"INVESTOR ATTENTION & STOCK OF BHARTI AIRTEL LIMITED: NEW EVIDENCE FROM TECHNICAL ANALYSIS"

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ABSTRACT:

Using various technical analysis tools, this paper documents the relationship between investor attention and stock of Bharti Airtel Limited i.e returns, volatility and trading volume. Trading volume is considered as a proxy of investor attention. In order to calculate the relation between Stock Returns and value, the mean value of returns, the standard deviation, skewness and kurtosis are used. Bharti Airtel being the top company subscriber base wise and revenue base wise the share prices from 2014 to 2019 are considered for the purpose of study. Based on the findings it is concluded that on daily as well as annual basis least volatility was evident for the stock of Bharti Airtel Ltd. The study results show that there was a significant variation in trading volume of the stock during the years 2014 to 2019.

Keywords: Technical Analysis, trading volume, volatility, GOI, VAS

INTRODUCTION:

In the present era, the telecommunication plays a vital role in communication and can also be considered as the wheel on which the world advances. Today the Telecom industry has inordinate influence on all aspect of our lives, right from telephonic communication amongst the people located in far places or residing at distant locations. The Telecommunication or the mobile world has made the supply chains or networks operate flawlessly and has smoothened the process of producing goods and satisfy the demands of people across the world. Telecommunication services have become invincible key or tool for the speedy growth of the economy which in turn helps in socio economic progress of a nation. It mainly comprises of GSM, CDMA, data and voice services.

While having the look at evolution of Indian Economy, the all-round reforms, especially in developing economies, like India have been paved by the initiatives like globalization, liberalization and privatization which are the three most spoken words in today's world.[1] The developing country like India has realized that development of effective and efficient means of communications and information technology is important to push them onto the path of development. The telecom sector in India has grown phenomenally post-liberalization.

REVIEW OF RELATED LITERATURE:

In the backdrop of the aims and objectives of this study, a systematic review of the existing literature related to the topic under investigation was carried out. To conduct the review, researcher considered following aspects like, the research question being addressed; theoretical background of the study, methodology used, findings of the study, conclusions and future scope delineated by the investigation, etc. In addition to above, the research gaps were identified on the basis of this review and this literature review was used as basis for synthesizing and gaining a new perspective of the issues concerning the market returns vis-à-vis various script of various listed companies in general and those (companies) operational in the telecom sector in particular.

Ghosh and Dutta (2014)[2] in their research have focussed on the performance of telecom companies after the mergers and acquisitions. They have considered 10 M&A for testing the performance of BSE-listed Indian telecom companies for the timeframe spanning from 2000 to 2010. For testing the pre- merger and post merger performance of these companies they have used various measures like selected HR and financial parameters like HCROI (Human Capital Return on Investment), Compensation of employees to PAT ratio, EPS (Earnings Per Share) and market share. The findings indicate a mixed outcome.

Gregoriou *et al.*, (2015)[3] have carried out a major research in order to analyse the determining factors affecting the stock prices of telecommunications firms. In order do the deep study and to expand the coverage of the study both developed and developing countries around the world including 160 countries and 45 companies, for the timespan from 2000 to 2011 were considered. The findings show that the financial and non financial factors have the major impact of price volatility of the telecom stock.

Rastogi and Mazumdar (2016)[4] in their research have focussed on the Corporate Debt Restructuring (CDR) mechanism. Equity holders enjoy a better deal than the lenders. They reap more benefits post announcement of the admission of a firm to CDR. The equity shareholder are in better position than the lenders of the company. The market thus perceives admission to CDR as an indicator of better return on equity capital.

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[1] Globalisation and liberalisation of the Indian Economy, n.d.

[2] Ghosh, S and Dutta, S. (2014). Mergers and Acquisitions: A Strategic Tool for Restructuring in the Indian Telecom Sector, *Procedia Economics and Finance*, 11, pp. 396-409.

[3] Gregoriou, A., Healy, J and Gupta, J. (2015).Determinants of telecommunication stock prices, *Journal of Economic Studies*, 42(4), pp. 534-548.

[4] Rastogi, A and Mazumdar, S. (2016). Corporate Debt Restructuring (CDR) and its Impact on Firms' Stock Market Performance: A Study of Pre- and Post-CDR Share-price Movements, *South Asian Journal of Management*, 23(3), pp. 7-26.

Muthusamy (2012)[5] in his research study titled 'A Financial Analysis Of Selected Telecommunication Companies in India' has focussed on the liquidity, overall profitability, performance and turnover of selected private telecommunication companies in India. The period of five years from March 2005 to March 2010 is considered for the study and selected 6 telecom companies are studied for reaching the conclusion. The different techniques such as liquidity, profitability, turnover, and comparative analysis are used for the purpose of calculating Equity share capital, Reserve, co-efficient of variation in operating profit. The findings showed that Private telecommunication is mor strong telecom operator sector in India. Bharti Airtel emerges as India's top mobile phone operator in 2009-10.

Al Refai and Hassan (2018)[6] have used the heteroscedastic market model with EGARCH (1,1) specification in order to examine the effects of impact of market-wide volatility on time-varying risk. For the study, the daily sector returns from the Qatar Stock Exchange for the period ranging from 2007–2015, have been obtained. Their study reveals that the overall market volatility affects the large sectors equally as the small ones.

STATEMENT OF THE PROBLEM:

As we have seen that telecom industry is the most volatile industry and in depth research is very essential in this field because it guides the investors when and how to take decision about entry and exit in the market with specific reference to telecom shares. Stock market trends are not so easy to predict, so one need to count or consider many points like fundamental analysis of the company, technical analysis and financial analysis of the company to predict the stock market. In addition to above, this sector has gone through many ups and downs. Also, it has witnessed many mergers and acquisitions in the recent past. Heavy losses and debts have become the part and parcel of the sector and many investors have lost their money. Hence, to get the in depth knowledge about the intricacies of the stock market with respect to stock of Bharti Airtel Limited and the right time for entry and exit into the market, the researcher has selected the topic titled "**Investor Attention and stock of Bharti Airtel Limited : New Evidence From Technical Analysis**."

OBJECTIVES OF THE STUDY:

The following are the objectives of the study for the period under consideration.
1. To study the volatility in share prices of telecom sector companies during the study period i.e. 2014 to 2019.
2. To study the trends in trading volume of shares of selected telecom sector companies after major events.
3. To study the relation between trading volume and share price returns of selected telecom companies.

HYPOTHESES OF THE STUDY:

To study the said problem the researcher has considered the following hypotheses.
Hypothesis – 1

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5 Muthusamy, A. (2012). A Financial Analysis Of Selected Telecommunication Companies In India, *International Journal of Marketing and Technology*, 1-31.
[6]Al Refai, H and Hassan, G. M. (2018). The Impact of Market-wide Volatility on Time-varying Risk: Evidence from Qatar Stock Exchange, *Journal of Emerging Market Finance*, 17(2), https://doi.org/10.1177/0972652718777083

- H_0 = There is no volatility in the share prices of Bharti Airtel Ltd.
- H_1 = There is significant volatility in the share prices of Bharti Airtel Ltd.

Hypothesis – 2
- H_0 = There is no change in the trading volume of Bharti Airtel Ltd. after major events.
- H_1 = There is substantial change in the trading volume of Bharti Airtel Ltd. after major events.

POPULATION OF THE STUDY:

All the telecom companies engaged in the service provision in India are considered as population of the study.

SAMPLING METHOD AND SAMPLE SIZE:

Sampling of Telecom Sector Companies
- The researcher has used *purposive sampling* technique for the purpose of selection of company for the study. The company having *pan India presence* and **subscriber wise and revenue wise top** company which is *listed on the stock exchange* was selected purposefully. The selected telecom sector company is Bharti Airtel Limited.

Sampling of Share Price Data
- In view of the selection of company and their performance on the bourses (BSE and NSE) the data of share price variation during the study period i.e. 2014 to 2019 was collected from the NSE website i.e. https://www1.nseindia.com/live_market/dynaContent/live_watch/get_quote/GetQuote.jsp?symbol=EXCEL by adopting the *census method.*

DATA COLLECTION:

Primary Data Collection

Since, this study dealt with the stock prices and the volume of the shares traded in the BSE and NSE bourses, no primary data was collected.

Secondary Data

The study is based on secondary data completely. The secondary data has been collected from the National Stock Exchange website which contains data related to stock prices and volume. The Telecom company considered for the study is-

Bharti Airtel Limited. Daily returns for the stocks of Bharti Airtel Limitedhave been calculated to measure the volatility and volume have been considered to measure the liquidity of the same.

Company Profile

India stands in a second position in the world with reference to the telecommunication market as she has a subscriber base of around 1.17 billion and has shown all signs of strong growth. The Indian mobile economy is growing quickly and contribute markedly to India's Gross Domestic Product.

The government has promoted reforms in the telecom sector and continues to be pre-emptive in providing scope for growth and progress for telecom companies. The telecom sector after witnessing various mergers and acquisitions is currently in a consolidation phase.

The following tables will disclose the facts related to subscriber base and revenue market share of the top telecom companies.

Subscriber Base	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Bharti Airtel	205.39	226.02	251.24	273.65	304.19	325.18
Vodafone	166.56	183.8	197.95			
Idea Cellular ltd.	135.79	157.81	175.07	404.43	433.91	394.84
Reliance Communication	110.89	109.47	102.41	83.5	0.19	0.02
Reliance Jio				108.68	186.56	306.72

Revenue Market Base	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Bharti Airtel	31.6	34.4	34	31	29	29.2
Vodafone	27	24.7	24.7	40.7	31	30.6
Idea Cellular ltd.	28	29.3	32.8			
Reliance Communication	7.6	5.4	3.6			
Reliance Jio				22	31	30.9

The above figures are self explanatory to highlight the information about the top telecom companies. Out of these 5 companies Reliance Jio is not listed.

Bharti Airtel Limited (NSE: BHARTIARTL) is an Indian global telecommunications Services Company based in New Delhi, India. It operates in 16 countries across South Asia and Africa. Airtel provides GSM, 3G, 4G LTE and VoLTE mobile services, fixed line broadband and voice services depending upon the country of operation. Airtel had also rolled out its voice over Long Term Evolution technology across seven telecom circles namely Mumbai, Maharashtra and Goa, Madhya Pradesh, Chhattisgarh, Gujarat, Andhra Pradesh &Telangana, Karnataka, Chennai and Kolkata in India. It is the second largest mobile network operator in India and the third largest in the world with over 429 million subscribers. Airtel has got 278.6m subscribers in India with a market share of 23.59%. This top 10 telecom companies in India was estimated to have revenue of around $15 billion in 2017 with more than 25,000 employing serving this biggest telecom company in India. Ownership: Bharti Enterprises (64%) and Sing Tel (36%) Market Share: 24.85% .

STATISTICAL TOOLS FOR ANALYSIS OF DATA:

In this study, we have considered stock volume and volatility aspects of technical analysis. For processing the volume of the stock and volatility of the stock, the following tools have been used in the study.

Volatility

Volatility refers to the dispersion of returns during a certain period of time for stocks, security or market index which have been statistically measured. The standard deviation or the variance of the security or stock gives the volatility measure.

The formula for daily volatility is computed by finding out the square root of the variance of a daily stock price. Daily Volatility Formula is represented as,

Daily Volatility Formula = $\sqrt{\text{Variance}}$

Further, the annualized volatility formula is calculated by multiplying the daily volatility by a square root of Annualized Volatility Formula is represented as,

Where,

Rt- daily return of stock i

- average return of stock i

T- Time in days for which return has been calculated

LIMITATIONS OF THE STUDY:

The present research work has following shortcomings/limitations:

1. The research is based on secondary data completely due to very nature of the topic.
2. Analysis involves use of limited technical tools. The researcher has not taken into account all indicators/techniques/tools of technical analysis i.e. Dow Theory, charts, support and resistance level, Fibonacci number and stochastic etc because of certain reasons like the major focus of the study being the volume of the stock and volatility thereof. Hence only those methods of processing have been considered which are required for computing the volatility and trading volume.
3. The researcher has focussed only on last 6 years for the analysis (i.e. 2014 to 2019) as various developments have taken place during this period so this period was crucial for the telecom sector as there was wide spread consolidation.
4. The conclusion drawn in this study is based on the data collected for a specific time period; hence it may or may not be applicable at large for the longer duration. So we can't predict the prices of the stocks for long term.

DESCRIPTIVE STATISTICS:

Bharti Airtel Limited

Table 1.1:Descriptive Statistics of volume and return of the stock of Airtel for 2014

Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	242	0	2622742	311618.4	±274890.5	3.559	21.723
Returns	242	-4.84	5.46	.0395	±1.59694	.418	1.206

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.1 presents descriptive statistics of volume and return of the stock of Airtel for the year 2014. Mean volume of the stock was 311618.4±274890.5 (with variation between 0 and 2622742). In addition to it Skewness value of the stock was 3.559 while the kurtosis value was 21.723. Mean returns of the stock was 0.0395±1.59694 (with variation between -4.84 and 5.46). However skewness value of the stock was .418 while the kurtosis value was 1.206.
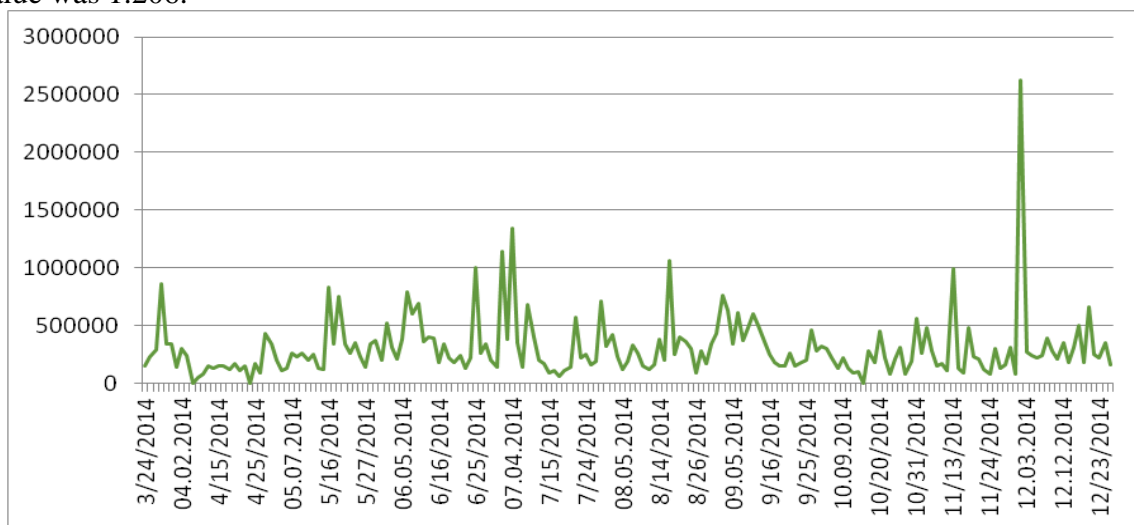

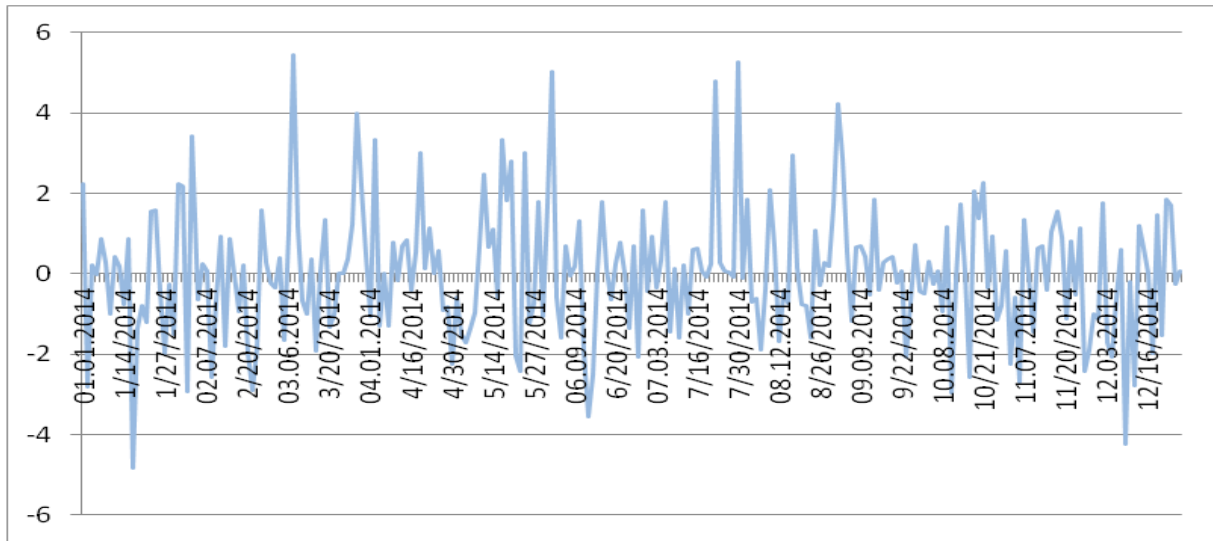**Fig 1.1(a): Volume of Bharti Airtel for 2014**

Fig 1.1(b):Returns of Bharti Airtel for 2014

Table 1.2: Descriptive Statistics of volume and return of the stock of Airtel for 2015

Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	243	0	1722731	277796.49	±230493.270	2.508	8.808
Returns	243	-5.64	7.09	.0076	±1.86863	.350	1.374

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.2 presents descriptive statistics of volume and return of the stock of Airtel for the year 2015. Mean volume of the stock was 277796.49±230493.270 (with variation between 0 and 1722731). In addition to it skewness value of the stock was 32.508 while the kurtosis value was 8.808. Mean returns of the stock was 0.0076±1.86863 (with variation between -5.64 and 7.09). However skewness value of the stock was.350 while the kurtosis value was 1.374.
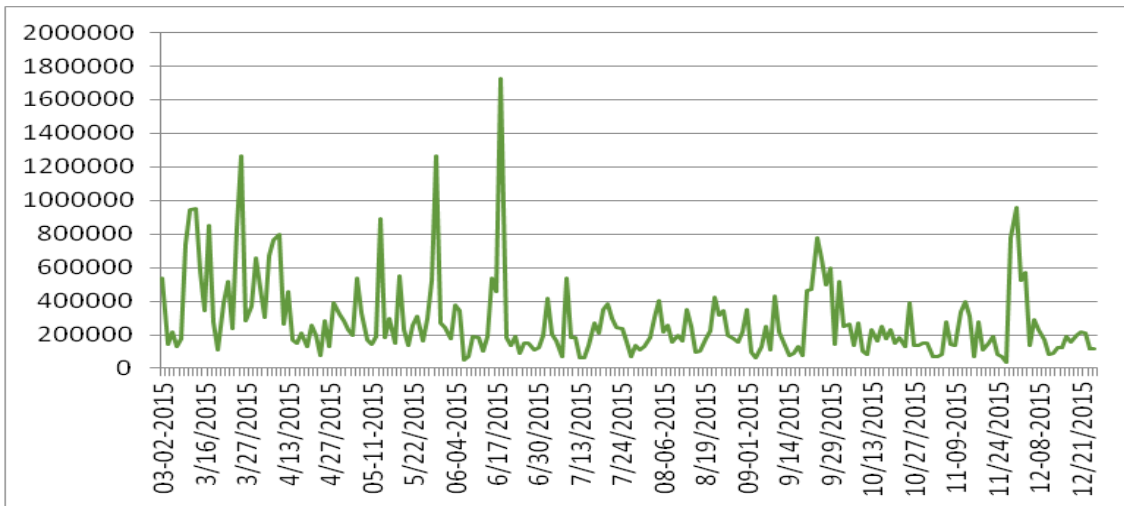

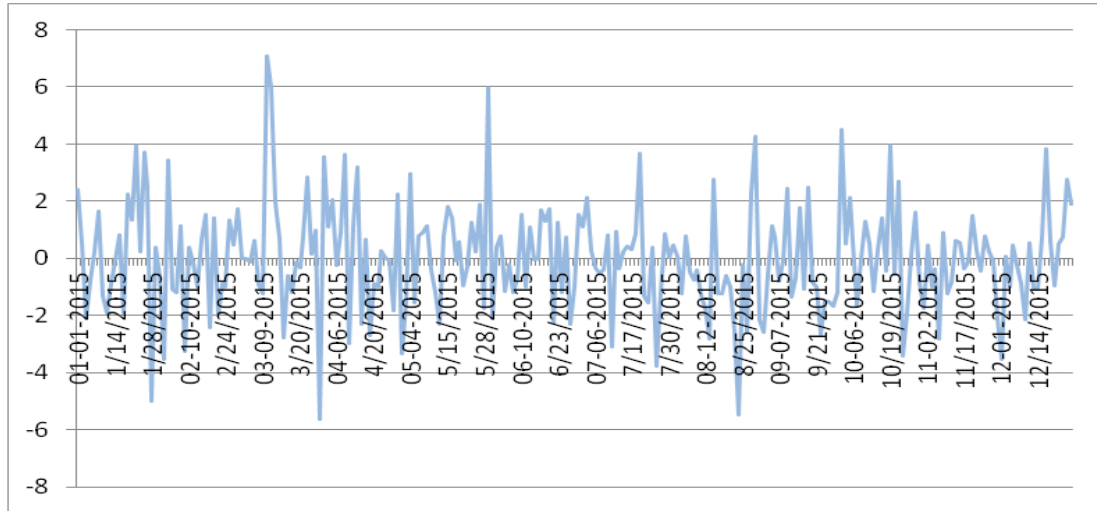**Fig 1.2(a):Volume of Bharti Airtel for 2015**

Fig 1.2(b): Returns of Bharti Airtel for 2015

Table 1.3 Descriptive Statistics of volume and return of the stock of Airtel for 2016

Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	243	34387	7215534	298629.97	±655972.839	8.383	80.207
Returns	243	-6.37	5.53	-.0341	±1.71395	-.111	1.107

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.3 presents descriptive statistics of volume and return of the stock of Airtel for the year 2016. Mean volume of the stock was 298629.97±655972.839 (with variation between 34387 and 7215534). In addition to it skewness value of the stock was 8.383 while the kurtosis value was 80.207. Mean returns of the stock was -0.341±1.71395 (with variation between -6.37 and 5.53). However skewness value of the stock was -.111 while the kurtosis value was 1.107.
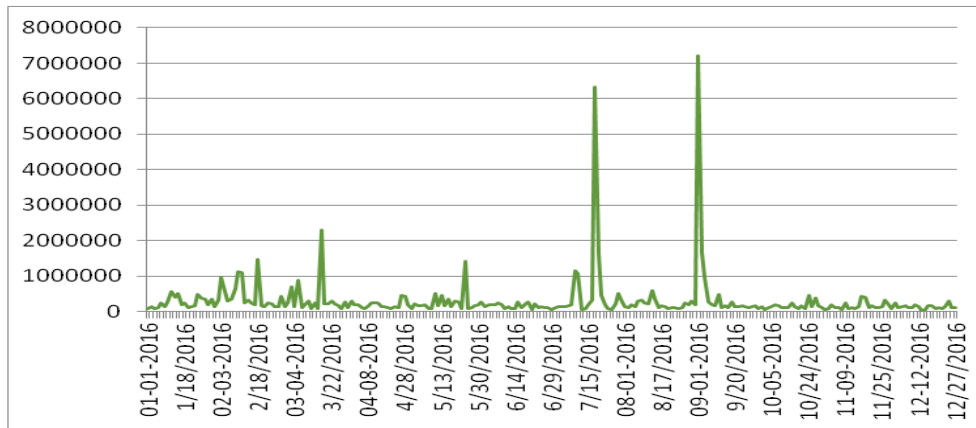

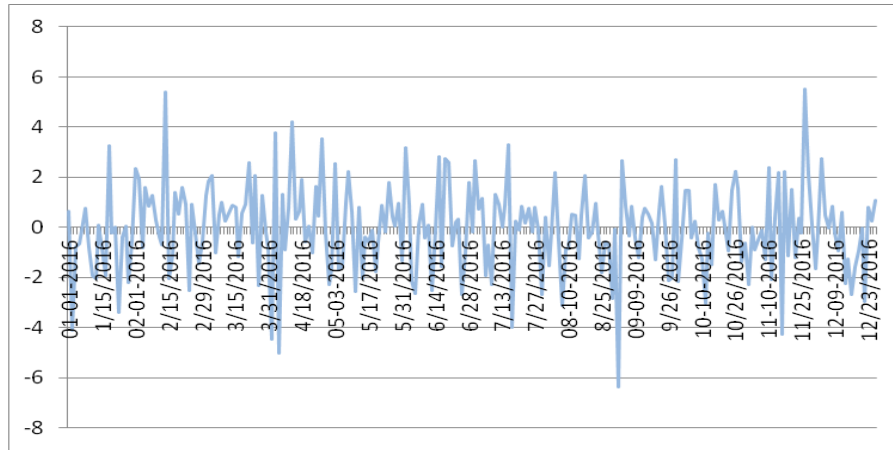**Fig 1.3(a): Volume of Bharti Airtel for 2016**

Fig 1.3(b): Returns of Bharti Airtel for 2016

Table 1.4: Descriptive Statistics of volume and return of the stock of Airtel for 2017

Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	248	22575	279514756	2313500.06	±21260981.004	11.673	139.886
Returns	248	-4.98	8.19	.2452	±1.84857	1.314	4.261

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.4 presents descriptive statistics of volume and return of the stock of AIRTEL for the year 2017. Mean volume of the stock was 2313500.06±21260981.004 (with variation between 22575 and 279514756). In addition to it skewness value of the stock was 11.673 while the kurtosis value was 139.886. Mean returns of the stock was .2452±1.84857 (with variation between -4.98 and 8.19). However skewness value of the stock was 1.314 while the kurtosis value was 4.261.
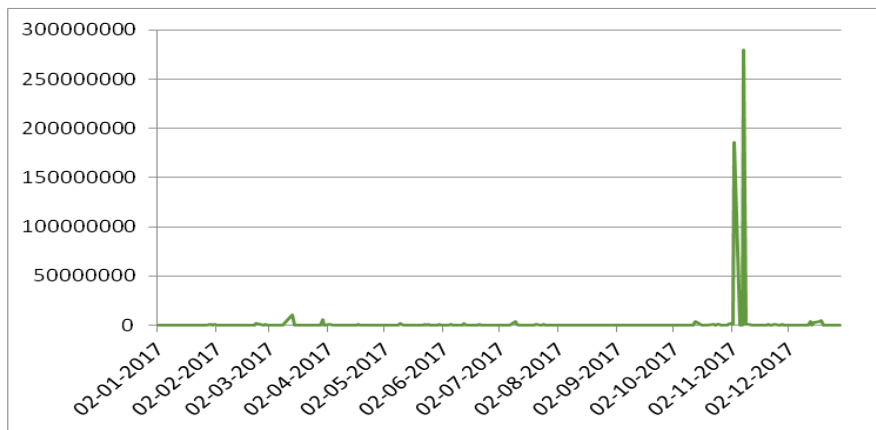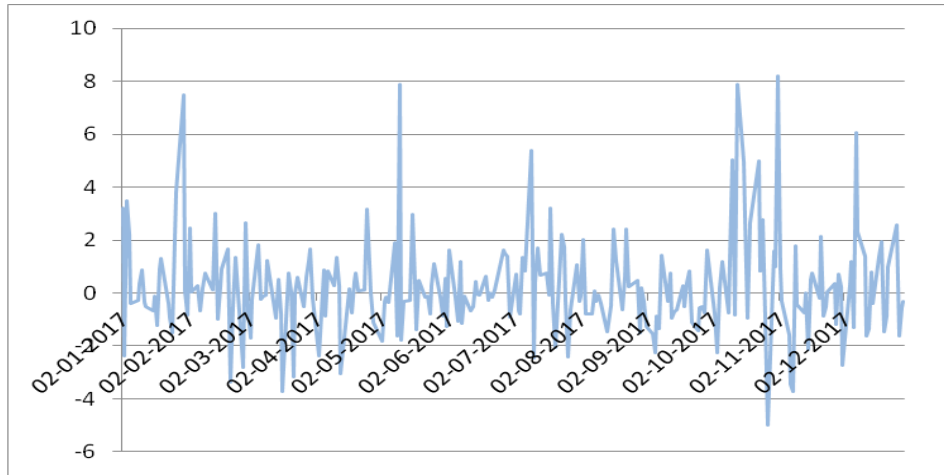

Fig 1.4(a): Volume of Bharti Airtel for 2017

Fig 1.4(b): Returns of Bharti Airtel for 2017

Table 1.5: Descriptive Statistics of volume and return of the stock of Airtel for 2018

Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	247	18074	39137203	722176.38	±2841127.214	10.963	139.524
Returns	247	-6.60	10.79	-.1802	±2.22821	.813	3.841

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.5 presents descriptive statistics of volume and return of the stock of Airtel for the year 2018. Mean volume of the stock was 722176.38±2841127.214 (with variation between 18074 and 39137203). In addition to it skewness value of the stock was 10.963 while the kurtosis value was 139.524. Mean returns of the stock was -.1802±2.22821 (with variation between -6.60 and 10.79). However skewness value of the stock was .813 while the kurtosis value was 3.841.
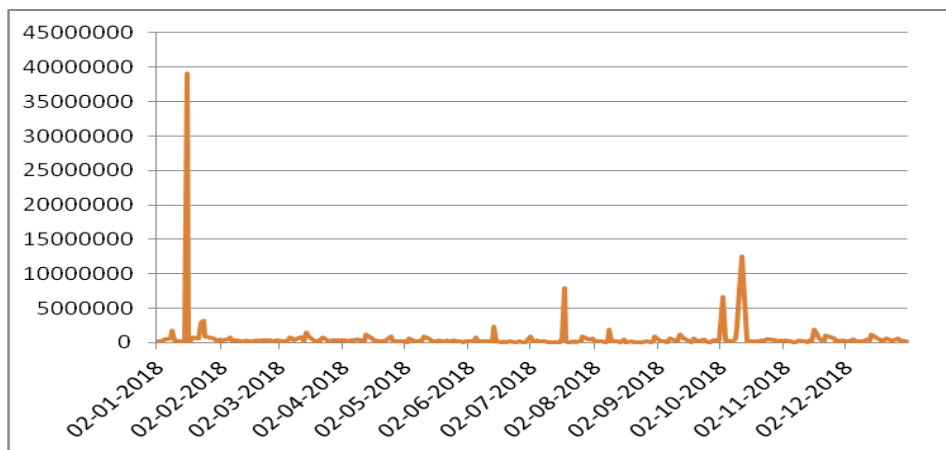

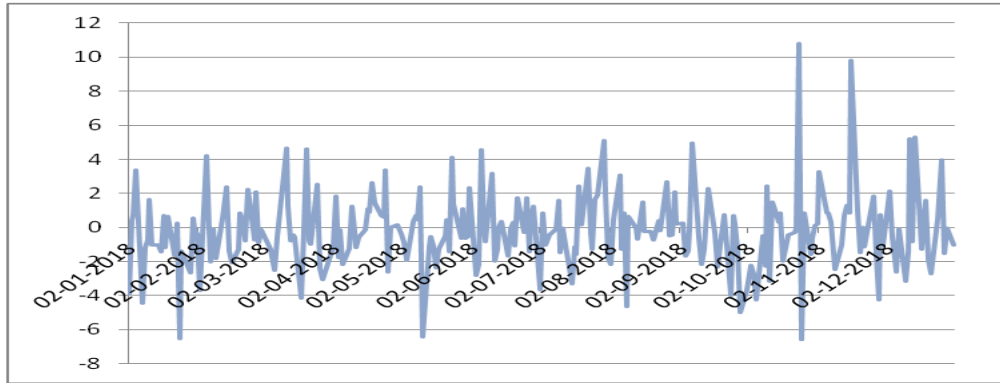**Fig 1.5(a): Volume of Bharti Airtel for 2018**

Fig 1.5(b): Returns of Bharti Airtel for 2018

Table 1.6: Descriptive Statistics of volume and return of the stock of Airtel for 2019

Bharti Airtel	N	Min.	Max.	Mean	±SD	Skewness	Kurtosis
Volume	244	68703	14607920	544473.9	±1101287	9.271	111.39
Returns	244	166.312	360.85	236.1827	±40.65011	0.722	0.769

Min: Minimum; **Max**: Maximum, **SD**: Standard Deviation

Above table 1.6 presents descriptive statistics of volume and return of the stock of Airtel for the year 2019. Mean volume of the stock was 544473.9±1101287 (with variation between 68703 and 14607920). In addition to it skewness value of the stock was 9.271 while the kurtosis value was 111.39. Mean returns of the stock was 236.1827±40.65011 (with variation between 166.312 and 360.85). However skewness value of the stock was 0.722 while the kurtosis value was 0.769.
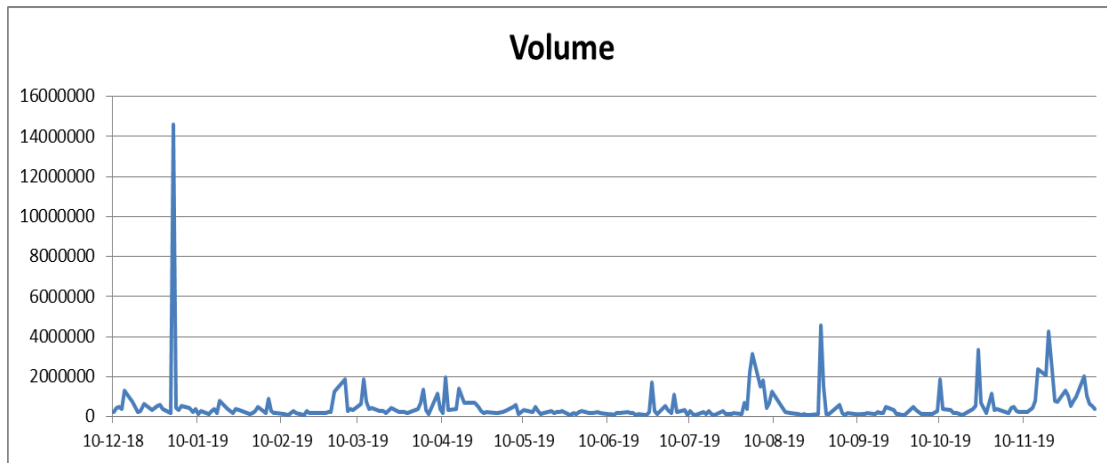

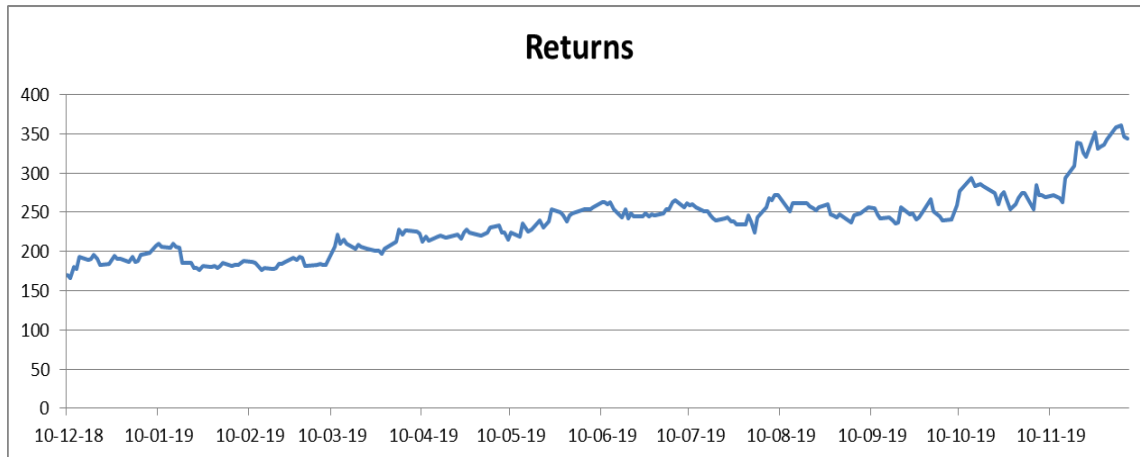**Fig 1.6(a): Volume of Bharti Airtel for 2019**

Fig 1.6(b): Return of Bharti Airtel for 2019

FINDINGS
1. To study the trends in trading volume of shares: Descriptive Statistics of Volume of the Stock
1) **Bharti Airtel**
- **Year 2014**:Average trading volume of Bharti Airtel stock during the year 2014 was 311618.4±274890.5.
- **Year 2015**: Average trading volume of Bharti Airtel stock during the year 2015 was 277796.49±230493.270.
- **Year 2016**: Average trading volume of Bharti Airtel stock during the year 2016 was 298629.97±655972.839.
- **Year 2017**: Average trading volume of Bharti Airtel stock during the year 2017was 2313500.06±21260981.004.
- **Year 2018**: Average trading volume of Bharti Airtel stock during the year 2018 was 722176.38±2841127.214.
- **Year 2019**: Average trading volume of Bharti Airtel stock during the year 2019 was 544473.9±1101287.

The study results show that there was a significant variation in trading volume of the stock during the years 2014 to 2019. Apart from the 2014 and 2019 years the trading volume data of Bharti Airtel showed non-normal distribution.

Findings
2. To study the trends in trading volume of shares: Descriptive Statistics of Volume of the Stock
1) **Bharti Airtel**
- **Year 2014**:Average trading volume of Bharti Airtel stock during the year 2014 was 311618.4±274890.5.
- **Year 2015**: Average trading volume of Bharti Airtel stock during the year 2015 was 277796.49±230493.270.
- **Year 2016**: Average trading volume of Bharti Airtel stock during the year 2016 was 298629.97±655972.839.
- **Year 2017**: Average trading volume of Bharti Airtel stock during the year 2017was 2313500.06±21260981.004.
- **Year 2018**: Average trading volume of Bharti Airtel stock during the year 2018 was 722176.38±2841127.214.

- **Year 2019**: Average trading volume of Bharti Airtel stock during the year 2019 was 544473.9±1101287.

    The study results show that there was a significant variation in trading volume of the stock during the years 2014 to 2019. Apart from the 2014 and 2019 years the trading volume data of Bharti Airtel showed non-normal distribution.

3.Findings Related to Volatility Determination (Historical):To study the volatility in share prices of Bharti Airtel Ltd.

1)   Daily and Annual Volatility of Bharti Airtel Stock during 2014-19

- **Daily Volatility**: In view of the study results it is evident that there is an increase in the volatility of Bharti Airtel Ltd. Stock from the year 2014 to 2019. Based on the data it is concluded that during the study period high volatility (2.22%) was evident during the years 2018 and 2019.
- **Annual Volatility**: In view of the study results it is evident that there is an increase in the volatility of Bharti Airtel Ltd. Stock from the year 2014 to 2019. Based on the data it is concluded that during the study period high volatility (34.73%) was evident during the years 2018.

4.To study the relation between trading volume and share price (returns): Findings Related to Relationship between Volume and Returns

1)   Correlation between Volume and Returns of Bharti Airtel

- **Year 2014**: The data showed that there is significant positive relationship between volume and returns of Bharti Airtel in the year 2014 (r^2= .127,P<0.05).
- **Year 2015**: The data showed that there is positive relationship between volume and returns of Bharti Airtel in the year 2015 (r^2= .113, P=not significant).
- **Year 2016**: The data showed that there is significant negative relationship between volume and returns of Bharti Airtel in the year 2016 (r^2= -.136, P<0.05).
- **Year 2017**: The data showed that there is negative relationship between volume and returns of Bharti Airtel in the year 2017 (r^2= -.117, P=not significant).
- **Year 2018**: The data showed that there is negative relationship between volume and returns of Bharti Airtel in the year 2018 (r^2= -.030, P=not significant).
- **Year 2019**: The data showed that there is positive relationship between volume and returns of Bharti Airtel in the year 2019 (r^2= .094, P=not significant).

Hypotheses Testing
Hypothesis – 1

- H_0 = There is no volatility in the share prices of Bharti Airtel Ltd.
- H_1 = There is significant volatility in the share prices of Bharti Airtel Ltd.

Daily and Annual Volatility data for the Bharti Airtel Stock Trading during the study period (2014-19)

	2014	**2015**	**2016**	**2017**	**2018**	**2019**
Daily Volatility	1.61%	1.86%	1.72%	1.82%	2.22%	2.22%
Annual Volatility	24.97%	29.10%	26.77%	28.72%	34.73%	34.60%
No. of Trading Days	242	244	243	248	245	244

Hence, in view of the above, it is evident that there is significant change in the volatility of share prices of Bhrati Airtel. Hence, the null hypothesis is rejected and the alternate hypothesis which states that *"There is significant volatility in the share prices of Bharti Airtel"* is **accepted**.

Hypothesis – 2

- H_0 = There is no change in the trading volume of Bharti Airtel Ltd. after major events.
- H_1 = There is substantial change in the trading volume of Bharti Airtel Ltd.after major events.

Trading volume can help an investor identify momentum in a security and confirm a trend. In view of its importance the change in the trading volume of Bharti Airtel Ltd. stock was studied through the trend analysis. The results of this analysis are presented in sections **1.1, 1.2, 1.3** and **1.4**. The trend analysis indicated that there was significant ($p<0.05$) change in the trading volume after major events. Hence, the null hypothesis is rejected and alternate hypothesis, which states that "*There is substantial change in the trading volume of Bharti Aritel Ltd. after major events*", is **accepted**.

CONCLUSIONS:

Volume and Return of the Stock

Volume is counted as the total number of shares that are actually traded (bought and sold) during the trading day or specified set period of time, which is a measure of the total turnover of shares. The trading volume (a measure of the total shares that have changed hands for a specific time period) data of the telecom sector companies showed a remarkable variation when assessed on an annual scale. The highest average trading volume for Bharti Airtel stock during the year 2017 was 23.1 lacs. This shows that the Bharti Airtel stock was least traded in terms of volume on the Indian bourses during the study period.

In view of the study results it is concluded that there is noticeable difference in the daily volatility of the Bhrati Airtel which is listed on the Indian bourses. Based on the data it is concluded that on daily as well as annual basis least volatility was evident for the stock of Bharti Airtel Ltd.

Relationship between Volume and Returns

The statistical analysis of the data pertaining to volume and returns for stocks of Bharti Airtel Ltd, during the study period indicated that there is a significant ($p<0.05$) positive relationship between these parameters.

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