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# Relationship between Trading Volume and Stock Return Volatility: A Descriptive Study

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**ABSTRACT**

The present paper is an Endeavour to test whether there is a relationship between trading volume and stock return volatility or not by doing thorough analysis of respective review of literature. For this purpose various articles of different time horizon were analyzed. Most of the studies observed a positive contemporaneous relationship amoung the above said variables and both the variables have impact on each-other with bi-directional impact. But some studies have found only uni-directional impact among the two variables. These studies conclude that stock price is determined through market demand and market supply. During the initial day of week market remains at peak in comparison to later days of the week.

## 1. Introduction

Stock market is a key concept and plays a crucial role in the economic development of a country. The relationship between trading volume and stock return volatility provides an insight into structure of financial markets. Both can be defined as a subject that has been researched in emerged markets and but in emerging markets this subject of study is coming out of its nascent stage. Most of the empirical studies in developed markets that provide evidence on the relationship between trading volume and stock returns volatility. But it has a different aspect in developing countries. Trading volume and stock return are counted as two major pillars of the stock market which have expository power to provide a transparent map of the microstructure of the capital market in more depth. However, these factors may contain valuable information about securities and provide guidelines to investors for taking rational investment decisions.

## 2. Review of literature

Literature review is the first step of any research work wherein we have to identify a problem on the basis of prior research. The present study is based on systematic review that gives a comprehensive picture of the empirical studies conducted for a time frame from 1970 onwards to the latest study available at national and international levels. A brief description of the various studies in chronological order has been discussed hereunder:-

**Crouch (1970)** declared that the stock price changes are directly concerned with the demand and supply of the stocks. The reason behind his point is for short period of time supply of the stock in the market is fixed and is held by the investors and after fixing, any change in the stock's price will change investor's perception and motivate them to reshuffle their position. The change will directly affect on the demand and supply of the stocks. The expert or the market maker, who knows about this change, will quickly change the price of the stocks. Again here price changes will not be shifting and market maker regularly accepting orders. But beyond a point it will be hard for market maker to provide liquidity in the market and suddenly there will be a drastic change in the prices to induce investor community to provide liquidity. So if say it in simple words, there should be some correlation between the transaction volume and change in the prices of security. In crux, in this study stock price changes in short period when supply is constant, they are directly affected by the demand curve of the stocks. It also underlined that stock price and demand curve are positively correlated in some way or the other in short period of time when supply is fixed.

**French (1980)** observed the trading volume and stock return relationship under the different hypothesis which includes calendar time hypothesis and active trading hypothesis. It found that in calendar time hypothesis the chance of the expected return on Monday is three times higher than expected return on other days of the week and has been same for all the days of the week.

**Richard *et al.* (1993)** examined that return series have both days of the week and time of the day effect. They take one more step ahead by saying that volume series is dominated by the time of the day effect. They have found that the relationship between volumes and return is asymmetric. Moreover, the relationship is stronger for positive returns than for non-positives ones. They also highlighted that return cause volume and volume cause return changes unidirectional. They had taken 15 minutes data on stock return and trading volume from international markets to assess intraday relationship. Therefore, according to them, the time of the day effect is much dominating than the day of the week effect.

**Pyun*et al.* (2000)** did their firm level investigation and analysis by using 15 individual stocks listed in the Korean stock market from 1990 to 1994. The focus of their research was that the relationship between volatility spillover and information flow for firms with different sizes. Their findings show that total trading volume reduces the GARCH effect and volatility spillover occurs only from large to small firms but it not vice versa.

**Chen, Anlin and Tu Eva (2002)** examined the stock returns determination in emerging markets of Taiwan in his work "The Determinants for Stock Returns in Emerging Markets: The Case of Taiwan". They observed whether the value of stocks is affected by risk elements or firm characteristics by applying factor model (CAPM).Their study confirmed that these risk elements have significantly but not sufficiently impact on value of stock. However, size as well as book-to-market value is significantly affected by the risk elements.

**Daniel *et al.* (2002)** investigate extensive evidence about how psychological biases affect prices and investor behaviour. The paper argued that limited attention and overconfidence caused investor blind faith about the strategic incentives of informed market participants. It highlighted that, political participants as well as individuals remain subject to the biases and self-interest they exhibit in private settings. The paper suggested that private planners and government should establish rules to improve efficiency and choices, including reporting, disclosure, advertising, and default-option-setting regulations. The paper also suggested that economists should study how regulatory and legal policies can limit the damage caused by imperfect rationality.

**G.Louis and K.Andrew (2003)** analyzed intraday price volatility of S&P 500 and Nikkei stock indices, Newyork and Tokyo stock exchanges, in respect of trading volume and stock return. They found that there have been significant short run impacts of trading volume and stock return which have been shown by non linear pattern.

**Abraham (2005)** examined the predictors of stock returns in his study "An exploration of earnings whispers forecasts as predictors of stock returns" by applying miller price optimism model. He hypothesized heterogeneous expectations to compare high differential stock and low differential stocks and found that high differential stock have significantly lower returns in future in comparison to low differential stock. He termed high differential stock as glamour stock and low differential stock as volume stock.

**Ravindra and Wang (2006)** analyzed the Asian markets in context to the relationship between trading volumes to stock indices. They have analyzed six developing markets in Asia over 34 months up to Oct. 2005. It was found that causality extends from the stock indices to trading volume in South Korean market. On the other hand, in Taiwan market causality has been observed in reverse order.

**Anirut and Abeyratna (2007)** examined the dynamic and causal relationship among trading volume, return volatility and stock returns. They observed that relationship between trading volume and stock return is asymmetry which means that increment and decrement in the indicators is not in the same proportion. So, stock returns and trading volume can be described by the past dynamics of volume and stock return volatility. However, stock return and trading volume indicate some valuable points or information to describe future dynamics of volatility in returns. They have been found that trading volume has high significant power to predict future dynamics in comparison to others.

**Nowbusting and Naregadu (2009)** analyzed the stock return, volatility and trading volume on Stock Exchange of Mauritius (SEM), 36 stocks have been studied by them and for the purpose of relationship six indices were constructed. They have used mixture of distribution hypothesis, where volume is taken as a proxy for the rate of information arrival and various models were used by them including Arch, Garch and GJR-TGarch. The paper found very weak evidence of positive relationship between volatility and trading volume. Moreover, bad news affect volatility more than good news, though the significance of the asymmetric terms in the conditional variance.

**Pathirawasam.Chandrapala (2011)** analyzed the relationship between trading volume and return in his study entitled "The relationship between trading volume and stock returns" by taking sample of 266 stocks of Colombo Stock Exchange from 2000 to 2008 for his study. His study revealed a positive correlation between contemporary change in trading volume and stock returns by adopting Jagadeesh and Titman model. Along with, the study proved that this positive relationship can work more in developed markets in comparison to developing markets where positive effect of trading volume on stock returns is less.

**MT.Raphael (2012)** examined the relationship between trading volume and stock returns in JSE Securities Exchange South Africa. His study revealed that there is always positive correlation between contemporary change in trading volume and stock price. Along with, his study also concluded that past returns does not affect trading volumes and past returns just seems to provide information for investment.

**Gangopadhyay*et al.* (2013)** attempted to provide evidence that insider purchases were inversely related to the idiosyncratic volatility of stocks. It was found that stock idiosyncratic volatilities were generally inversely related to future 6- and 12-month returns. Results of the paper were primarily driven by the timing of insider sales rather than insider purchases. The results were consistent with an information-based explanation of firm-specific return volatility.

**Alkhazali.Ahmad Salem (2014)** identified the relationship between trading volume and volatility in stock price and casual relationship between them from 2000-2014 for 15 years. He analyzed his data with the help of Noise-Trader model (which assumes that investors rely upon rumors and inaccurate information and not able to understand the grow indicators) and found there is no significant statistical relationship between trading volume and stock returns at Amman Stock Exchange. His study also revealed that the relationship between trading volume and stock prices is one-way at Amman Stock exchange.

**Chandra. A (2014)** attempted to establish the relationship between trading volume and return i.e. whether net FII trading volume cause variation in stock market return or vice- versa. He examined the direction of causality between FII trading

 

volume and stock return in Indian context in his study "Cause and Effect between FII Trading behaviour and Stock Market Returns: The Indian experience". He found in his study unidirectional causal relationship between trading volume and stock return.

**Samman.HA& Jafari.MK (2015)** studied trading volume and stock return volatility for industrial firms listed on Muscat Securities Market in Omen under the title "Trading Volume and Stock Return Volatility: Evident from Industrial firms of Omen" The study results provide evidence for a significant positive effect for return volatility on trading volume by using VAR model and Granger causality test. The second main purpose of the study was to derive a conclusion whether the results of such a relationship are consistent with the weak-form of the efficient market hypothesis.

**Mustafa.Adeel et.al. (2016)** investigated relationship between trading volume and stock return entitled 'Investigation of Relation between Stock Returns, Trading Volume, and Return Volatility' in Pakistan Economy on the basis of secondary data from January 2012 to March 2016. Their main conclusions included that negative shock has a greater impact on volatility and investors are more prone to the negative news whereas good news has greater positive impact on stock return and there is a strong relationship exist between the trading volume, stock return and stock volatility.

**Sahota.Gurleen&Singh.Balwinder (2016)** examined the casual relationship between trading volume and return in their study entitled "The Empirical Investigation of Casual Relationship between Intraday Return and Volume in Indian Stock Market" by taking 35 stocks into account of S&P CNX Nifty during April 2007 to March 2011. Their study found that majority of stock had no causal relationship between trading volume and return of the securities. However, their study found a significant causal relationship between trading volume and return for some securities.

**Kumar. Satish (2017)** attempted to analyze the contemporary and causal relationship between trading volume and volatility in the Indian currency future market for selected currency pairs in his study entitled "Revisiting the Price-Volume Relationship: A cross currency evidence". He observed four pairs of currency i.e. USD-INR, EUR-INR, GBP-INR and JPY-INR by applying generalized method of movement and Granger causality model. He concluded that there is a positive contemporaneous relationship between future returns and trading volume in unidirectional way.

**Onoh.JO and Ukeje.OS (2017)** analyzed the Nigerian Capital Market in their study entitled "Trading Volume and Market Turnover in the Nigerian Capital Market: Implications to Stock Market Returns" The study found the effect of trade volume and market turnover on daily stock return of the Nigerian Stock market using secondary data obtained from daily trading in the market for the period of 15 years. The study concluded that the volume of trade had a negative but significant effect on stock returns and the turnover at the market had a positive and significant effect on the stock market returns

**Chen,S. et al (2018)** exposed the relationship between volume and price in stock market, in their study entitled" Forecast of stock price fluctuation based on the perspective of volume information in stock and exchange market". They hypothesized whether the inclusion of value information really contribute to the prediction of the volatility of the stock price by applying the stochastic volatility with volume (SV-VOL) model based on the APF-LW simulation method. They have found that stock markets volume information is helpful to the prediction of stock price volatility.

## 3. Research Methodology

The present study is descriptive or explanatory in nature. Inter-studies comparison has been done. So, comparative analysis has been applied on the present study. The observed studies applied different statistical tools like Arithmetic Mean, Maximum, Minimum, Standard Deviation, co-efficient of Variance, Skewness, Jarque-Bera, KurtosisSerial Correlation, Factor Analysis, T-test, ANOVA, Multivariate data analysis technique, Augmented Dickey Fuller test, and Granger Causality test, GARCH (1,1), EGARCH (1,1), and GMM (Generalized Method of Moments).etc.

## 4. Analysis and Interpretation

On the basis of different articles study, it could be said that there is a positive contemporaneous relationship between trading volume and stock return volatility.Most of the studies observed a positive contemporaneous and causal relationship amoung the above said variables and both the variables have impact on each-other with bi-directional impacts. But some studies have found only uni-directional impact amoung the two variables. These studies conclude that stock price is determined through market demand and market supply. During the initial day of week market remains at peak in comparison to later days of the week. The significant positive relationship between these two variables is often found in developed countries in comparison to underdeveloped country. The studies also observed that bad news have more effect on stock market than good news.

## 5. Further scope of the study

The present paper employs the description of the relationship between trading volume and stock return volatility in the different stock market. This paper could be considered as effective prime for further studies on this topic because the investigator has been able to overcome numerous drawbacks of previous studies and likewise sample size can be increased as per the comfort of the researchers. There is dire need to connect these two variables with a focus to understand the return variability in the stock markets.

## 6. Concluding remarks

1. There is a positive contemporaneous and causal relationship between trading volume and return volatility.
2. Both the variables (trading volume and return volatility) have impact on each-other with bi-directional impacts. But some studies have found only uni-directional impact among the two variables.

3. Some studies found lead-lag relationship between the above said variables.
4. The studies conclude that stock price is determined through market demand and market supply.
5. During the initial day of week market remains at peak in comparison to later days of the week.
6. It was also observed that bad news have more effect on stock market than good news.

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