DBA AFRICA MANAGEMENT REVIEW

THE MEDIATING EFFECT OF TRADING ACTIVITY ON THE RELATIONSHIP BETWEEN MARKET INFORMATION RISK AND PRICE DISCOVERY FOR STOCKS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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Abstract

Besides being one of the yardsticks for assessing the quality of financial decisions by management in the maximisation of shareholders wealth, stock markets around the world provide unparalleled investment destination for investors. Consequently, the structure and design of a financial market for stocks must continuously attempt to discover efficient market clearing prices in order to attract investor who will then initiate and continuously participate in the activity of trading. The objective of the study was to determine the mediating role of trading activity (TA) on the relationship between market information risk (MIR) and price discovery (PD) for stocks listed at the Nairobi Securities Exchange and it was anchored on market microstructure theory. This study followed the positivist paradigm and was guided by correlational descriptive research design. The population for this study was all sixty six companies listed at the NSE with the unit of analysis being stocks trading at the stock market for the period of six months using 60 minute frequency intraday day data. Using the quantitative data, the hypothesis was tested using correlation and Hierarchical multiple regression analysis. The findings from Sobel tests found that the relation between the independent variable, MIR and the dependent variable, PD, was affected by the introduction of trading volume indicator of TA as a mediating variable. However, number of transactions did not mediate the relationship between MIR and PD. Trading activity based on the trading volume to number of transactions ratio composite was found to significantly mediate relationship. Market microstructure frictions play a central role in shaping the platform for risk sharing and price evolution. It is recommended that regulators should therefore aim at continuously designing stock markets that will facilitate efficient evolution of short-term equilibrium prices.

Key words: Market Microstructure, Trading Activity, Market Information Risk, Price Discovery, Stocks Listed at NSE

[1] Postgraduate Student, Department of Finance & Accounting, University of Nairobi, Nairobi, Kenya: *rchogii@uonbi.ac.ke*

[2] Professor, Department of Finance & Accounting, Faculty of Business and Management Sciences, University of Nairobi, Nairobi, Kenya

[3] Professor, Department of Finance & Accounting, Faculty of Business and Management Sciences, University of Nairobi, Nairobi, Kenya

[4] Senior Lecturer, Department of Management Science, Faculty of Business and Management Sciences, University of Nairobi, Nairobi, Kenya

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1. INTRODUCTION

Hasbrouck (2007) presents three scenarios that constitute a market microstructure distinguishing it from traditional field of finance. First, in an environment with different market participants, and sets of either private or public information, market microstructure comes in handy to offer explanation as to sources of value and reasons for value. Secondly, it permits the existence of multiple prices and varying degree of trading activity at any given time period. Lastly, the structural, technological, trading mechanisms and regulatory regime in place cumulatively define the market structure and design and this undoubtedly is a continuously shifting target and a potential candidate for this kind of study. This study is therefore a product of this conjecture and is based on the market microstructure theory as opposed to the traditional theories of classical finance. Trading activity (TA) sets the process of discovering an equilibrium price in motion through placement of orders as per the rule book of the exchange. Kandel and Pearson (1995) casts doubt on stocks having fundamental values by noting that market participants share more less the same fundamental information but may interpret it differently resulting in trading activity accompanied by multiple prices for a stock. Harris and raviv (1993), provide a description of trading activity where trading occurs because of profit motives of privately informed market participants thus introducing private information as a driver of trading activity. Investors learn from the pattern of trading activity and apply it in the placement of quotes. This implies that trading in itself is a source of information that could initiate an activity.

Trading activity is an important characteristic of any stock market in any country and it has described in various ways by different authors. Beaver (1968), notes that volume is a good measure for trading activity since it captures the magnitude of disagreement that exists with arrival of new information. However, Jones et al., (1994) states that number of transactions is an important variable whereas Chordia et al., (2007) notes that liquidity trading is based on stock visibility, difference in opinion and uncertainty about intrinsic values. Agarwal (2009) points out that turnover captures different aspects such as dispersion in beliefs induced by information difference among investors. Trading volume, an indicator of trading activity, plays a critical role in a stock market because it facilitates price discovery process by providing a platform where market participants , informed or uninformed, share risk .In this thesis, trading activity was quantified using trading volume and total number of transactions in each interval as the indicators. Cao et al., (2000) identifies continuous trading markets, call auction markets, price experimentation, and price signalling as some of the trading mechanisms in an exchange. NSE has got auction and continuous trading as market clearing mechanisms. Biais et al., (2005) documents that microstructure studies attempt to show how observed prices vary from long-term values in the short-term. The deviation arises because of frictions in the market reflecting costs of transaction, asymmetric information costs and the nature of the behaviour of participants. The price formation process in the market place is basically the question of how investors bid and ask quotes in placement of orders eventually translate to market equilibrium prices in auction or continuous markets.

The market architecture of NSE is defined and shaped by rules and regulations in place which govern the trading process from when a trade is initiated until when settlement is done. The structure of a market in the short term impact the process by which equilibrium prices are arrived at throughout the trading period by way of degree of information asymmetry and other induced frictions. The exchange is characterized by pre-open period (9.00a.m-9.30a.m), opening auction (9.30a.m), continuous trading (9.30a.m-3.00p.m), closing (3.00p.m), trade corrections (3.00p.m-3.15p.m) and trade halt period which is basically public holidays and overnight periods when trading does not take place.

The role of market information risk and intensity of trading activity in asset pricing has become a topical issue with many of the microstructure studies concentrating on either sequential or parallel market price discovery process in more mature and sophisticated markets. However, there is little evidence on how trading volume and number of transactions play out and have a mediating effect on the relationship between market information risk and price discovery in a thin emerging markets which perhaps never had microstructure data in the recent decades, a situation that technology may have changed through introduction of electronic trading. Price discovery as an important function of any exchange is undoubtedly one of the understudied and less understood in most emerging stock markets both in terms of its nature and underlying mechanisms that drive the process.

Information asymmetry and its role in explaining price formation process constitute current issues in microstructure research and an important consideration in the design of stock markets. Bakeart and Harvey (2003) noted that there are limited empirical studies on large-section of emerging markets, including Kenya, which could largely be attributed to lack of intraday data which is the standard form of data in the analysis of price discovery process. The reviewed empirical studies on intraday price discovery process has been on varying stock markets in developed economies although none offered an explanation for the likely source of contradiction. These studies can be replicated locally in order to offer some evidence and contribute to the either side of the contradiction in pursuit for a conclusive point of reference. The studies reviewed have concentrated on the nature of price discovery process in various stock markets. It is however established by both theory and empirical literature that information content of a stock could dictate the level of participation by traders and this eventually would vary the degree of trading risk and level of trading activity.

Ngugi (2002) did a study on institutional changes at NSE and its impact on trading activity and liquidity whereas Agatha (2013) focused on effect microstructure changes on market efficiency at the NSE. Other empirical studies undertaken in emerging stock markets in the region include Lukamia (2014) and Kadapakkam et al., (2003) which utilized end of the day index and end of day stock prices respectively. However, studies on price discovery are in a standard way undertaken using high frequency data. This study aims to fill this methodological gap by using intraday data for stocks listed at the NSE as opposed to end of stock prices or

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exchange indices. Empirical evidence on how market information risk and trading activity enhance or act as a constraint in the prices discovery process is essential in eventually shaping the market structure through actions of regulators and traders. Furthermore, this study has contributed to the empirical microstructure literature of Kenyan stock market and this firmly formed part of the motivation for study. The study therefore aimed at answering the following research question; how does trading activity influence the magnitude and direction of effect between market information risk and price discovery for stocks listed at the Nairobi Securities Exchange? The objective therefore was to determine the mediating effect of trading activity on the relationship between market information risk and price discovery for stocks listed at the Nairobi Securities Exchange

2. LITERATURE REVIEW

Empirical Review

Masulis and Shivakumar (2001) in a study of the speed with which information is incorporated into stock prices in markets with varying structures in the US found that indeed microstructure impacts the process either retarding or accelerating it. The authors also find that proportion of foreign investors present is an important factor other than market reforms which drives liquidity and enhanced market efficiency. This study justifies why studies of microstructure nature can be undertaken in every stock market because of their uniqueness.

Kadapakkam et al., (2003) studied Indian cross-listed stocks in LSE and particularly the role of advanced foreign market and emerging domestic market in price discovery using 23 large Indian stocks with

GDRs and trading in London for a period 1999 to 2002 using daily closing prices. The LSE opens one hour earlier than Mumbai Stock Exchange. The found ownership as far as foreign is concerned is key to price discovery especially on markets that are emerging. In as much as they linked foreign ownership to level of contribution, this study introduces MIR, trading activity and organizational characteristics variables to establish the combined effect of these factors on price discovery. Furthermore, the reviewed study focused on securities in parallel markets whereas this study was based stocks listed and trading at the NSE which utilises the WPC as opposed to IS as a measure of price discovery.

Lok and Kalev (2006) in an error correction model and how New Zealand as well as Australia behave in a cross listing found no contribution of each market in discovery of prices as far as home market is concerned. These findings are consistent with that of Bacidore and Sofianos (2002) and Solnik et al., (1996) who suggest that price discovery takes place most in the home market where substantial information originates. However, Lok and Kalev (2006) fail to show how each market contributes to price discovery process either explicitly or implicitly following the confirmation and conclusion that each market contributes to price discovery. Frijns et al., (2010) replicated the study by Lok and Kalev (2006) by studying a sample of Australian and New Zealand cross listed stocks using Information Share (IS) methodology of Hasbrouck (1995). With regard to price formation, they found that the home market was dominant compared to the foreign market. They also found that each specific and unique market structure contribute to price discovery. However, Eun and Sabherwal (2003) and

Kadapakam et al., (2003) find the foreign market dominating in price discovery and they attribute it to higher percentage of ownership in the cross listed stocks. This is a clear testimony that the debate on where price discovery occurs for cross listed stocks is not yet conclusive.

Czerwonko, Khoury, Perrakis and Savor (2012) studied how tick size and microstructure noise together with informed trading and volatility inversion influence price discovery in a theory and empirical study evidence. The findings followed that informed traders increases the efficiency of trading activities since they are able to detect information risk on the market which significantly influence price discovery process. The results further shows that tick size change is as a result of shared market information, reduced risks related to information and also concerns equities and exchange funds traded.

Harris (2013) studied how information Share in Options Markets influences announcements of earnings with volume and volatility playing moderating roles. Using panel data in a sample of 500 stocks it was established that the volume of trading significantly increases when announcement of earnings happen since the risks of market information reduces as perceived by market participants. The results further shows that information sharing relating to market has no difference significantly as far as the option market is concerned relating to either put or call with the argument that when the volume of stock trading is higher, the information concerning market is efficient, exhibiting low market risks. The results further show that volatility in prices is positively and significantly related to sharing of information in a higher level

which in turn improves price discovery process.

Kryzanowski and Lazrak (2011) examining how informed trading plays a role in price discovery among stocks listed at Toronto Stock Exchange in Canada with the findings that when either public or private information is available, the volume of trading increases significantly due to reduced bid ask spreads and increased liquidity. During periods of enhanced announcements or communication of relevant news, bid ask spreads shrink and this enhances price discovery significantly due to investors ability to monitor market risks during announcements periods and the fact that adverse selection problem is drastically minimized.

Riordan, Storkenmaier, Wagener and Zhang (2013) studied how information on newswire and trading activity influences intraday price discovery through immediacy management among electronic order market with the findings revealing that information arrival is critical in determining levels of trading activity. The implication of this finding is that adverse selection costs and intensity of trading is increased with the availability of information and where investors are believed to possess different information market reaction is induced leading to significant drop in trading intensity and volume.

Prokopiv (2019) in a paper testing informational inefficiency of stock price formation of Ukrainian companies-comparison between Ukrainian and Warsaw stock exchanges claimed that informational efficiency is impossible to achieve. This is due to the non-zero cost of information acquisition and all existing information cannot be reflected in the

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prices. Furthermore, in the real world assumptions about investors being rational cannot always hold. Not every trader is actually trading on information; some investors are uninformed and trade just due to liquidity or personal reasons. The study argues that to reach the competitive equilibrium of security prices, it is enough that the information is inexpensive. On the one hand, the incentive of acquiring information comes into conflict with the efficiency of information spread by markets leading to reduced trading activity behaviour. On the other hand, as markets evolve, price inefficiencies motivate more arbitrageurs to trade the wrongly priced assets depending on the characteristics of the individuals or organizations resulting to inefficiency in price discovery.

Brolley and Cimon (2018) studying order flow segmentation, liquidity and price discovery taking into account the role of latency delays in the review of literature found that when trading is well informed, investors will take advantage of the information available to trade largely since there would be decreased risks associated to the market. This will thus enhance the discovery of prices and liquidity will be improved on stocks and the trend may reverse significantly when information is insufficient to make trading decision as this will create many risks on the market thus making investors to engage in low trading activities.

Theoretical Review

This study was anchored market microstructure theory. The Glosten and Milgrom model (1985) lends itself to the analysis of risk neutral, informed and uninformed traders and how price emerge given the trading process in a multi-period setting by expanding Copeland and Galai (1983) into a sequential framework. This model involves a sequential trade in which traders are assumed to trade an asset with competitive risk neutral market representatives (brokers) who quote bid and ask prices and adjust quotes across time based on the trades that occur, instructions from investors (traders) and this is rooted in the assumption that there exists heterogeneous groups of traders classified as either informed or uninformed. The spread arises as result of revisions in the asset's value conditioned by observed trades which are presumed to be carriers of information. This confirms the notion that a trade in itself communicates some information and spreads implicitly represents market information risk or liquidity. This model largely incorporates adverse selection costs in making predictions especially where dealers are uninformed and make inference of stock values based on trade history. Glosten and Milgrom model (1985) make some predictions of the evolution of prices and market information risk except that it doesn't attempt to address the issue of the speed at which prices tend to move and converge in an environment with information efficiency. Kyle (1985) presents a model where a single informed investor trades a single asset together with certain number of uninformed noise traders with the source of information being both public and private. The signal that is public can be observed majorly by participants on the market in totality whereas the information known to traders perceived informed is private. Because of the fact that the traders that are informed gives higher profits, then when there is increase in those traders that are informed, then reduction in returns as well as spreads becomes inevitable. While updating their beliefs about future asset values and in quoting prices, traders factor in private

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information and insider's trading strategy. Kyle, in the 1985 model makes the prediction that, in a situation where uninformed trading is largely inelastic, trading volume increases and market information risk becomes pervasive. The models theorizes that market makers and uninformed investors experience adverse selection problem when trading with informed participants and this is the genesis of the market information risk and traders are limited in terms of the size of the trade that can be executed at any given trading day. The implication for this is that, informed traders consistently try to take advantage of the information they possess when formulating and eventual execution of buy or sale strategy. The model enables investors to understand how information mismatch and microstructure frictions can result in poor trade decision when placing quotes

3. RESEARCH METHODOLOGY

A correlational descriptive research design was adopted in the study. Kothari and Garg (2014) on research design documents that correlation analysis establishes the joint variation between or among variables of interest in a study and involved investigating stocks trading at the NSE. This study used secondary data obtained from NSE and ABACUS wealth management data stream. The intra-day data used was both quote and transactional based. This kind of data was critical in revealing some intra-day regularities at NSE such indicators as; Bid-ask spread (BAS), weighted price contribution (WPC), volatility and trading volume. Data on ownership concentration was obtained from published books of accounts for companies whose stocks trade at the NSE. The period for this study was six months (January to June 2019) for the continuous trading period at the NSE as from 9.30 a.m to 2.30 p.m. The intraday interval was of sixty minutes translating to five intervals during each trading day.

Operationalization of Study Variables

As noted by Bryman (2012), a meaningful way to understand a construct is to consider how other researchers operationalized them in their work as presented in the sections that follow.

Price Discovery

In this study, intraday WPC was utilized as proxy for price discovery over the sixty minute interval in the spirit of Barclay and Warner (1993), Cao et al. (2000), Barclay and Hendershott (2003, 2008), Huang (2002) and Ellul et al (2005).

$$WPC_{i,k} = \sum_{t=1}^{T} \frac{|r_{i,t}|}{\sum_{t=1}^{T}|r_{i,t}|} * \frac{r_{i,t,k}}{r_{i,t}}$$

Where,

$r_{i,t}$ = Return on stock i on day t. This was computed using the open - to - close weighted average volume price

$r_{i,t,k}$ = Return on stock i in interval k on day t (for k = 1,2,3,4 & 5) and (t = 1…T). The returns were computed using transaction (trading) prices in each interval

$\frac{r_{i,t,k}}{r_{i,t}}$ = Measures the contribution of the return in the kth interval relative to the open - to close return r_{it}, on day $_t$

$\frac{|r_{i,t}|}{\sum_{t=1}^{T}|r_{i,t}|}$ = This term weights the relative importance of information, over the

T day sample period of the open - to - close return on each trading day t.

Market Information Risk

Market information risk was measured at each interval using bid – ask spread by obtaining the best inside quote as per Abhyankar et al., (1977, 2001) and Llorente et al. (2002). As documented by Rusell (2006) and Lunde (2006), bid-ask quotes is a best measure as opposed to transaction prices which suffer from residual noise and bid-ask bounce effects.

$$BAS = \frac{ASK_{i,k} - BID_{i,k}}{\left(\frac{ASK_{i,k} + BID_{i,k}}{2}\right)}$$

Where,

BAS = Bid - Ask Spread

BID = Buying Price in the inside quoted

ASK = Selling price in the inside quote

i = Stock

k = Interval

Trading Activity

The proxies for trading activity used in this study are trading volume and total number of transactions as per Beaver (1968), Jones et al., (1994) and Agarwal (2009). These variables were standardized by taking their logarithm. Natural Log of total shilling value of stocks sold and bought and Natural Log of total number of both buy and sell initiated transactions.

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4. DATA ANALYSIS, RESULTS AND DISCUSSION

Data Analysis and Findings

The study sought to establish the mediating effect of trading activity on the relationship between market information risk and price discovery. In this study, mediation was tested using the causal steps approach, Hayes (2013) and sable tests. The following hypotheses were therefore formulate and tested.

H_1: *Trading volume to transaction ratio significantly mediates the relationship between market information risk and*

H_2: *Trading volume significantly mediates the relationship between market information risk and price discovery and;*

H_3: *Total number of transactions significantly mediates the relationship between market information risk and price discovery.*

Stepwise regression analysis was carried out to establish whether trading activity mediates the relationship between market information risk and price discovery through the following steps

$$PD=a_1+\beta MIR+ \varepsilon_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.Step\ 1$$

$$TA=a_2+ \beta_2 MIR+ \varepsilon_2\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.Step\ 2$$

$$PD= a_3+\beta_3 TA+\varepsilon_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.Step\ 3$$

$$Sobel\ Tets\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.Step\ 4$$

Testing of indirect effect was done as per works of Sobel (1982), (Schultheis, 2016), and Hayes, A (2013). The results are presented in the table below

Hypothesis	Step 1	Step 2 (Path 'a')	Step 3(Path 'b')	Step 4 (Sobel Tests)
H_1	R^2=0.294 F=163.923, P- p<0.05 β= 0.511, t= 12.803, p<0.05	R^2=0.092 F=39.923, P- p<0.05 β= 0.247, t= 6.318, p<0.05 SE=0.039	R^2=0.164 F=77.364, P- p<0.05 β= 0.470, t= 8.796, p<0.05 SE=0.053	*Sobel Test=5.153, p<0.05*
H_2	R^2=0.294 F=163.923, P- p<0.05 β= 0.511, t= 12.803, p<0.05	R^2=0.023 F=9.270, P- p<0.05 β= 0.154,t= 3.045, p<0.05 SE=0.051	R^2=0.078 F=33.352, P- p<0.05 β= 0.259, t= 5.775, p<0.05	*Sobel Test=2.674, p<0.05*

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			SE=0.045	
H_3	R^2=0.294 F=163.923, P- p<0.05 β= 0.511, t= 12.803, p<0.05	R^2=0.040 F=16.356, P- p<0.05 β= 1.430,t= 4.044, p<0.05 SE=0.354	R^2=0.000 F=0.063, P- p>0.05 β= 0.002,t= 0.251, p>0.05 SE=0.0.007	

The study therefore determined whether trading volume significantly mediates the relationship between market information risk and price discovery through path analysis using bootstrapping with 500 resamples to measure t-statistics and P-values as per (Chin, 1998). This facilitated the assessment of the path coefficients statistical significance.

H_1: Trading volume to transaction ratio significantly mediates the relationship between market information risk and

The overall mediation effect trading volume and number of transactions on the relationship between MIR and PD was done and a composite variable, volume – transaction ratio was estimated as per Ley (1972) who noted that composite is a variable of two or more measures that are related either statistically or conceptually and resultant variable ought to capture theoretical and logical meaning of the attribute. The ratio of volume to transactions composite variable was estimated and it deeply accounts for trends and regularities in a given trading time in an exchange (Guha and Mukherjee, 2008; Lo and Wang, 2000). The results of first step generally show that market information significantly influences price discovery and the overall model is also. Further, market information risk significantly influence trading activity with coefficient of determination R^2 of .092 and p-value<0.05. The overall model is also significant with F-value (394, 1) =39.923 and a p-value<0.05. The finding further reveals that MIR has an impact on TA with the results showing that there is a significant (t-value = 6.318) and a positive (beta = 0.247) relationship between these two constructs. In step three, results show that trading activity based on the composite significantly influence price discovery with coefficient of determination R^2 of .405 and p-value<0.05). The overall model is also significant with F-value of 77.364 and p-value<0.05.The findings showed that there is a significant (t-value = 8.796) and a positive (beta = 0.470) relationship between TA and PD.The final step involved the evaluation of the influence of the mediating variable on the relationship between MIR and PD as per Sobel – Score tests. Sobel tests indicate that the relation between the independent variable, MIR and the dependent variable, PD, was affected by the introduction of the mediating variable, TA. Trading activity as measured by the volume to transactions

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ratio composite variable was found to be mediator.

H_2: Trading volume significantly mediates the relationship between market information risk and price discovery

The results in step one reveal that market information risk significantly influence price discovery with coefficient of determination R^2 of .294 and p-value<0.05. This implies that 29.4 % variation in price discovery is attributed market information risk as measured by bid-ask spread. The overall model was also significant with F-value of 163.923 and p-value<0.05. The results also showed that there is a significant (t-value = 12.803) and a positive relationship (β = 0.511), suggesting that MIR has a significant effect on PD. The results in second step showed that market information significantly influence trading volume with coefficient of determination R^2 of .023 and p-value<0.05. This is interpreted to mean that 2.3% variation in the outcome variable (Trading volume) is explained by market information risk. The overall model has a good fit and is also significant with F-value of 9.270 and p-value<0.05. The finding further reveal that MIR has an effect on TV with the results showing that there is a significant (t-value = 3.045) and a positive (β = 0.154) relationship between these two constructs with the *p-value* being less the 0.05(p-*value=0.002).* In step three, trading volume significantly influence price discovery with coefficient of determination R^2 of .078 and p-value<0.05). The predictor variable trading volume explains only 7.8% variation in the dependent variable, price discovery with 92.2% explained by other factor or variables not included in the model. The overall model is also significant with F-value of 33.352

and p-value<0.05. There is also a significant (t-value = 5.775) and a positive (beta = 0.259) relationship between TV and PD. In step four, Sobel tests showed that the relation between the independent variable, MIR and the dependent variable, PD, was affected by the introduction of the mediating variable, TV. The relationship between MIR and PD was mediated to the extent that the relationship p-value falls below the alpha value of 0.05 and therefore mediation effect is significant which confidence < 1.96 @ 95% confidence.

H_3: Total number of transactions significantly mediates the relationship between market information risk and price discovery.

Results of step one show that market information risk significantly influence price discovery with coefficient of determination R^2 of .294 and p-value<0.05). The overall model is also significant with F-value of 163.923 and p-value<0.05. The results further showed that there is a significant (t-value = 17.407) and a positive relationship (beta value = 0.542), suggesting that MIR has an effect on PD. Step two indicate that market information risk significantly influence number of transactions with coefficient of determination R^2 of .0400 and p-value<0.05). Number of transaction explains 4% variation in MIR. The overall model is also significant with F-value of 16.356 and p-value<0.05. The finding further reveal that MIR has an impact on NT with the results showing that there is a significant (t-value = 4.044) and a positive (beta = 1.430) relationship between these two variables and p-value<0.05. However, in step three, results show that number of transactions does not significantly influence price discovery with coefficient of determination R^2 of .000 and p-

value>0.05). The overall model is also not significant with F-value of 0.063 and p-value>0.05. The findings showed that there is an insignificant (t-value = .251) and a positive but minimal (beta = 0.002) relationship between NT and PD. The insignificant values at step three therefore terminated the process of mediation and thus conclude that number of transactions does not significantly mediate the relationship between market information risk and price discover. Therefore, the total number of transactions as an indicator of trading activity is not a mediator.

Discussion of Findings

The objective of the study was to examine the mediating effect of trading activity on the relationship between market information risk and price discovery. The proxies for trading activity were trading volume and number of transactions.

The findings revealed trading volume mediates market information risk and price discovery relationship significantly. However, the study findings show that number of transaction does not mediate the relationship between market information risk and price discovery. The study supports Grossman and Stiglits (1980) who discussed the problem of possible information heterogeneity in agents' price expectations and therefore trading activity in market could be seen as largely heterogeneous. Further Information based theories also supported by the study findings with the argument that theory lends itself to the analysis of risk neutral, informed and uninformed traders and how price emerge given the trading process in a multi-period setting and also involves a sequential trade in which traders are assumed to trade an asset with competitive risk neutral market representatives (brokers) who quote bid and ask prices and adjust quotes across time based on the trades that occur (Glosten & Milgrom, 1985).

These findings are consistent to that of Bacidore and Sofianos (2002) and Solnik et al., (1996) who suggest that price discovery takes place most in the home market where substantial information originates. However, Lok and Kalev (2006) fail to show how each market contributes to price discovery process either explicitly or implicitly following the confirmation and conclusion that each market contributes to price discovery. Frijns et al., (2010) found that the home market dominant compared to the foreign market. They also found that each specific and unique market structure contribute to price discovery. However, Eun and Sabherwal (2003) and Kadapakam et al., (2003) find the foreign market dominating in price discovery and they attribute it to higher percentage of ownership in the cross listed stocks. The findings contradicts with market efficiency theory which argues that prices follow a random walk process and any information available for predicting the stock prices is already incorporated in the prices and error term being only source of uncertainty.

Conclusions

The objective of the study was to assess the mediating effect of trading activity on the relationship between MIR and price discovery. Trading activity was measured by two variables namely; trading volume and total number of transactions in each interval where they were standardized by taking their logarithm. Natural Log of total shilling value of stocks sold and bought and Natural Log of total number of both buy and sell initiated transactions. It is established that trading volume has a significant mediating effect on the

relationships between market information risk and price discovery. However, total number of initiated buy and sell transactions did not mediate the relationship between market information risk and price discovery. The act of trading in itself generates the volume and number of transactions in the market. Through trading, information is somehow revealed to the market participants and this enhances price discovery. The objective examined the effect of trading activity on the relationship between market information risk and price discovery. The structural model of this study was evaluated using the path coefficients. The current study applied bootstrapping to measure t statistics and P values. This facilitated the assessment of the path coefficients statistical significance. Sobel test table found that the relation between the independent variable, MIR and the dependent variable, PD, was affected by the introduction of the mediating variable, trading volume. The relationship between MIR and PD was mediated to the extent that the relationship p-value falls below the alpha value of 0.05 and therefore mediation effect is significant which confidence < 1.96 @ 95% confidence. Trading volume, an indicator of trading activity is a mediator. Further, number of transactions as another indicator of trading activity was subjected to the path analysis (steps one to three) for mediation. In the third step, the results of regression analysis revealed that number of transactions does not significantly influence price discover (path coefficient "b") and this ruled out proceeding to next step of computing the sobel z-test. This therefore meant that number of transactions does not mediate the relationship between market information risk and price discovery.

Contributions of the Study Findings

The studies on price discovery so far had only considered improving market efficiency through studying how consistently the market trading system affect these variables and thus the market efficiency and how the continuous system show better price determination than the fixing system, there is no study in the area that had attempted to determine the appropriate indicators of price discovery involving the components of weighted price contribution and the application of factors like market information risk, trading activity and organizational characteristics how they jointly influence price discovery. The focus of those prior studies was mainly whether trading activity is an appropriate measure of price discovery. This study contributes in the study of market information risk and price discovery by application of weighted price contribution and by decomposing market information risks into bid-ask spread which were found to have statistically significant effects. The research followed a positivist philosophical approach. The results of the study supported the postulations of the information based models of market microstructure theory. Specially, the study results which utilized generated and observed variables from participants varied strategies support the predictive value of Kyle and Milgrom models formulated in 1985. It is worth noting that market microstructure as an alternative explanation to the question of how information gets absorbed in prices is undoubtedly a topic under debate. The results of the study has contributed to the debate and forms one form of confrontation of the current issues and the

adequacy of the existing models when applied in a high frequency trading environment.

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