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Relationship Between Risk Aversion Of Individual Investors And Stock Market Participation Decision Among Secondary School Teachers From Nakuru County, Kenya

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Abstract

Participation in the stock market is important to the general economy and to individual investors. Despite the benefits of stockholding, few individuals participate in the stock market. Many researches have tried to provide explanation the reason why few individuals participate in the stock market. There was need to investigate the relationship between risk aversion and individual investor stock market participation decision among secondary school teachers in Nakuru County. The study employed explanatory research design and data was collected from 320 teachers that were selected using stratified proportionate random sampling technique. Primary data was collected using structured questionnaires. Inferential statistical techniques which included Pearson correlation coefficient and regression analysis were used to analyze the data with the aid of SPSS. The research findings found that risk aversion has a significant positive relationship with stock market participation decision of secondary school teachers in Nakuru County. The study concluded that risk aversion of individual investors has a significant relationship with stock market participation decision among secondary school teachers from Nakuru County. The study recommends that the citizens should be enlightened on the benefits of diversification and on risk analysis so that they can avoid making investment mistakes that can result in losses.

Keywords: Risk aversion, stock market participation decision, teachers

INTRODUCTION

Investment in financial securities started in 1900s in the United States and the Great Britain. Afterwards the trade spread to other continents and other countries of the world (Anderson, Born and Schnusenberg, (2010). In Africa, securities markets have been observed to be generally underdeveloped in terms of listed companies and market capitalization (Allen, Otchere and Senbet (2011). Allen, *et al.* (2011) further reveal that East Africa stock market liquidity was particularly low, in many instances having less than 1% of GDP of values in stocks traded.

Rutterford and Hannah (2016) show that initially the securities market was dominated by individual investors. In the UK for instance the institutional ownership of UK Corporate securities was less than 10% before the First World War. The study revealed that there were just but 505 institutional investors from a sample of 33,078 shareholders in the 261 registers that were obtained from 47 UK companies for the period 1870-1935 with the rest being owned by retail investors. Institutional investors owned only 4.2% of the value of these shares from 1900-1909 (Rutterford, Green, Maltby and Owens 2010). Similarly a study by Rutterford and Hannah (2016) observed that retail investors dominated the securities market up to about 1952 when the institutional investors took over the market.

Although initially the stock market was dominated by individual investors, there has been a decline in individual investor participation rates. Rutterford and Hannah (2016) report that there was low individual investor participation in the stock market which stood at 11% for the UK companies in 2016. Further, the study reported a low individual investor participation in the US stock exchange which stood at 42% in the year 2010. Ameriks and Zeldes (2000) similarly reported that many individual investors do not participate in the

market for stocks at any given time. In Kenya, the regulator of capital markets report that individual investors reduced their investments in equity from a high of twenty seven percent (27%) of the market capitalization in 2008 to a low of fourteen percent (14%) in 2010. As at 2015, the Oxford Business Group study reported that the percentage of individual investors in Kenya was 4% of total investors in the Securities Exchange Market. Generally, individual investors participating in the stock market is low in Kenya (Aduda, Masila and Osongo, 2012). However, the individual investor participation is still in decline. This implies that the stockholding puzzle is has not yet been solved.

Securities markets play a vital role in the general economy of a country. Olweny, Namusonge and Onyango (2012) found a positive relationship between the securities market and economic growth in Kenya. Demirgüç-Kunt and Levine (1996) found that countries with well-developed stock markets also had more advanced banking and nonbank financial mediating institutions like investment firms, brokerage houses and mutual funds. Contrary, countries with weak stock markets had weak financial intermediaries. This shows that the development of the market for stocks adds to the general growth of the economy since it goes hand in hand with other facets of financial development. Individual investors also stand to gain from investing in the stock exchange market. Mankiw and Zeldes (1991) found that individuals who participated in the stock exchange market enjoyed higher lifetime consumption when compared to non-participants in the stock market. Guvenen (2006) also faults stock market participation as the reason behind the great wealth disparities between the participating and the non-participating households. This implies that individuals who participate in the stock market enjoy numerous benefits that result from participating in the stock market. Therefore the importance of the securities exchange cannot be overemphasized. Therefore the study sought to provide explanations for the limited individual investor participation in Kenya.

A number of studies have provided an understanding of for instance risk aversion (Lee, Jacobsen and Berkman 2013; Gollier 2001) on participation in the stock market. In Kenya few studies have tried to explain the reasons why very few individuals participate in the stock market. There was need to provide explanations for this limited stock market participation and this study sought to fill this gap by establishing the relationship between risk aversion of individual investors and stock market participation decision for secondary school teachers in Nakuru County, Kenya.

In examining the relationship between risk aversion and stock market participation decision among secondary school teachers the following hypothesis was tested

H₀₁: There is no significant relationship between risk aversion of individual investors and stock market participation decision



Figure 1: Conceptual framework

LITERATURE REVIEW

Risk Aversion and Stock Market Participation Decision

Risk aversion is the desire for an individual to circumvent uncertainty. (Tversky & Kahnemann, 1974) define risk aversion as a preference for a certain outcome over a prospect with an equal or better expected value. According to earlier studies individuals are risk sensitive and tend to avoid risk as much as possible. Kahneman and Tversky (1979) is of the view that investors are not prudent and they are inconsistent when faced with risky choices and that they recognize risk after defining it. Therefore their risk orientation changes depending on the situation at hand.

Risk aversion has been observed to reduce the probability of stock market participation in previous studies. Gollier (2001) reported that difference in individual risk preference influences the makeup of a portfolio for retail investors. Guiso, Sapienza and Zingales (2018) conducted a survey to establish whether risk aversion was influenced by the financial crisis of 2008. Data was collected from clients from a large Italian Bank from a sample of 1,686 customers stratified according to geographical area, financial wealth and the size of City. The study revealed that risk aversion increases more for the investors who experienced very huge losses. Further, the study found that risk aversion increased even for those who had not experienced any loss. These results suggest that individuals will trade off their stocks after a fall in the prices of the securities bought.

Andersen, Hanspal, and Nielsen (2018) conducted a study that sought to examine risk taking preferences and the past experiences of

investors. Data was collected from the Danish population about investors for 20 years and above who had invested in the stocks of the local banks. The data collected contained investor information about personal data and financial data of the investors together with information about their deceased parents. The study sought to investigate the impact of the financial crisis of 2008 to check the impact that default had on the risk attitudes of investors. The study established that those who had invested in the banks experienced huge losses as a result of default and were thereafter unwilling to hold risky investments despite the inherited wealth that could cover their losses. The study's results showed that the investor's risk attitude was affected by their personal experiences to a great extent and that the experiences of close family members influence their risk taking minimally. Using the logit model, the study reported that the individuals living where the head offices of publicly listed banks were located had increased the chances of investing by 3.8% before the financial crisis. Further, the study found that stock market participation rates dropped significantly in banks that had defaulted after the crisis. The study suggests that risk attitudes of investors determine their decision to participate in investment.

Mahina, Muturi, and Memba (2014) conducted a study that sought to investigate behavioral biases of individuals and their effects on investments. The study specifically investigated loss aversion influence on the investments of investors in the Rwandan Security Exchange. Data was collected from 374 individual investors in the exchange and were identified through simple random sampling from a target population of 13,543 individual investors. Cross sectional descriptive survey research design was adopted for the study. The study reported that there exists a significant positive relationship between the loss aversion and investment in the Rwandan Security Market. This study investigated loss aversion influence on the investments for investors who were already participating in the stock market.

Ratemo (2016) conducted a study that sought to explain how individual investor choices are affected by behavioral biases of mental accounting, loss aversion bias, representativeness bias, anchoring bias, and overconfidence bias. The study targeted Kisumu County investors in the Nairobi Security's Exchange (NSE). Data was collected from a sample of 60 individual investors. The study employed descriptive and correlation research design. The study found that the choices of investors are affected by behavioral biases and particularly by loss aversion. The study found that investors are generally risk averse and for this reason they prefer to dispose winning stocks but hold onto losing stocks for longer with the hope that the prices would rise at a later period in order for them to dispose such stocks.

Wendo (2015) investigated the factors that influence participation of advocates in the Nairobi Security exchange. The study evaluated participation by examining the preferred investment avenue of the investors. The study further sought to investigate the reasons why the advocates invested whether for savings, to get returns or to finance expenses. The study found that investors preferred the investments that had lower chances of losses. Further, the study found that the respondents considered the level of uncertainty in determining their investment decision.

Omery, (2014) also sought to investigate the effect of behavioral factors of loss aversion, price changes, herding, past market trends of stocks, overconfidence and anchoring on individual investor behavior. The study employed descriptive research design. Primary data was collected through structured questionnaires and interviews from a sample of 63 individuals who had invested in the stock market. Analysis was done using Pearson's product moment correlation and linear regression techniques. The study found that investors become more risk averse after a prior loss and that they readily sell shares whose values has increased and avoid selling shares whose values have gone down in order to avoid regrets. These findings reaffirm the findings of Ratemo (2016).

Paravisini, Rappoport and Ravina (2016) examined the relationship between wealth and the risk attitudes of investors. The study used data that was collected from 2,168 investors from a club made up of lenders. The data obtained was used to correlate risk attitudes and the affluence of investors for the members of the club. The observed repeated patterns of investments of lenders enabled the study to draw conclusions about the effects of wealth changes on the risk attitudes of the investor. The study found that the richer investors were more risk averse and that after experiencing a loss of wealth in their trading activities; the risk aversion levels of investors similarly increased.

Lee, Jacobsen and Berkman (2013), studied the relationship between stock market return expectations and risk aversion of individuals. The objective of the study was to investigate the interaction between the expected returns of individual investors and their risk aversion levels and to establish how these two factors singly affect participation in the market for stock. The study also tested how the joint results arising from the bringing together the two variables impacts on decisions for investment on individuals. The study used data from the Dutch National Bank Household Survey for the period 2004-2006. The study measured individuals' stock market expectations from a set of inquiry on the anticipated year head price changes. Risk aversion level was measured by questions that allowed them to evaluate individual risk inclinations in terms of investment strategies. The study found that risk aversion has negative impact on expectations about the stock market and also on the decision to participate in the market for stocks. Further, the study reported that stock market expectations have significant and positive effects on the decisions on portfolio allocation. The study observed that upon individuals participating in the market for stocks, risk aversion becomes immaterial in determining their portfolio

allocation decision. The study concluded that individual expectations and risk aversion significantly influence a person's stock market participation.

Wamae (2013) conducted a survey that sought to evaluate behavioral factors influencing retail investors' decisions at the Nairobi Stock Exchange for 17 investment banks. The study utilized primary data sources to collect data from a sample of 47 respondents. The study found that risk aversion influences individual investor's investment decision making. Lakshmi, Visalakshmi, Thamaraiselvan and Senthilarasu (2013) investigated how behavioral characteristics differ in short term and long term investors and the effects on the investment behavior. Data was collected from a sample of 318 individual investors. The study used the structural equation model to bring out the relationship between the investment decisions and the behavioral characteristics of the investors having different time horizons. The results showed that risk aversion had a positive and significant influence on the investment decision making for long term investors. This implies that with higher risk aversion levels comes a greater tendency of retail investor to prefer longer term investments.

Grinblatt and Keloharju (2001) investigated the reasons why both individual and institutional investors traded in the market in their buy, sale or holding of securities. Data was collected from central register about the Finnish stocks for the period 1994-1997. Logit regression analysis were used to analyze the data. The results revealed that previous uncertainties of the return of investors did not have any impact on the decision to trade in securities and specifically it did not result in investors selling their already held securities. Instead, the influence of past returns on the level of trading is more relevant for previously earned positive returns than for previously earned negative returns.

Michailova (2010) conducted an experiment that sought to investigate the influence of behavioral factors of overconfidence and risk aversion on the behavior of individual investors in the asset market. Data was collected from ten experimental sessions from a sample of 32 people and regression analysis was used to analyze the data. The study revealed that participation of individuals in the asset market is driven by overconfidence and not risk aversion. Despite this, the study predicted that individual higher levels of risk aversion will have negative effects on trading activity of these individuals in the asset markets. This implies that risk aversion discourages individual investor trading activities.

Elton, Gruber and Busse (2004) investigated investors' choices of index funds where costs varied across funds with the funds having almost comparable investment strategies; the variations drove anticipated differences in performance. Despite the predictability, investors invested in very costly securities with expected poorer performance. The study suggested that individuals should form well diversified portfolios in order to reduce risk and earn high returns from investment in financial securities.

Charness and Gneezy (2010) conducted an experiment on the influence of risk attitudes of investors on their portfolio selection decision. Data was collected from the Graduate School of Business of the University of Chicago from a sample of 275 individuals. The study reported that the preferences of risk of individuals did not affect the investment behavior. Laakso (2010) conducted a study that sought to shed more light on the stock market participation puzzle by investigating a comprehensive list of participation drivers in order to analyze their explanatory power. The study obtained data from European Survey on Health, Ageing and Retirement in Europe. Analysis was done using probit regressions to assess the individual factors affecting the decision on direct and indirect stock market participation. The study identified risk aversion as the single most economically important explanation for stock market participation and that this effect was observed for all specifications of stock holding.

Another study by Gollier (2001) examined the portfolio problem using comparative statistics with one asset being uncertain while the other was a safe asset. The study revealed that more ambiguity aversion does not reduce the demand for the asset with unpredictable return. If anything, the study reported that investors demand increased for the ambiguous asset with the introduction of uncertainty aversion due to the resulting increase in equity premiums.

Waweru, Munyoki and Uliana (2008) investigated behavioral factors of overconfidence, availability bias, representativeness, regret aversion, loss aversion and mental accounting in the investment decision making for institutional investors operating in the Nairobi Securities Exchange (NSE). Data was collected from a sample of 23 institutional investors. The study found that loss aversion and regret avoidance affected the investment decision of institutional investors at the market for stocks to a large extent. In another survey conducted by Rooij, Lusardi and Alessie (2011), an aspect of risk was introduced in the investigation of the effects of financial literacy on stock market participation and evaluated the association between stock market participation and risk aversion. They observed that risk is associated to ownership of stock with those individuals not willing to take risks less expected to participate in the financial market.

Barberis, Huang and Thaler (2006) established the importance of assessing individual risk per trade in isolation without relating it to previous experiences could be more relevant to the investment decision making. The study further sought to address the stock market

participation puzzle by evaluating investor preferences. The study obtained data from analyzing independent money gambles. The study revealed that first order risk aversion could explain the non-participation. This means that first order risk is more important than overall market risk in determining the participation decision. Bellemare, Krause, Kröger and Zhang (2005) conducted an experiment to evaluate the effects of risk aversion on investment behavior of individuals having information disseminated. The study results reported that risk aversion affected the behavior of investors even without increasing the period the investment was held and that this risk aversion was determined by the level of information the investor had about the investment.

The studies reviewed suggest that risk aversion could explain person's stock market participation for investors. However, many of the findings could not be extrapolated to developing countries like Kenya and therefore there was need to conduct this research to investigate risk aversions contribution towards the stock holding puzzle especially for emerging markets like Kenya and particularly for secondary school teachers in Nakuru County.

Markowitz Portfolio Theory

This theory was developed by Harry Markowitz in 1952 who posits that investors can reduce the portfolio risk through diversification. According to the theory, investors are fundamentally risk averse and would consider the expected risk and return when selecting the securities to include in their portfolio. The theory provided a framework that allows investors to construct and select portfolios grounded on the expected performance and the risk tolerance of investors (Levisauskait, 2010).

The risk-return trade-off is distinguished as the fundamental law in Modern Financial Economic Theory. This law provides direction to individual investors in decision making particularly in the management of a portfolio of assets. Friedman and Savage (1948) defined risk aversion as that with a given identical amount of return, investors will always choose the one with the lowest risk. Modern Portfolio Theory suggests that investors always desire higher returns therefore want to maximize returns on their investments. This is the assumption of non-satiation. However investors are fundamentally risk averse which means that given to choose between two assets having same return they will chose the one with lower risk. Markowitz further explained the need for investors to diversify their portfolios in order to reduce the risk by selecting assets that have negative correlation in their returns (Levisauskait, 2010).

MPT has made significant contributions to modern financial theory and practice. The theoretical conclusions have formed a basis on which all other theoretical analysis on portfolio selection and investment management are based. The Markowitz Portfolio Theory brings out the importance of risk and its relationship to securities return. Individual investors are faced with the decision to invest in the stock market and this decision will be founded on their views of risk, and the risk and returns for individual asset and ultimately total portfolio risk should they consider having more than one security in their investment. It is on the basis of this theory that the study sought to establish the relationship between risk aversion of individual investors and stock market participation decision among secondary school teachers in selected sub counties in Nakuru County, Kenya.

RESEARCH METHODOLOGY

This study used explanatory research design. The study population comprised 1,609 secondary school teachers from the Nakuru, Molo, Njoro, Naivasha and Gilgil sub counties of Nakuru County (TSC Report, 2018). The study used stratified proportionate random sampling where the Sub Counties represented the strata. Simple random sampling was then used to determine the representative sample in each stratum. The sample size was 320 secondary school teachers. Primary data was used and was collected using structured questionnaires.

Reliability of the instrument was checked through pilot testing. Cronbach alpha was used to test reliability of items measuring a particular construct. The results obtained an overall Cronbach Alpha correlation coefficient of 0.869 on risk aversion and a coefficient of 0.853 on stock market participation. Content validity was achieved by the use of professionals in the subject matters who assisted in examining the test items. To test construct validity, factor analysis approach was conducted. The study only considered significant the factor loadings that were greater than 0.4 after varimax rotation. Hair, Babin, Anderson and Tatham (2011) asserts that factor loadings greater than 0.4 should be accepted. The results of factor analysis confirmed the validity of the questionnaire and all the items met the loading cut off of 0.4 and were therefore retained for analysis.

Inferential statistics were used to analyze the data with the aid of Statistical Package for Social Scientists (SPSS) version 25. Inferential statistical techniques which included Pearson correlation coefficient, regression analysis and ANOVA were used to test the relationship between the explanatory variable and the dependent variable. Regression analysis was used to establish the relationship between risk aversion and stock market participation decision. The research hypothesis was tested at 5% level of significance while the F-statistic was used to check whether the model significantly fits the data.

The study employed the following regression model

$$Y = \beta_0 + \beta_i X_i + \epsilon$$

Where;

- Y - Stock market participation decision
- X_i - Risk aversion of individual investors
- B_i - Regression coefficients for the independent variable
- β₀ - Regression Constant
- ε - Stochastic error term assumed to be normally distributed

ANALYSIS AND FINDINGS

The study established that the correlation between risk aversion of individual investors and stock market participation was positive and statistically significant ($r = 0.325, p < 0.05$).

As shown on Table 1 the R square is 0.051 which implies that 5.1% variation in stock market participation decision can be explained by risk aversion of individual investors. This means that 94.9% variation in stock market participation decision can be explained by other factors other than risk aversion.

Table 1

Model Summary of Risk Aversion and Stock Market Participation Decision

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.225 ^a	.051	.046	.83673	.051	12.211	1	229	.001

Source: Research Data, 2019

Table 2 indicates that there exist a statistically significant positive relationship between risk aversion of individual investors and stock market participation decision among secondary school teachers from selected sub counties in Nakuru County ($\beta = 0.237, p < 0.05$). A beta coefficient of 0.237 implies that when risk aversion of individual investors increases by an additional unit, stock market participation increases by 0.237. The null hypothesis (**H₀₃**) was rejected that “*There is no significant relationship between risk aversion of individual investors and stock market participation decision*”. This implies that there is a significant relationship between risk aversion of individual investors and stock market participation decision.

The following regression equation was obtained

$$Y = 2.508 + 0.237 X_1$$

Where;

- Y – Stock market participation decision
- X₁ – Risk Aversion of individual investors

Table 2

Coefficients Results for Risk Aversion and Stock Market Participation Decision

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.508	.235		10.661	.000
	Risk Aversion	.237	.068	.225	3.494	.001

Source: Research Data, 2019

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that risk aversion of individual investors has a significant relationship with stock market participation decision among secondary school teachers from selected Sub Counties in Nakuru County, Kenya. The results reveal that there exists a positive

statistically significant relationship between risk aversion of individual investors and stock market participation. This means that risk aversion is important for explaining stock market participation decision of secondary school teachers in Nakuru County. The study recommends that through efficient diversification, investors can be able to mitigate exposure to investment risks probable in the uncertain asset market which might discourage the individuals from investing. The study recommends that the citizens should be enlightened on the benefits of diversification and on risk analysis so that they can avoid making investment mistakes that can result in losses. Through efficient diversification of stocks the investors will also be able to reduce the fear of uncertainties while investing. Further, through diversification, the investors will also be able to assume risks with certainty while determining their portfolio allocation decision thus enhancing investment in financial assets with higher returns regardless of the level of risk.

The study used a case study approach by investigating secondary school teachers and therefore the findings of the study may not be generalized on other groups within the population. The study therefore recommends that the study should be done on a broader scale in Kenya. Yin (2003) reveals that case study findings cannot be generalized. The study also recommends that further research should use a quantitative approach in order to test and validate the research findings.

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