to -1 day and post announcement period is +1 day to +15 day.



Estimation window for this study is – 151 days to -16 days that is 120 days. Estimation window has been used to determine the regression coefficient Intercept ( $\alpha$ ) and Slope ( $\beta$ ).

Figure – 1 Event Study Window

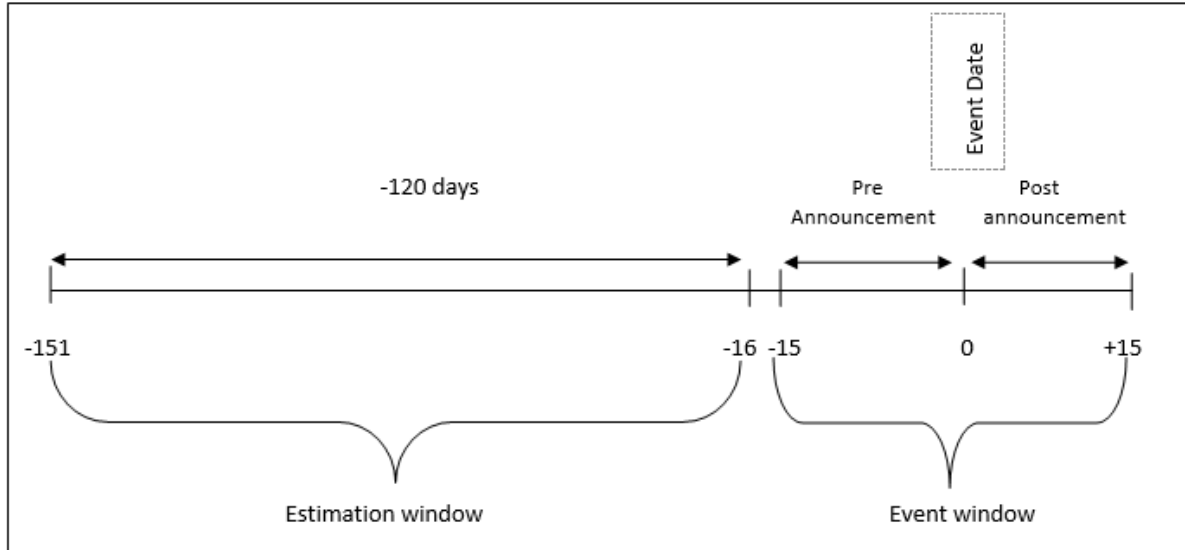


Figure 1 (Naik et al., 2018) is the Event study window, in this event window 0 day is an event day that is the dividend announcement date. 15 days prior are called the pre event announcement period and 15 days after are called a post announcement period. These 31 days are called the event window. The abnormal returns have been calculated for these periods. Before 16<sup>th</sup> day to 151 days that is 120 days are called the estimation window.

*Step 3: Calculation of daily stock return and market return:*

Daily Stock returns for individual securities were calculated as follows:

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

Daily Market returns were calculated by using market index as follows:

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

Where,

$R_{jt}$  is the Actual Returns of share  $j$  on day  $t$

$P_{jt}$  is the price of share  $j$  on day  $t$  and  $P_{jt-1}$  is the price of share  $j$  on day  $t-1$ .

$R_{mt}$  is the Daily index return on Nifty IT Index during period  $t$

$I_t$  is the Nifty IT Index price on day  $t$  and  $I_{t-1}$  is the Nifty IT Index price on day  $t-1$

*Step 4: Calculation of Expected Return (ER)*

Expected returns on every security were calculated around 31 days event study window using a simplistic model of regression with a following formula:

$$E(R_{jt}) = \alpha_j + \beta_j R_{mt}$$

Where,

$E(R_{jt})$  is the Expected return on security j during period t

$\alpha_j$  is the Alpha coefficient of security j

$\beta_j$  is the Beta coefficient of security j

$R_{mt}$  is the Daily index return on Nifty IT Index during period t

*Step 5: Calculation of Daily Abnormal Returns (ARs)*

Abnormal Returns are the returns generated by selected sample companies over the 31 days event window using a following formula:

$$AR_{jt} = R_{jt} - E(R_{jt})$$

Where,

$AR_{jt}$  is the Abnormal Return on Security j on day t

$R_{jt}$  is the Actual Returns of share j on day t

$E(R_{jt})$  is the Expected return on security j during period t

*Step 6: Calculation of Average Abnormal Return (AAR)*

Average abnormal return is the average of abnormal return of each stock for every day pre and post event day of event window. The AARs were acquired by using a following formula:

$$AAR_t = \frac{1}{n} \sum_{t=1}^n AR_{jt}$$

Where,

$AAR_t$  is the Average Abnormal Return on day t

$AR_{jt}$  is the Abnormal Return of security j on day t

n is the number of sample announcements

*Step 7: Calculation of Cumulative Average Abnormal Return (CAAR)*

Cumulative Average Abnormal Return is the sum of all Average Abnormal Returns, Which were calculated as follows:



$$CAAR_t = \sum_{t=-15}^{+15} AAR_t$$

Where,

CAAR<sub>t</sub> is the Cumulative Average Abnormal Return on day t

AAR<sub>t</sub> is the Average Abnormal Return on day t

#### *Step 8: Calculation of T test and P value*

T test has been used to analyse the effect of stock returns on pre and post event period of event window. The T test was calculated as follows:

#### **T test for Average Abnormal Return (t – AR)**

$$T = AR_t / \sigma AR_t$$

Where,

AR<sub>t</sub> = Abnormal Returns;  $\sigma AR_t$  = Standard error of Abnormal Returns

The Standard error is computed as follows:

$$SE = \sigma / \sqrt{n}$$

Where,

SE = Standard error,  $\sigma$  = Standard deviation, n = number of observation

#### **T test for Average Abnormal Return (t – AAR)**

$$T = AAR_t / \sigma AAR_t$$

Where,

AAR<sub>t</sub> = Average Abnormal Return

$\sigma AAR_t$  = Standard error of Average Abnormal Return

The Standard error is computed as follows:

$$SE = \sigma / \sqrt{n}$$

Where,

SE = Standard error,  $\sigma$  = Standard deviation, n = number of observation.

#### **T test for Cumulative Average Abnormal Return (t – CAAR)**

$$T = CAAR_t / \sigma CAAR_t$$

Where,

CAAR<sub>t</sub> = Cumulative Average Abnormal Return

$\sigma CAAR_t$  = Standard error of Cumulative Average Abnormal Return

The Standard error is computed as follows:

$$SE = \sigma / \sqrt{n}$$

Where,

SE = Standard error,  $\sigma$  = Standard deviation, n = number of observation.

P values were calculated to find the significant level of T values of Abnormal returns, which as calculated as follows:

P value = TDIST (T test value, degrees of freedom, 2)

## DATA ANALYSIS AND INTERPRETATION

Table 1: Company – wise analysis of Abnormal Returns and its P – value

Event days	COFORGE			HCL			INFOSYS		
	AR	T - Test	P – Value	AR	T - Test	P - Value	AR	T - Test	P - Value
-15	0.0300	1.1886	0.2369	0.0045	0.3243	0.7463	-0.0056	-0.6522	0.5155
-14	0.0086	0.3413	0.7335	-0.0067	-0.4828	0.6301	0.0023	0.2637	0.7924
-13	0.0199	0.7878	0.4323	0.0031	0.2198	0.8264	0.0000	-0.0056	0.9956
-12	0.0068	0.2699	0.7877	0.0070	0.4992	0.6186	-0.0020	-0.2355	0.8143
-11	0.0045	0.1781	0.8590	0.0076	0.5432	0.5880	0.0194	2.2393	0.0270*
-10	-0.0192	-0.7594	0.4491	0.0014	0.1003	0.9202	0.0022	0.2524	0.8011
-9	-0.0118	-0.4655	0.6424	-0.0028	-0.1982	0.8432	-0.0079	-0.9085	0.3654
-8	0.0107	0.4249	0.6717	0.0083	0.5929	0.5543	0.0021	0.2430	0.8084
-7	0.0403	1.5956	0.1132	-0.0056	-0.3983	0.6911	0.0037	0.4326	0.6661
-6	0.0122	0.4843	0.6291	-0.0051	-0.3644	0.7162	0.0072	0.8272	0.4098
-5	-0.0033	-0.1295	0.8972	-0.0113	-0.8086	0.4204	-0.0150	-1.7332	0.0856
-4	-0.0091	-0.3617	0.7182	-0.0010	-0.0693	0.9449	-0.0010	-0.1121	0.9110
-3	-0.0222	-0.8799	0.3807	0.0072	0.5132	0.6088	-0.0087	-1.0047	0.3170
-2	0.0532	2.1059	0.0373*	0.0141	1.0101	0.3145	0.0030	0.3479	0.7285
-1	0.0040	0.1580	0.8747	-0.0481	-3.4423	0.0008*	0.0222	2.5675	0.0115*
0	-0.0080	-0.3155	0.7529	0.0096	0.6860	0.4940	0.0091	1.0503	0.2957
1	-0.0048	-0.1880	0.8512	0.0121	0.8659	0.3883	-0.0038	-0.4350	0.6644
2	0.0221	0.8735	0.3841	-0.0205	-1.4706	0.1440	0.0059	0.6841	0.4952
3	0.0293	1.1596	0.2485	-0.0017	-0.1202	0.9045	0.0091	1.0544	0.2938
4	0.0290	1.1493	0.2527	0.0058	0.4179	0.6768	0.0063	0.7222	0.4716
5	0.0171	0.6786	0.4987	-0.0150	-1.0741	0.2849	-0.0053	-0.6116	0.5419
6	0.0172	0.6801	0.4978	0.0062	0.4446	0.6574	-0.0060	-0.6916	0.4905
7	0.0134	0.5298	0.5972	-0.0092	-0.6580	0.5118	0.0100	1.1563	0.2499
8	0.0505	2.0000	0.0478*	-0.0144	-1.0326	0.3039	0.0030	0.3509	0.7263
9	0.0045	0.1796	0.8577	-0.0008	-0.0570	0.9547	0.0024	0.2795	0.7803
10	-0.0280	-1.1090	0.2696	0.0308	2.2025	0.0295*	0.0071	0.8252	0.4109
11	-0.0591	-2.3382	0.0210*	0.0079	0.5679	0.5712	-0.0154	-1.7767	0.0781
12	-0.0346	-1.3690	0.1736	0.0067	0.4812	0.6313	-0.0014	-0.1618	0.8718
13	0.0435	1.7211	0.0878	0.0197	1.4068	0.1621	-0.0090	-1.0359	0.3023
14	0.0073	0.2902	0.7722	-0.0012	-0.0853	0.9322	0.0087	0.9993	0.3197
15	0.0133	0.5257	0.6001	0.0076	0.5442	0.5873	0.0009	0.1041	0.9173

Significance at 5%

Event days	L & T INFOTECH			TCS		
	AR	T - Test	P – Value	AR	T - Test	P - Value
-15	0.0184	0.8119	0.4185	0.0047	0.2958	0.7679
-14	-0.0068	-0.3015	0.7635	-0.0131	-0.8288	0.4089
-13	-0.0059	-0.2599	0.7954	0.0051	0.3206	0.7491
-12	-0.0399	-1.7586	0.0812	-0.0416	-2.6264	0.0098*
-11	-0.0155	-0.6850	0.4947	0.0235	1.4824	0.1409
-10	-0.0067	-0.2972	0.7669	0.0156	0.9872	0.3255
-9	-0.0067	-0.2952	0.7683	0.0038	0.2376	0.8126
-8	0.0447	1.9732	0.0508	0.0008	0.0483	0.9615
-7	0.0155	0.6856	0.4943	0.0193	1.2192	0.2252
-6	0.0480	2.1172	0.0363*	-0.0158	-0.9995	0.3196
-5	-0.0098	-0.4313	0.6671	-0.0108	-0.6808	0.4973

-4	0.0189	0.8327	0.4067	-0.0027	-0.1728	0.8631
-3	0.0183	0.8077	0.4209	-0.0398	-2.5142	0.0133*
-2	0.0052	0.2276	0.8203	-0.0143	-0.8994	0.3702
-1	0.0114	0.5016	0.6169	0.0243	1.5330	0.1279
0	-0.0169	-0.7470	0.4565	0.0022	0.1357	0.8923
1	0.0102	0.4512	0.6526	0.0146	0.9190	0.3599
2	-0.0358	-1.5814	0.1164	-0.0176	-1.1123	0.2683
3	0.0193	0.8503	0.3968	-0.0183	-1.1516	0.2518
4	0.0251	1.1062	0.2709	-0.0141	-0.8922	0.3741
5	0.0385	1.7002	0.0917	0.0099	0.6271	0.5318
6	0.0257	1.1357	0.2583	0.0008	0.0474	0.9623
7	0.0056	0.2470	0.8053	0.0071	0.4468	0.6558
8	-0.0443	-1.9536	0.0531	-0.0049	-0.3100	0.7571
9	0.0075	0.3313	0.7410	-0.0028	-0.1791	0.8581
10	0.0183	0.8094	0.4199	0.0017	0.1056	0.9161
11	-0.0174	-0.7662	0.4450	0.0063	0.3988	0.6908
12	0.0098	0.4307	0.6675	-0.0047	-0.2983	0.7660
13	-0.0006	-0.0263	0.9791	0.0134	0.8431	0.4008
14	0.0014	0.0618	0.9508	-0.0036	-0.2289	0.8193
15	-0.0044	-0.1935	0.8469	0.0040	0.2522	0.8013

Significance at 5%

The Table 1 explains the abnormal returns of five selected sample companies in respect of Nifty IT index and its corresponding P value for the 31 days event window. In case of Coforge Ltd., the abnormal returns are positive for 21 days out of 31 days, and for remaining 10 days, it is reported as negative abnormal returns. The P value of Coforge Ltd., represent the value of T test for abnormal returns and it reveals that there is a significant variations in the abnormal returns for the days of -2; +8, and +11 day of the event. It indicates that the market is inefficient and the investors can earn abnormal return, so the null hypothesis is rejected. Apart from the above three days the market is efficient and the investor can not earn abnormal return. So the null hypothesis is accepted.

Abnormal returns of HCL Ltd., are negative for 14 days out of 31 days and for the remaining 17 days, it shows positive abnormal returns. The P value of this company exhibits that there is a significant variations in the abnormal returns for the day of -1 in the pre event window and +10<sup>th</sup> day of post event window. It specifies that the market is not efficient and the market participants can earn abnormal return, so the null hypothesis is rejected. Excluding the above two days in the whole event window, the market is efficient for left over days and the market participants can not earn abnormal return. Therefore the null hypothesis is accepted.

In case of Infosys Ltd., the abnormal returns are positive for 19 days and negative for 12 days out of 31 days. The P value of Infosys Ltd., conveys that there had been significant variations in the abnormal return for the days of -11, and -1 of the pre event window. It represents that the market is inefficient and the investors can earn abnormal return, therefore

the null hypothesis is rejected. Besides the above two days the market had been efficient and the investors could not earn abnormal return. So the null hypothesis is accepted.

Abnormal returns of L & T Infotech Ltd., are negative for 13 days and positive for 18 days out of 31 days. The P value of this company explains that there are significant variations in the abnormal return for the day of -6 of the event. It reveals that the market is inefficient and the market participants can earn abnormal profit. Hence the null hypothesis rejected. Except on the -6<sup>th</sup> day of the event, market is efficient for rest of the days and the investors can not earn abnormal return. Therefore the null hypothesis is accepted.

Finally, in case of TCS Ltd., the abnormal returns are negative for 14 days out of 31 days event window and positive for 17 days. The P value of TCS Ltd., exhibits that there is significant variations in the abnormal return for the days of -12 and -3 of the event. It represents that the market is inefficient and the investors can earn abnormal return. Therefore the null hypothesis is rejected. Apart from the above two days, the market is efficient for remaining days and the investors can not earn abnormal return, hence the null hypothesis is accepted.

### **Inference**

Table 1 shows the abnormal return in the event window of five selected sample of Nifty IT Index and it is found that the variations in the ARs are not statistically significant. We can see that the P values of each company in the event window are more than 5% for most of the days which means that the support for the null hypothesis. That is the market is efficient and the investors can not earn abnormal profit. But some companies in stock market are not efficient of the day of after the announcement of dividend (Goyal and Gupta, 2019) namely Coforge Ltd and HCL Ltd which indicates that the investors can earn abnormal return. After analyzing five companies in Nifty IT Index, it is found that the remaining companies market is efficient; they are Infosys Ltd, L & T infotech Ltd and TCS. The stock prices are easily obtained the information and there was no chance to get abnormal returns.

### **Daily Average Abnormal Returns of pre and Post Announcement Periods in the Event Window and its Respective P Values**

The Table 2 represents, the Average Abnormal Returns of selected companies in Nifty IT index during 31 days event window. The null hypothesis stated that the market is efficient and the investors could not make abnormal returns. To check the significant level of variations in the average abnormal returns around event window, T stat has been applied. P values in the

below table portray that there is no significant variations in the abnormal returns around the whole event window.

Table 2 – Average Abnormal Returns and its P Value

Event window	Cumulative Average Abnormal Returns	T – Test	P – Value
-15	0.01040	1.1815	0.2397
-14	0.00724	0.8223	0.4125
-13	0.01166	1.3248	0.1877
-12	-0.00228	-0.2594	0.7957
-11	0.00561	0.6369	0.5254
-10	0.00427	0.4850	0.6286
-9	-0.00080	-0.0904	0.9281
-8	0.01253	1.4231	0.1573
-7	0.02720	3.0898	0.0025*
-6	0.03649	4.1452	0.0001*
-5	0.02646	3.0059	0.0032*
-4	0.02747	3.1209	0.0023*
-3	0.01841	2.0916	0.0386*
-2	0.03066	3.4829	0.0007*
-1	0.03342	3.7964	0.0002*
0	0.03261	3.7039	0.0003*
1	0.03828	4.3485	0.0000*
2	0.02907	3.3028	0.0013*
3	0.03663	4.1610	0.0001*
4	0.04704	5.3439	0.0000*
5	0.05611	6.3735	0.0000*
6	0.06489	7.3708	0.0000*
7	0.07026	7.9817	0.0000*
8	0.06825	7.7533	0.0000*
9	0.07042	7.9995	0.0000*
10	0.07640	8.6793	0.0000*
11	0.06089	6.9168	0.0000*
12	0.05604	6.3662	0.0000*
13	0.06943	7.8869	0.0000*
14	0.07194	8.1724	0.0000*
15	0.07622	8.6586	0.0000*

Significance at 5%

## Inference

Table 2 displays the average abnormal returns of selected sample companies of Nifty IT Index in 31 days event window over the dividend announcement. It revealed that the variations in the AARs are not statistically significant in the event window. The P values of each day during the event period is more than 0.05, it intimates that the null hypothesis is accepted. So it can be clear that the stock prices reflect information quickly. That is the stock market is efficient and investors cannot make abnormal profit.

Figure – 2 Average abnormal Returns

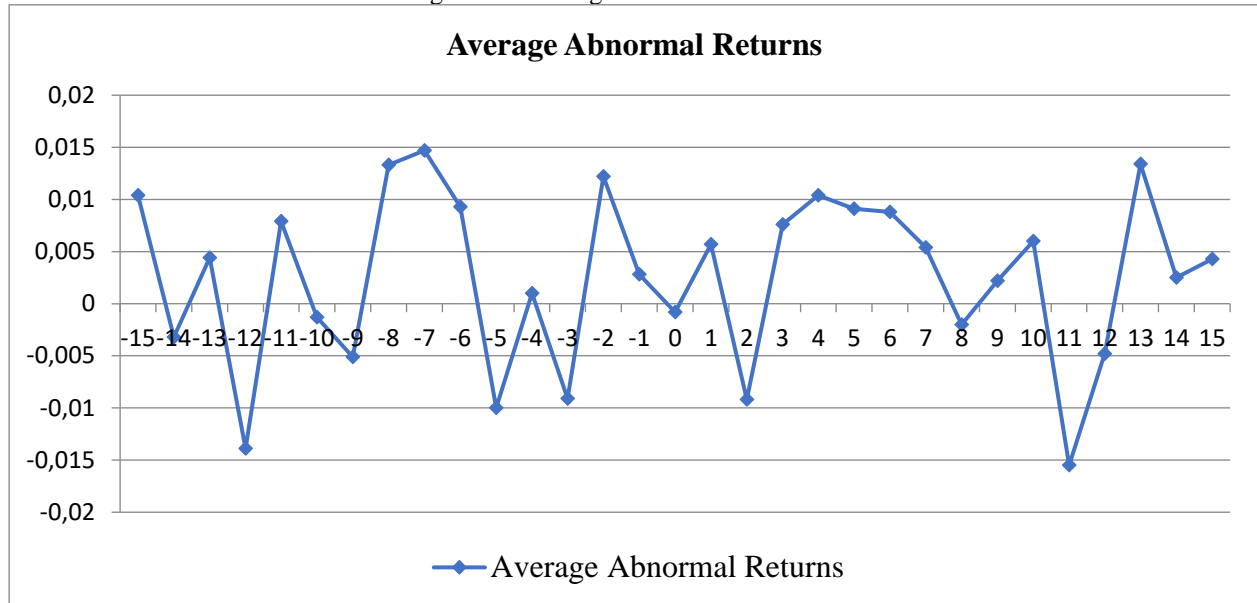


Figure 2 displays the presence of Average Abnormal Returns around event window on dividend announcement. It depicts that the Average Abnormal Returns were positive for 9 days prior to the event announcement date except on the days of -3,-5,-9,-10,-12 and -14. On the event day only it shows negative Average Abnormal Returns, but before and after the event day it shows positive. It also represents that the Average Abnormal Returns were positive for 11 days after the date of event announcement except on 4 days that is 2, 8, 11, and 12. On the whole, the above figure represents that the Average Abnormal Returns were randomly fluctuating in nature, both pre and post announcements period of the event window. Even there were positive Average Abnormal Returns for twenty days during the event window, it was not significant.

### Daily Cumulative Average Abnormal Returns of pre and post Announcement Periods In the event Window and its Respective P values

The Table 3 represents, the Cumulative Average Abnormal Returns of selected companies in the Nifty IT Index during 31 days event window. The hypothesis had been tested by applying the T test and the significant level of abnormal returns around the event study window were checked by using P values. The P values of Cumulative Average Abnormal Returns in the below table defined that there is significant variations in the abnormal return except for the period between -15<sup>th</sup> day to -8<sup>th</sup> day of the event.

Table 3 - Cumulative Average Abnormal Returns and its P Value

Event window	Cumulative Average Abnormal Returns	T – Test	P – Value
-15	0.01040	1.1815	0.2397
-14	0.00724	0.8223	0.4125
-13	0.01166	1.3248	0.1877
-12	-0.00228	-0.2594	0.7957
-11	0.00561	0.6369	0.5254
-10	0.00427	0.4850	0.6286
-9	-0.00080	-0.0904	0.9281
-8	0.01253	1.4231	0.1573
-7	0.02720	3.0898	0.0025*
-6	0.03649	4.1452	0.0001*
-5	0.02646	3.0059	0.0032*
-4	0.02747	3.1209	0.0023*
-3	0.01841	2.0916	0.0386*
-2	0.03066	3.4829	0.0007*
-1	0.03342	3.7964	0.0002*
0	0.03261	3.7039	0.0003*
1	0.03828	4.3485	0.0000*
2	0.02907	3.3028	0.0013*
3	0.03663	4.1610	0.0001*
4	0.04704	5.3439	0.0000*
5	0.05611	6.3735	0.0000*
6	0.06489	7.3708	0.0000*
7	0.07026	7.9817	0.0000*
8	0.06825	7.7533	0.0000*
9	0.07042	7.9995	0.0000*
10	0.07640	8.6793	0.0000*
11	0.06089	6.9168	0.0000*
12	0.05604	6.3662	0.0000*
13	0.06943	7.8869	0.0000*
14	0.07194	8.1724	0.0000*
15	0.07622	8.6586	0.0000*

Significance at 5%

### Inference

Table 3 presents the Cumulative Average Abnormal Returns of selected companies of Nifty IT Index in 31 days event window over dividend announcement. Most of the days that is 23 days out of 31 days, P values in the event window are less than 0.005, it means the null hypothesis has to be rejected. It is also clear that the stock prices didn't reflect the information promptly. So the investors can earn abnormal returns.



Figure 3- Cumulative Average Abnormal Returns

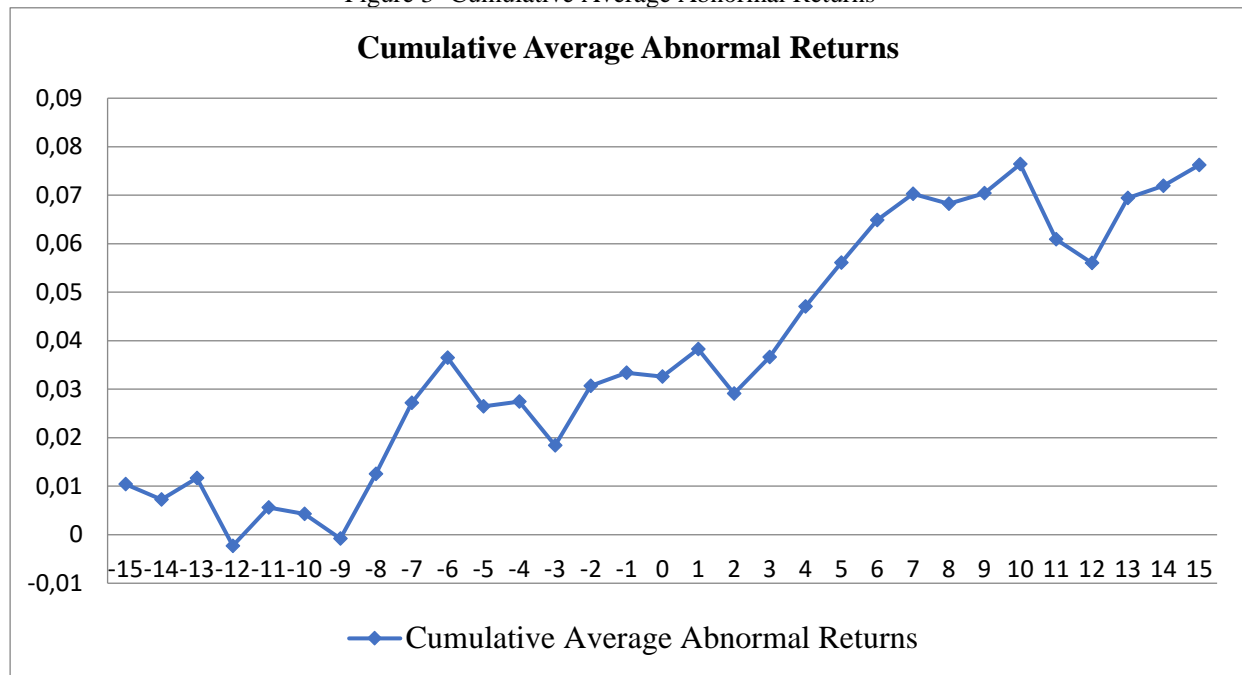


Figure 3 displays the presence of Cumulative Average Abnormal Returns around event window on dividend announcement. It depicts that the Cumulative Average Abnormal Returns had been positive for 13 days prior to the event date except on -9 and -12. In case of post announcement period, all the fifteen days showed positive Cumulative Average Abnormal Returns. But the returns reduced on the days of +2, +8, +11 and +13. Though the Cumulative Average Abnormal Returns are fluctuating in nature, it shows upward trend. The P values of Cumulative Average Abnormal Returns had been significant for 23 days. It represents the stock prices didn't reflect the information quickly.

## SUGGESTIONS

The inference of the study discloses that the Coforge Ltd and HCL Ltd have earned significant variations in the abnormal return after the day of dividend announcement. So it is suggested to buy and hold more shares. In case of Infosys Ltd, L&T infotech Ltd and TCS, there is no significant variation in the abnormal return. Hence it is suggested to sell those shares. To avoid the negative abnormal return, the investors are suggested to engage in short selling and approach for insiders' information.

## CONCLUSION

The study analysed the semi strong form of efficiency of selected companies in Nifty IT Index over the dividend announcement period. Out of 10 companies in Nifty IT Index, five

companies were chosen by those which made dividend announcement during the period of five years from 2016 to 2020. T test and P value has been calculated to find the effect of dividend announcement on selected sample of Nifty IT Index. On the basis of Average Abnormal Returns the above study concluded that the market is efficient in case of dividend announcements and the investors cannot make any abnormal return. Finally it can be said that the stock prices have been reflected by quick information.

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