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THE RELATIONSHIP BETWEEN TRADING VOLUME AND PRICE VOLATILITY OF SHARES IN THE NAIROBI SECURITIES EXCHANGE

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Abstract

This study intended to examine the price- volume movements in the NSE, in order to determine the impact of changes in trade volume on the volatility of stock prices. Traded volume is the measure of how many trades take place for a security or on an exchange on a given trading day. A high trading volume is an indicator of a high level of interest in a security at its current price. The research design was a correlational study and the population of study consisted of all the 20 companies forming the NSE20 – share index by December 31, 2011. The sample consisted of 14 companies continuously forming the NSE 20-share index between the periods January 2007 – 31st December, 2011. Secondary data for the period was collected from NSE data bank. Purposive sampling was used. The sample of 14 was based on the fact that some companies such as Uchumi Ltd and CMC motors had been suspended while Athi River mining co, Safaricom and Equity bank were included in the index in 2008 and Kenol Kobil was removed from the index in 2009. Volume of shares was computed using the average monthly traded volumes while share price volatility was determined using the standard deviation. Karl pearson's correlation co-efficient model was used for the purpose of analysis to determine whether there exist a relationship between the variables. A regression model was also used to further assert the outcome of the study. The T-tests were below 0.5 which was insignificant and the R^2 also were below 0.5 indicating that major variations of price were explained by other variables other than changes in traded volumes. It was concluded that there is a weak correlation between traded volume and the share price volatility of listed firms at the NSE. It is however recommended that a study of similar nature to be carried out on all the listed companies to give a more varied and valid conclusion.

Key words: *Trading volume, Stock price volatility*

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Since the stock market crash of October 1987 there has been substantial interest in research on why stock returns and volatility are propagated across world markets. The focus on trading volume equally follows from the view that trading volume is a good proxy for the degree of heterogeneity in investors' opinions and beliefs (Tauchen & Pitts, 1983). The securities exchange markets are equally witnessing a new trading environment, due to globalization, liberalization, and integration of the world economy, which lead to introducing new practices in the last two decades in the majority of stock exchanges. Examples of such practices are; the linkages increase among the world stock markets, the increase in share of foreign ownership, the increase share of cross border stock trading transactions, using the alternative trading system (ATSs) for stock trading, using of internet as a mean of stock trading, which changed the environment of stock trading decisions, and changing of the floor trading to a screen based trading (Sabri, 2007).

Karpoff (1987) cites many studies that document a positive relation between price volatility and trading volume in financial markets. Despite so many empirical studies on the volatility-volume relation, there is no general consensus about what actually drives the relation. In particular, since trading volume for a time interval (e.g., daily volume) can be decomposed into two components, the number of trades and size of trades, the volatility-volume relation could in principle be driven by either one or both components. The theoretical models suggested thus far do not agree on the role of trade size in the volatility-volume relation. On the one hand, some models show that informed traders prefer to trade large amounts at any given price (Kim & Verrecchia, 1991). Trade size is likely to be positively related to the quality of information possessed by them and will therefore be correlated with price volatility. On the other hand, other models indicate that a monopolist informed trader may camouflage his trading activity by splitting one large trade into several small trades (Admati & Pfleiderer, 1988). Thus trade size will not necessarily convey adverse information. Few studies provide empirical evidence on the roles of the number of trades and size of trades in the volatility-volume relation.

Besides the number of trades and size of trades, order imbalance or net order flow (the difference between buy and sell orders) may play a role in the volatility-volume relation. Yet previous empirical studies always investigate how volatility (measured by either absolute return or squared return) is correlated with trading volume or the number of trades. They simply ignore an important prediction of the market microstructure models (Kyle, 1985) that price volatility is induced by net order flow. In this model, the market makers cannot distinguish whether a specific buy or sell order is from an informed trader or a liquidity trader. The market makers will therefore infer information from the net order flow, and will revise the price upward (downward) when there are excess buy (sell) orders. Such behaviuor is supported by many empirical studies e.g. Glosten & Harris (1988) and Huang & Stoll (1997) that find trade indicator variables (buyer-initiated and seller-initiated trades) are quite successful in explaining intra daily movements in prices and quotes. Hence, the volatility-volume relation could be at least partially driven by the relation between stock returns and the daily order imbalance.

1.2 TRADING VOLUME AND STOCK PRICE VOLATILITY

Trading volume is the measure of how many trades take place for a security or on an exchange on a given trading day. A high trading volume is an indicator of a high level of interest in a security at its current price. Llorente, Guillermo, Roni, Gideon & Jiang (2002) argue that there are two components in trading volume: One arises from investors' hedging demands while the other is due to investors' speculative needs. In their model, two groups of investors are endowed with different information with respect to the expected returns of traded assets, but within a group the investors are homogeneous. Investors' hedging demands arise from the correlations between the expected returns of traded assets and the payoffs of non-traded assets. Speculative demands reflect the trades of investors with superior information. Since superior information can cause information asymmetry among investors, trading volume reflecting investors' speculative demands can reduce liquidity (Koski & Michaely, 2000). Chalmers & Kadlec (1998) document that both the effective spread and turnover increase with return volatility. Baker & Stein (2004) asserts that high trading volume reflects the participation of overconfident investors, which is driven by high investor sentiment. High investor sentiment can also cause different opinions between investors with rational expectations on asset prices and investors with distorted asset valuations. If high investor sentiment leads to a higher level of speculative demand, as suggested by Baker & Wurgler (2004), Llorente et al (2002) model would also suggest a positive relation between investor sentiment and trading volume.

Kotze (2005) posits that volatility measures variability, or dispersion about a central tendency — it is simply a measure of the degree of price movement in a stock, futures contract, or any other market. Studies conducted by Levine & Zervos (1998) reveal that being a part of the financial system, Stock Market plays a crucial role to the economic growth of the country. Volatility can actually be used as a surrogate risk. If there is a rise in the volatility it can be interpreted as a rise in the risk and the investors can think of switching the investment to less risky investment. Thus volatility in the stock market acts as a parlance to frame the investment strategy by the investors. Sabri (2008) posits that the following factors may be considered as the most causes for increasing stock price volatility that may lead to stock market crisis in both developed and emerging economies; Changes in deposit interest rate, changes in exchange rate of Arab national currencies, changes in volume of stock trading, the capital flow of equity portfolio from and to securities markets, introducing new options and interaction attached to the listed underling shares, changes in the index future and index options rates of the listed underling shares, falling of international and leading stock price indices, changes in bond yields issued by the listed companies and change in volume of traded bonds issued by the listed companies. However, the majority of these presented factors may not be applicable to the NSE because of the following reasons; first the size of the NSE is still limited, secondly the trading share of cross-listed firms and foreign trading is still limited and immaterial, thirdly the connections to international and leading stock markets are weak and insignificant as reported by various studies and lastly the options and future securities markets does not exist. Thus, the volume factor remains the most important factor that may drive the volatility of stock price movements. The concept of the volume impact is built on the fact that prices need volume to move, thus, the high volatility of stock prices may be produced as consequence of volume volatility and trading activities (Blume, Mackinlay & Terker, 1989).

The boom experienced at the NSE in the recent past has resulted to an increase in the volume traded, with securities market registering increased activity especially with initial public offers. The growth has been attributed to the high growth rate registered by the Kenyan economy in the last three years and the changing international perception of Kenya as a secure investment destination. Kalui (2004) states that companies quoted at the NSE experience high stock price volatility. He found that stock price volatility at the NSE between 1998 and 2002 was a high of 21.2%; with the industrial and allied sector recording the lowest at 15.3%. The highest stock price volatility was registered in the year 2000 at 31.9% and the lowest during this period of study in 2001 at 12.8%. In 1991, Kenya introduced equity stock as recorded in the most recent trading session ended as a measure to mitigate the high volatility of equity stock prices. Given the above background, this study makes an attempt to examine the relationship between trading volume and share price volatility for companies quoted at the NSE.

1.3 PROBLEM STATEMENT

In finance, considerable attention has been given to understand the relationship between return, volatility, and trading volume. Price-volume relationship is important because this empirical relationship helps in understanding the competing theories of dissemination of information flow into the market. The concept of the volume impact is built on the fact that prices need volume to move, thus, the high volatility of stock prices may be produced as consequence of volume volatility and trading activities. Trading volume can contain information on how security prices evolve over time. For instance, Chordia, Tarun, Avanidhar & Ravi (2001) argues that trading volume reflects liquidity. They find that stocks with lower trading volume earn higher expected returns as a liquidity premium. Lee & Swaminathan (2000) on the other hand, argue that trading volume does not measure liquidity. They find that momentum profits depend on the past level of trading volume. Since high- (low-) volume winner (loser) stocks experience faster return reversals, trading volume plays a role in reconciling intermediate-term momentum with long-term reversal on stock returns.

Investors at the NSE are worried as the market remains turbulent with stock prices dipping to new levels. This happens as discussions intensify over whether the bearish trend is due to the global recession, effects of 2008 post-election violence or lowering investors' confidence. The bear market between January 2 and March 31 2009, the NSE-20 share index dropped from 3,589.16 points to 2,805.03 points with market capitalization falling from Sh863 billion to Sh689 billion. Apart from the global recession, the NSE has also been hit by a number of regulatory and governance issues. Kalui (2004) states that companies quoted at the NSE experience high stock price volatility. He found that stock price volatility at the NSE between 1998 and 2002 was a high of 21.2%; with the industrial and allied sector recording the lowest at 15.3%. The highest stock price volatility was registered in the year 2000 at 31.9% and the lowest during this period of study in 2001 at 12.8%. The concern to be addressed by this study is whether the volatility in share prices is due to changing volumes traded of the individual shares.

Various studies in different stock markets reported that there are significant relationships between volume and stock price movement and volatility, due to the fact that trading volume is a source of risk because of the flow of information. Saatccioglu & Starks (1998) found that volume lead stock prices changes in four out of the six emerging markets. Säfvenblad (2000) found that Swedish index returns exhibit high autocorrelation when trading volume is low. However, Jones, Charles, Gautam & Lipson (1994) found that the positive volatility-volume relation documented by numerous researchers reflected a positive relationship between volatility and the number of transactions. In Kenya, Kalui (2004) identified a list of factors including payout ratio, leverage, size, and growth in assets as some of the factors that cause share price volatility at the NSE. In his analysis, he however pointed out that there are other factors that may affect share price volatility with a specific recommendation on the study of dividend policy on stock price volatility. It is on this platform that trading volume is also being addressed by this study as one of the factors that may have an effect on the volatility of share price volatility.

Kiptoo (2010) also conducted a study to examine the relationship between selected macro-economic variables and share prices proxied by NSE 20 share index for the period covering 19887 to 2008. The result obtained showed that there is indeed significant relationship between NSE 20 share index and inflation and NSE 20 share index and exchange rate. Other variables used also indicated the existence of a relationship but the relationship was insignificant such as NSE 20 share index and interest rates, money supply and gross domestic product. The studies done in Kenya addresses other factors affecting share price volatility other than trading volume including; macro-economic variables, dividend payment policies, payout out ratio, leverage, size and growth in assets of the company. However, results of studies in other countries show a relationship between share price volatility and trading volume. This study therefore represents an attempt to address the question: Is there a relationship between trading volume and share price volatility in the NSE?

1.4 RESEARCH OBJECTIVES

1. To determine whether share prices of listed companies are volatile
2. To determine the relationship between trading volume and price volatility of shares in the NSE

2.0 LITERATURE REVIEW

This study is anchored on three theories which include random walk theory, signaling and chaos theory.

2.1 Random walk theory

The concept of random walk was first developed by Bachelier (1900). He found that a successive price change between two periods is independent with zero mean and variance depends upon interval between two periods. The early studies on testing the weak form efficiency on the developed stock markets, generally agree with the support of weak-efficiency of the market considering a low degree of serial correlation (Fama, 1970). Porterba and Summers (1988) confirmed the presence of mean reverting tendency and absence of random walk in the U.S. Stocks. Lo and McKinney (1999) proposed variance ratio test to test random walk hypothesis. Their findings provided the evidence against random walk hypothesis for the entire sample period of 1962 to 1985. Fama and French (1988) discovered that forty percentage of variation of longer holding period returns were predictable from the information on past returns for U.S. Stock markets. Stock prices follow a random walk which is connected to that of the efficient market hypothesis. Reilly & Brown (2007) argue that for a capital market to be termed as efficient several assumptions are made. An initial and important premise of an efficient market requires that a large number of profit maximization participants analyze and value securities independently. A second assumption is that new information regarding securities comes to the market in a random fashion, and the timing of one announcement is generally independent of others. The third assumption is profit maximizing investors adjust security prices rapidly to reflect the effect of new information.

2.2 Signaling theory

Why should firms signal? Firms will signal only if there is an economic advantage to be gained from signaling and if information asymmetry in the market negatively impacts on their value. Signaling is essentially a unique strategic communication tool used by the firms to bridge an undesirable communication gap. Spence (1973) revealed three important conditions necessary for signaling which are: Information asymmetry, the benefits of signaling must outweigh the cost of signaling and there must be a signaling equilibrium which prevents signals from being mimicked by perceived bad firms. In their seminal work, Miller and Modigliani (1961) acknowledged that dividend changes influenced stock prices and attributed this phenomenon to the information content of dividends. They assert that dividend payments reflected management's assessment of future earnings. Under the asymmetric information environment, a firm's dividend policy is important because it conveys information about future earnings. An increase (a decrease) in current dividends indicates that firm's future earnings are likely to rise (fall). Lintner (1956) in his study of dividend policy suggest that dividends are changed when there is a permanent change in firm earnings. Fama, Fisher, Jensen & Roll (1969) argued that when stock splits are accompanied by dividend announcements, there is an increase in adjusted share price for the group that anounced dividend increase and a decline in share price for the group that decreased dividend.

2.3 Chaos Theory

This is a relatively new approach to modeling nonlinear dynamic systems like the stock market. Chaos theory analyzes a process under the assumption that part of the process is deterministic and part of the process is random. Chaos is a nonlinear process which appears to be random. Chaos theory is an attempt to show that order does exist in apparent randomness (Mauboussin, 2002). By implying that the stock market is chaotic and not simply random, chaos theory contradicts the efficient market hypothesis. In essence, a chaotic system is a combination of a deterministic and a random process. The deterministic process can be characterized using regression fitting, while the random process can be characterized by statistical parameters of a distribution function. However, contrary to the belief under MPT and CAPM, the stock market is a dynamic (or non-linear) system. Chaos theory is the study of these dynamic systems. Many systems in life are dynamic, such as the beat of your heart, evolution, and even the structure of your brain. Current changes in dynamic systems, such as movement in stock prices, are dependant on past changes, like past stock price movement. Corrado and Jordan (2005) assert that an underlying principle of chaos theory is the concept of sensitive dependence on initial condition. Sensitive dependence on initial condition states that the smallest change in the initial state of a dynamic system has a drastic effect on its future behavior. This explains Bachelier and later economists' belief that stock prices moved in a random walk. The slightest miscalculation of what affects stock prices would cause any long-term predictions to be widely inaccurate making the movement of prices looks totally random (Kotze, 2005).

2.4 EMPIRICAL LITERATURE REVIEW

Sabri (2008) examined the price- volume movements in the Arab stock markets, in order to determine the impact of changes in trade volume on the volatility of stock prices as expressed by the unified MAF stock price index. The research covered a sample of eight out of the fifteen Arab stock markets included in the Arab Monetary Fund database, using monthly data from 1994 to 2006. The study found that there is an increasing relationship in both trading volume and stock price volatility, which may be considered as a recent phenomenon in the majority of the Arab stock markets. Another study by Sabri (2002) reported various causes for increasing stock return volatility that may lead to stock market crises. These causes include overreaction to noise trading, reaction to earning announcements and fundamentals, liberalization of stock markets, foreign trading and volatility of cash flow to equity markets, increasing correlation between the world stock indices, transmission of volatility due to changing of bonds yield, deposit interest rates and changing in exchange rates. Increasing linkages between developed and emerging stock markets lead to increase the correlation between their stock price indices (Sabri, 2002). The majority of stock market experts considered declining international stock indices as being the most risky factor in destabilizing the other national stock markets, thus increasing stock price volatility.

Kalui (2004) analyzed factors that caused stock price volatility for companies quoted at the NSE. In his study he identified payout ratio, size, earning volatility, and assets growth to be some of the factors causing stock price volatility. His model explained 21.6% of stock price volatilities for companies listed at the NSE between the years 1998 to 2002. He found out that stock price volatility at the NSE was high at 21.2%, compared to returns of 1.095%. The study further found out that stock price volatility at the NSE between 1998 and 2002 was a high of 21.2%; with the industrial and allied sector recording the lowest at 15.3%. The highest stock price volatility was registered in the year 2000 at 31.9% and the lowest during this period of study in 2001 at 12.8%.

3.0 RESEARCH METHODOLOGY

3.1 Research design

The research design used was a correlational study. Mugenda & Mugenda (2003) explains that a correlational research is used to explore the relationship between variables and this is consistent with this study which seeks to establish the relationship between trading volume and price volatility of shares.

3.2 Target population

The target population was 20 firms (Refer to appendix 1) that makes up the 20-share index on the NSE as at December 31, 2011. The NSE 20 Share Index tracks only 20 of the highest market capitalization companies across each sector listed on the Kenyan Securities Market. Its justification is that it is updated every day after the markets have closed and by looking at it, a person can understand the performance and trends regarding prices and volumes of the NSE without having to check the individual stock prices.

3.3 Sample and sampling

The study used purposive sampling. This sampling technique is one where the items for the sample are selected deliberately by the researcher and the researcher's choice concerning the items remains supreme (Kothari, 2004). The exact sample size consisted of 14 companies consistently making up the NSE – 20 share index between January 1 2007 and December 31, 2011. The sample of 14 is based on the fact that some companies such as Uchumi Ltd and CMC motors had been suspended while Athi River mining co, Safaricom and Equity bank were included in the index in 2008 and Kenol Kobil was removed from the index in 2009. Uchumi was however re-introduced into the index in 2011.

3.4 Data Collection

The research was based on secondary data. This study used selected monthly data, which gives enough time for trading price movement in response to volume movement. For example, Gervais et al (2001) found that individual stocks whose trading is extraordinarily large over a period of a week tend to experience large returns over the next month. The trading volume in stock markets may be expressed by the number of trades, number of traded shares and by the value of trading. This study used the number of shares traded per month. Thus, the monthly data for both traded volumes and share price from 2007 to

2011 was included in this study. The amount of data collected was 840 data points for share price and traded volume (14 companies x 12 Months x 5 years).

3.5 Data Analysis

Share price changes react to changes in trading volume; this implies that for this study, share price changes are dependent on the traded volume. Share price changes are as given by the NSE data base for each of the companies. The volatility of share price was determined by calculating the standard deviation of the shares on a monthly for each of the 14 companies. Subsequently, in order to investigate the stock price-volume movements, the correlation coefficient was calculated based on the linear association between the annual averages of the two main variables for each of the selected 14 companies, this revealed the magnitude and direction of relationship between share price changes and trading volume. To confirm further the extent to which volume affects price movement, a regression model of the form given below was used

$Y = a + bX + e$

Where Y = Average share price

X = Average Volume

e = Error term

A test of statistical significance for the correlation coefficient was then performed using the t-test.

4.0 DATA ANALYSIS

4.1 Trading volume and stock price volatility

Average trading volume and the relative average share price were used in the analysis. Share price volatility was computed using the standard deviation of the monthly share prices. The volume factor remains the most important factor that may drive the volatility of stock price movements.

4.2 Correlation co-efficient, Co-efficient of determination, standard deviation, and T-test

Share price volatility was determined by calculating the standard deviation of each of the companies share prices. In order to investigate the stock price-volume movements, the correlation coefficient was calculated based on the linear association between the two main variables including the average monthly traded volumes and the average prices of each of the selected 14 companies. This reveals the magnitude and direction of relationship between share price changes and trading volume. A t-test was then used to test the significance of relationship. The analysis was done for each of the companies. Some of the analyses are as given below:

Table 4.1 Regression analysis for Rea Vipingo

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.146[a]	.021	-.077	4.42658	.021	.217	1	1.E1	.651

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 shows that volume is a poor predictor of price. It depicts only 2.1% of the variations in price is due to changes in volume. The F ratio indicates that the model is not significant at a 5% level of significance.

Table 4.2 Regression analysis for Nation media group

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.276[a]	.076	-.016	20.13376	.076	.823	1	10	.386

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 also confirms that the negative correlation is very low. Only 7.6% of the variations in price are due to variations in volume

Table 4.3 Regression analysis for Barclays bank

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.328[a]	.107	.018	5.13491	.107	1.201	1	10	.299

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

Table 4.4 Regression analysis for Express Kenya

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.196[a]	.039	-.058	1.34916	.039	.401	1	10	.541

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 indicates that volume is a poor predictor of price. It depicts that only 3.9% of the variations in price are due to changes in volume. The F ratio indicates that the model is not significant at a 5% level of significance.

Table 4.5 Regression analysis for Sasini Tea

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.427[a]	.182	.101	.53419	.182	2.231	1	10	.166

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The low value of R^2 however shows that only 18.2 % changes in price determined by changes in volumes traded.

Table 4.6 Regression analysis for Kenya Airways

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.237[a]	.056	-.038	6.06166	.056	.593	1	10	.459

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The low R^2 shows that only 5.6% of the price changes are due to changes in volumes.

Table 4.7 Regression analysis for Mumias sugar

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.282[a]	.079	-.013	2.42199	.079	.862	1	10	.375

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The table above shows that only 7.9% of price change is caused by changes in trading volume as depicted by R^2.

Table 4.8 Regression analysis for Kenya commercial bank

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.324[a]	.105	.016	18.93935	.105	1.173	1	10	.304

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 imply that only 10.5% of price variations are due to variations in trading volume.

Table 4.9 Regression analysis for standard chartered bank

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.115[a]	.013	-.085	5.38508	.013	.134	1	10	.722

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 shows that only 13% of price changes depend on the changes in traded volume

Table 4.10 Regression analysis for Bamburi cement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.351[a]	.123	.036	4.42951	.123	1.408	1	10	.263

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 shows that 12.3% of the changes in price are due to variations in traded volume. This value is not significant.

Table 4.11 Regression analysis for KENGEN

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.739[a]	.546	.500	.98133	.546	12.021	1	10	.006

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The table shows that 54.6% of price changes are dependent on the changes in trading volume. This is slightly significant.

Table 4.12 Regression analysis for B.A.T

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.275[a]	.076	-.017	4.34081	.076	.818	1	10	.387

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 shows that the negative correlation is low.

Table 4.13 Regression analysis for EABL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.157[a]	.025	-.073	9.04746	.025	.252	1	10	.627

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

The R^2 shows that 2.5% variations in price are as a result of variations in traded volume. This is not significant.

Table 4.14 Regression analysis for KPLC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.136[a]	.019	-.080	50.99324	.019	.189	1	10	.673

a. Predictors: (Constant), VOLUME

b. Dependent Variable: PRICE

This table shows that only 1.9% of price changes being caused by changes in volumes of shares traded.

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Share price volatility

Volatility measures variability, or dispersion about a central tendency. It is simply a measure of the degree of price movement in a stock, futures contract or any other market. The standard deviation was therefore calculated for each of the companies share prices over the period of study. Large values of standard deviation mean that share prices fluctuate in a wide range from the mean. The share prices of the companies show low values of standard deviation implying that there is low share price volatility during the period of study.

5.2 Relationship between trading volume and price volatility

This study intended to determine whether changes in share prices of listed companies depend on the number of shares traded. The co-efficient of correlation calculated are below 0.5 showing that there is a weak correlation between share price and changes in traded volumes. Companies like Rea Vipingo (Table 4.1); Nation media group (Table 4.2); Barclays bank (Table 4.3); K.C.B (Table 4.8); Bamburi Cement (Table 4.10) and KPLC (Table 4.14) show negative correlation between share price and traded volume during the period of study. This explains that the changes in share price of these companies is not affected by changes in the volume of shares traded, hence no relationship. KENGEN (Table 4.11) recorded the highest positive correlation between the two variables at 0.7388 but the R^2 shows that only 55% of the share price changes depended on the changes in the traded volumes.

5.3 Conclusions

This study sought to investigate whether share prices are volatile and the relationship between trading volume and share price volatility of firms listed in the Nairobi securities exchange. The study concludes that the share prices are volatile. This implies that share prices vary over time on a month to month basis as shown by the different values of standard deviation of the prices. It can also be concluded that changes in share prices have a weak positive correlation with the number of shares traded. This indicates that major variations in share prices are explained by other variables other than the traded volumes. This result raises a number of issues that could be addressed in future research regarding the specific variables that affect share price changes. This conclusion regarding to the NSE is inconsistent with the studies related to other markets, specifically the Arab and Latin American market which found that the volume volatility represents the most predicted variable of increasing price volatility, and both volume and prices are integrated with each other.

Sabri (2002) found that there is an increasing relationship in both trading volume and stock price volatility, which may be considered as a recent phenomenon in the majority of the Arab stock markets. The study also found that the volume- stock price movements are significantly integrated for all selected markets, while the highest correlation coefficient between volume and stock price movement was found in Saudi stock market, Amman stock market, Muscat stock market and Kuwait stock market respectively.

5.4 Recommendations

The study recommends that the finance managers of various listed firms on the NSE take cognizance of the findings in this study as a starting point to understand factors that influence price volatility of traded securities. It further shows that trading volume does not explain major variations in the changes in securities prices at the NSE. Finance managers with the need to achieve the wealth maximization objective should look at other factors that might influence the share price volatility other than traded volume of shares. Although there are many empirical studies on the volatility-volume relation, there is still no general consensus about what actually drives the relation and this should be a concern for the Finance managers of listed companies. The study also recommends to the investors not to concentrate on monitoring traded volumes before making an investment decision at the NSE as this does not significantly signal capital gain.

5.5Limitations of the study

The study has various limitations, first the study relies on averages of the five years; averages are subject to the effect of extremes that may not give a clear picture of the possible outcomes. The limited time and resources was partially the reason for the dependence on the averages. Secondly, only 14 companies are studied during the five year period. Although this represents the different sectors, a clearer picture would still be established if all listed companies are studied. Lastly, changes in the price of shares are a function of many factors including key macro economic variables. This study therefore only gives a partial analysis.

5.6 Suggestion for further research

The study of similar nature should be carried out using different methodology such as regression to find out if the findings of this hold. Further, this study generalized the findings from all the sectors and it raises the question of whether the findings could hold for each sector. A study should therefore be carried out to specifically find out the nature of the relationship for each sectors and not a market as a whole as addressed in this study. Other than traded volumes, there are various factors that could affect the share price volatility. A study needs to be carried out to determine if there exist a relationship between share price volatility and risk management by examining the effect of automation in Nairobi securities exchange on the volatility and efficiency of shares traded. The context of the study (NSE) has in recent past realized tremendous growth in Technology like the adoption of electronic trading which has improved the market efficiency making the study proposed study viable.

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