Effect of Attitude Towards Risk on Individual Portfolio Choice at the Nairobi Securities Exchange, Kenya

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Abstract
Attitude towards riskplays a major role of determining a portfolio choice of an investment portfolio composed of a single or multiple assets that an investor chooses within a certain period of time. Although there exist numerous controversial arguments of the factors that determine the level of individual portfolio choice, focus on multidimensional perceptions of investors characteristics have been given little attention. The objective of this study was to determine the effect of investor's attitude towards risk on individual portfolio choice at the Nairobi securities exchange and to investigate the moderating effect of investor's age on the correlation between attitude towards riskand individual portfolio choice on common stocks at the Nairobi securities exchange. The study is anchored on risk aversion theory. A correlational research design was used for collecting data for the variables under study over a period of five years from January, 2013 to December, 2017. The population consisted of individual investors estimated at 2.4 million as at 31st December 2017 based on Central Depository and Settlement Corporation Limited (CDSC). A target population of 997,605 active retail investors who also form the accessible population at Nairobi securities exchange(NSE) were used to draw a sample size of 385 active individual retail investors. Both stratified and convenience sampling was used to select the required number of respondents. A structured questionnaire was used to collect the data whereby drop and pick approach was used by the researcher and research assistants. Pilot testing of the instruments was performed to assess its reliability. Further, multiple regression techniques were used to analyze the data obtained that was presented using frequency tables, means, standard deviations and correlation tables. The study findings revealed that attitude towards risk, have a positive and significant effect on the common stocks. As such a unit increase in a predictor variable leads to an increase in investment in common stocks. Further, the results of the study indicated that age moderate the relationship between attitude towards risk and the individual portfolio choice in respect to common stocks. The study will benefit management of investment banks and brokerage firms in policy formulation to assist individual investors in their portfolio choices and also to the academicians to advance the conceptual arguments of the moderating effect of age on the relationship between attitude towards risk and individual portfolio choice.
Keywords: Attitude towards risk, Individual portfolio choice, Risk aversion,Investor's age.

1. Introduction
Individual portfolio choice is the results of the process of investing one's funds in different investment opportunities, asset classes and markets that have low, negative, positive or possibly no correlation between their choices, that will earn the total return over time that one needs (Reilly and Brown,2012). A portfolio refers to a collection of investment or financial assets held by an individual, investment company, financial institution or hedge fund. An ideal portfolio choice is the mix of investment, from the most aggressive to the safest that will earn the total return over time that one needs. The mixes include stocks, bonds, and money market securities. The percentage of one's portfolio that one devotes to each depends on one's time frame and one's tolerance for risk. According to Markowitz (1952), one optimizes expected returns based on the level of market risk upon a construction of an investment portfolio chosen. Accordingly, by combining various asset classes into a portfolio, overall portfolio risk can be minimized and higher return can be achieved than with a portfolio that is not properly optimized. The investment of the portfolio chosen with the largest portfolio return is usually prioritized (Hatemi& El-Khatib, 2014). There are wide-ranging factors that influence individual portfolio choice which may include attitude towards risk, lifestyle characteristics, investor's specific needs, investment avenues and age that have influential implications.

In this regard, investors' attitude towards risk is the individuals' willingness to take risks and financial

investment decisions. It is the risk preference people hold towards risks (Fenghua, Zhifang, &Xiaohong, 2014). Different people have different attitudes towards risk-return tradeoff in any form of investment opportunity. As a result, investor's attitude towards risk is classified into three categories, namely; risk averse, risk seeker and risk neutral.

According to (Hyll, et. al 2015), standard models in economics assume that individuals are endowed with stable risk attitudes. On the other hand, Standard financial theory assumes that investors are rational hence when making investment decisions they tend to have invariant risk preferences. However, people gradually find that the investors' decision-making behavior in real life does not always comply with the assumption of rationality and their behaviors are usually limited by their own cognitive biases and external environment, leading to their risk preferences which vary with different situations (Fenghua, Zhifang, &Xiaohong, 2014).

Studies on behavioral finance have focused on investor behavior and their investment decisions with little attention on the extent to which attitude towards risk and age influence individual portfolio choice (Jain & Nikhil, 2012; Gumus&Ayioglu, 2015; Lutfi, 2011; Sandip&Ranjan, 2015). The aspect of risk involving risk averse, risk neutral on risk seeker and how they make investment choices are preferences of attitudes towards risk which investors constantly face and make choices. However, the extent to which attitude towards risk impact on individual portfolio choice on common stocks had not been upheld in the past studies. This study was to narrow this gap.

These studies have demonstrated that age influence the investor behavior. Nevertheless, the mentioned studies did not investigate the extent to which investor's age moderate the relationship between attitude towards risk and individual portfolio choice on common stocks. The afore mentioned studies were bivariate, for they considered the relationship between the explanatory and response variables without considering the moderating effect some of those variables may have on the model. This study will incorporate a multiple regression model to comprehensively establish the moderating effect of investor's ageon the relationship between attitude towards risk and individual portfolio choice on common stocks.

2.Literature Review
2.1 Risk Aversion Theory
Coricelli, Critchley, Joffily, O'Doherty, Sirigu and Dolan (2005) introduced the risk aversion theory whereby they triggered feelings of regret in healthy participants, by having them complete a gambling task in which they were informed that the best choice was the not the chosen option. Risk aversion theory originated from widely accepted risk-aversion theories, including expected utility theory and prospect theory. Risk-aversion involves only indirectly, as a side effect of how outcomes are valued or how probabilities are judged (Simonsohn, 2009). Risk-aversion is a preference for a sure outcome over a gamble with higher or equal expected value.Risk aversion is an investor's general desire to avoid participation in risky behavior or, in this case, risky investments. Risk aversion is the behavior of human (especially consumers and investors), when exposed to uncertainty, to attempt to reduce that uncertainty). Conversely, the rejection of a sure thing in favor of a gamble of lower or equal expected value is known as risk-seeking behavior. Most theoretical analyses of risky choices depict each option as a gamble that can yield various outcomes with different probabilities (Rottenstreich&Hsee, 2001).

2.2 Investor's Attitude Towards Risk and Individual Portfolio Choice at The Nairobi Securities Exchange
Bivariate models have been commonly used in the past literature (Azam& Kumar, 2011; Jain & Nikhil, 2012; Bairagi&Rastogi, 2013; Gumus&Ayioglu, 2015; Panjali&Kasilingam, 2015). Most of these studies have factored in investor's attitude towards risk as one of the independent variables influencing the retail investors' behavior or otherwise. However, less focus on whether age has a moderating role on the relationship between attitude towards risk and individual portfolio choice has not been explored.

In the study of Boobalan and Selvavinayagam (2019) which focused on investors' attitude towards risk and return in Indian stock market, the objective was to know the investors attitude towards risk and return of investment. The study used descriptive research design. The sampling technique adopted was random sampling and sample size of 150 investors was selected for the study. It was concluded that there is no significant difference between gender respondents and expected rate of return of investment. In this study, it was concluded that the investors should follow stop loss, estimation of target and make portfolio management, then only reduce risk and increase return on investment.

In the study by Dickason& Ferreira (2018) whose objective was to establish which behavioral finance biases are associated with a certain level of risk tolerance and investor personality in South Africa. The results showed that investors with a low-risk tolerance level and a conservative investor personality are subject towards loss aversion and mental accounting biases.

Rekha and Ashwini (2019) also carried out a study on investors' attitude towards investment decisions in equity market. The study concentrates on investors' attitude towards investment decisions in equity market and their risk bearing attitude based on their gender, age, income, education and occupation.. It was therefore

concluded that, based on their investing style investors are classified as conservative, moderate and Aggressive. Conservative investors avoid risk, moderate investors take medium risk tolerance and aggressive investors take high risk in their investment.

The past studies reviewed pertaining investors' attitude towards risk were mostly bivariate whereby the aspect of attitude towards risk being considered from the general perspective. Therefore, given those various debates by the diverse authors as aforementioned, there is need to demarcate the three classes of investors based by the three risk profiles and investigate whether these diversities in risk attitude may predict individual portfolio choice.

2.4.5 Investor's Age and Individual Portfolio Choice at The Nairobi Securities Exchange

Behavioral finance literatures have endeavored to examine whether investor's age influence investor behavior with less focus on whether it influences individual portfolio choice. However, researchers have used diverse conceptual approaches with a purpose of achieving their objectives.

Fatima and Shafi (2016) sought to determine the impact of demographic factors on investment behavior. The results depict that age and occupation has significant impact on the investment decision making of the investors of Kashmir while gender and marital status did not exhibit any significant relation with the investment behavior. Sandip&Ranjan (2015) investigated the critical role played by age, gender, marital/social status, number of dependents, educational qualifications, employment and income status, savings pattern, future monetary planning, investment amount and returns from investments on risk tolerance so as to determine whether the individual investors are risk averse or risk prone. On overall basis, this study found that the respondent investors had a lower risk tolerance level which made them highly risk averse.

In line with the hypotheses drawn, Sandip&Ranjan (2015) proved that aged investors are more risk averse than their younger, inexperienced counterparts; married investors with children and other dependents are more risk averse than their unmarried and with less dependent's counterparts; higher education brings risk tolerance attitude and thereby makes investors risk prone; higher income and savings also decrease risk aversion whereas future planning approach increases risk aversion. It was also established that higher investments amount and returns from such investments increase the risk tolerance level and thus reduced risk aversion of these investors. However, this study found that women investors are more risk prone than their male counterparts and employment status of the respondents is immaterial in regard to their risk attitude. There exists a research gap to establish the extent to which diverse attitudes towards risk influence individual portfolio choice.

3. Research Methodology.

3.1 Research Design

This study sort to establish the effect of attitude towards risk on individual portfolio choice at Nairobi Securities Exchange.The study used quantitative structured research design for collecting data for the variables under study. The individual investors used data for a five-year period from January, 2013 to December, 2017. Houser (2011) notes that it is designed to provide in-depth information about the characteristics of subjects within a particular field of study, thus, it can help identify relationships between variables.

3.2 Sample Size and Sampling Technique

A sample is a collection of units chosen from the universe to represent it (Kombo and Tromp 2009). The study used both stratified and convenience sampling. The NSE had 62 companies who were registered to trade at the exchange at the time. It was through stock brokerage/ investment firm that investors trade at these companies. There were 19 stock brokerage/investment firms existing at the Nairobi Securities Exchange at the time and therefore form the target population as well as the sample of this study. The study first adopted the strata made up of the 19 stock brokerage firms and used the proportion of the active retail investors in each stratum to arrive at the sample size of individual investors for each brokerage firm. Subsequently, convenience sampling was used to select samples from every stratum which have the required investor attributes, namely, active that is, they have been trading at the NSE during the year, and have an asset portfolio of one or more portfolio of assets.

Individually, using simple random sampling the researcher through the brokerage firm identified a retail investor and ascertain that the investor has the right attributes. Using this procedure, the researcher approached all the targeted active retail investors through the brokerage firms' management as es given to each brokerage firm to the numbers shown in table 3.2.

3.3 Research Instruments

The study used a structured questionnaire. The study collected the secondary data utilizing quantitative data. In this study the quantitative data was obtained from general information, attitude towards risk, age and on individual portfolio choice.

The questionnaire was designed to address specific objectives, research questions and test hypothesis. This study used a 5-point Likert scale to measure the attitude towards risk and individual portfolio choice. The Likert

scale, which is essentially an interval scale, is designed to examine how strongly subjects agree or disagree with a statement (Sekaran&Bougie, 2010). Kothari (2009) explains that 5-point Likert scales are used because they are more reliable and can provide more information.

4. Research Findings and Discussion

4.1 Response Rate

Questionnaires were administered to a total of 385 investors. Out of these 320 were dully completed and returned. This represents a response rate of 83.1%. On the other hand, 35 questionnaires were not returned. This represented 9.1%. Finally, 30 questionnaires that had been filled and returned had gaps, omissions and/or errors. This represented a response rate of 7.8%. This set of questionnaires were disqualified and therefore excluded from the respondents. The response rate of those that were dully filled and returned of 83.1% was considered good and representative and conforms to Mugenda and Mugenda (2009) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. The 83.1% is therefore considered a high response rate. The response rate for this study is as shown in table 4.1 below.

Table 4.1 Response rate for the questionnaires

Response	Frequency	Percentage
Dully filled and returned	320	83.1%
Not returned	35	9.1%
Disqualified questionnaires	30	7.8%
Total	**385**	**100%**

Source: Survey Data (2022)

4.2 Attitude towards Risk

The study sought to determine the opinion of respondents on attitude towards risk when investing.The descriptive findings for Attitude towards risk characteristics were obtained using the 5 Point Likert-Scale ranging from: Strongly Disagree (SD)= 1, Disagree(D)=2 Neutral(N)= 3, Agree(A)= 4, and Strongly Agree (SA)= 5. The results are shown in Table 4.2

Table 4.2 Attitude towards risk

	SD	D	N	A	SA	Mean	STD
As a risk averse investor when faced with same return I generally take the one having lower risks	16.9	5.3	5.0	35.6	37.2	3.71	1.441
As a risk averse investor I don't take chances once I see unnecessary fluctuation of security prices. This requires me to dispose those particular securities	7.8	6.3	5.3	45.3	35.3	3.94	1.166
I always watch the other market individual investors and even seek financial advice from friends before investing in any type of investments	14.1	6.6	3.4	38.8	37.2	3.78	1.376
I rarely assess the level of risks before assessing new investments	18.1	5.9	2.8	41.9	31.3	3.62	1.440
I would say I take more risks compared to the average person,	28.8	6.9	5.9	33.1	25.3	3.19	1.592
I believe that the only way of getting a good return is to invest in risky investments	7.2	7.2	7.5	44.7	33.4	3.90	1.157

Valid List wise =320

Source: Survey Data (2022)

Table 4.2 shows how respondents rated various items of the attitude towards risk characteristics. When respondents were asked "As a risk averse investor when faced with same return I generally take the one having lower risks" most respondents strongly agreed (SA) with 25.3% and having a mean = 3.71 and SD=1.441 When respondents were asked "as a risk averse investor I don't take chances once I see unnecessary fluctuation of security prices. This requires me to dispose those particular securities", most respondents agreed (A) with 45.3% (Mean=3.94, SD=1.166). Other items include; "I always watch the other market individual investors and even seek financial advice from friends before investing in any type of investments" agreeing (A) with 38.8% (Mean=3.78, SD=1.376), "I rarely assess the level of risks before assessing new investments." Agreeing (A) with 41.9% (Mean=3.62, SD=1.440). "I would say I take more risks compared to the average person," was rated Agree (A) with 33.1% (Mean=3.19, SD=1.592) On the other hand on, the statement whether the respondents believe that the only way of getting a good return is to invest in risky investments most Agree (A) that had 44.7%. (Mean=3.90, SD=1.157).

On average most respondents Agree (A) that had 39.9% (Mean =3.60, SD=1.361). This means that most investors agree and followed by those who strongly agree with the opinions expressed about their attitude towards risk in regard to risk averse, risk neutral and risk seeker when choosing to invest at NSE. The past studies on attitude towards risk (Boobalan and Selvavinayagam,2019, Phung and Nguyen 2017, Marwan 2015,Parameswari and Jasree, 2015 and RekhaandYashswini 2019, were in general perspective. The aspect of individual portfolio choice was lacking and therefore means that the findings were dissimilar.

4.3 Age

The study sought to determine the opinion of respondents when investing. Using ratio scale method of measurement, the respondents were required to indicate their age in years within a given range. Table 4.3 shows the age category of the respondents and have been categorized into five sub-groups.

Table 4.3 Age bracket

Age	Under 25	Between 25 to 35	Between 35 to 45	Between 45 to 55	Over 55	Mean	SD
Percentage	14.1%	19.4%	30.0%	14.7%	21.9%	3.11	1.331

Source: Survey Data (2022)

The results as shown in Table 4.3 above showed that most respondents were aged between 35 and 45 representing 30.0%, 21.9% being over 55years, 19.4% being between 25 and 35 years, 14.7% were between 45and 55 years and 14.1% being under 25 years with a mean of 3.11 and Standard Deviation of 1.331.

The group of between the ages of 35 and 45 is usually energetic, very active, is experienced, responsible and has skill as affirmed by Teeples& David (2010). This is followed closely by those of 55years and above of age. This group is mostly those who are done with educating their children and therefore, they have high disposable income for investment. The above implies that age has an influence in the investors behavior.

4.4 Individual Portfolio Choice

The study sought to determine the respondent's individual portfolio choice during investment process. The results are presented in Table 4.4

Table 4.4 Individual portfolio choice on common stock

	None	SD	V.Low	Low	N	High	V. High	SA	Mean	Std.Dev
The frequency at which I make decisions on investing in common stock	8.1		23.1	8.1	15.0	35.0	18.8		3.33	1.246
The frequency at which I delegate the decision making to my stock broker to invest in common stock	6.6		8.1		17.5	8 30.6	37.1		3.84	1.200
Valid N (list wise) = 254										

Source: Survey Data (2022)

The findings in Table 4.4 revealed that majority of the respondents in all the areas agreed(A) with the statements, that "I occasionally relied on the what other investors tell me" with 128 or 40.0%, that "I purchased the quantity of shares in a random manner or heuristically" with 149 respondents or 46.6%, it was similar to "I have been choosing and investing in securities that have had potential gains than those with perceived losses" with 150 respondents or 46.9% were in agreement. Similarly in agreement was "The choice to invest in is often based on information I know formed the greatest percentage of my investment decisions" with 123 respondents or 38.49%. other areas rated neutral with 110 respondents or 34.4% with the finding that "While choosing investments I relied on the combination of the price and quantity of shares I was able to purchase" and 141 respondents or 44.1% having the findings that "Before I invest in any security, I use my instincts and confidence to choose the security I need to invest in" Before I invest in any security, I use my instincts and confidence to choose the security I need to invest in. On average most respondents Agree at 40.5% (Mean = 3.77, SD = 1.067).

4.5 Inferential Statistics of The Study Variables

This entails the individual correlation analysis of the variables, the combined correlation analysis, the multiple regression analysis models and the hypothesis test.

4.5.1 Correlation between Individual Portfolio Choice in Respect to Common Stocks and Attitude Towards Risk.
The correlation between Individual Portfolio Choice in respect to common stocks and Attitude towards risk at NSE was examined and the Pearson correlation results from this study are shown in Table 4.5.

Table 4.5 Correlation between individual portfolio choice in respect to common stocks and attitude towards risk.

Correlations

Variables	Coefficient type	Common Stock	investor's attitude
common Stock	Pearson Correlation	1	.493[**]
	Sig. (2-tailed)		.000
	N	254	254
investor's attitude	Pearson Correlation	.493[**]	1
	Sig. (2-tailed)	.000	
	N	254	254

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data (2022)

In this study variable there is a positive correlation between Individual Portfolio Choice in respect to common stocks and Attitude towards Risk which is statistically significant at (r=.493 This implies that attitude towards risk positively influence Individual Portfolio Choice in respect to common stocks at NSE

4.5.2 Moderated Multiple Regression Analysis Results

Moderated multiple regression analysis was conducted to determine whether investor's age moderates the effect of attitude towards risk on individual portfolio choice at the Nairobi securities exchange.

4.5.3 Overall Significance Test Results

Table 4.6 shows the overall test results for the hypothesized research for model 1 and model 2

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Table 4.6 shows the overall test results for the hypothesized research for model 1 and model 2

Table 4.6 Moderated Regression model in relation to Common Stocks with Age

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1.(Constant)	.414	.096		4.298	.000
Investors Attitude	.155	.029	.246	5.268	.000
2.(Constant)	.228	.096		2.366	.019
Investors Attitude	.128	.028	.202	4.509	.000
Age	.156	.026	.247	5.977	.000

a. Dependent Variable: Individual portfolio

Source: Survey Data (2022)

4.5.4 Optimal models with Moderated Multiple Regression Analysis

Model 1

OLS Equation $Y = \beta_0 + \beta_1 X_1$

Then $Y = 0.414 + 0.155 X_1$

From the above equation Individual portfolio choice on Common Stocks =0.414 + 0.155 Attitude towards risk.

Equation 4.1

From the above regression model, it was revealed that holding Attitude towards risk as zero, and the individual portfolio choice in respect to common stocks at the Nairobi securities exchange would be at 0.414. It would imply that 0.414 was being contributed by other factors (variables) other than the study variable.

Further, having attitude towards risk as the only variable, denotes that if all other independent variables are rated as zero, a change of magnitude of one unit in X_1 (Attitude towards risk), $\{Y=0.414+0.155*1\}$ leads to a 0.569 change in Y (Individual portfolio choice in respect to common stocks. This implies that there is positive and significant effect ($p<.005$) on the direct relationship between all the independent variables and the dependents variable the common stocks.

Model 2

$M2 = \beta_0 + \beta_1 X_{1} + Z$

$M2 = .228 + .128 X_1 + .156Z$

In model two a regression was done to determine the moderating effect of age on the relationship between investor's attitude towards risk on common stocks. After testing for the independent variable the regression analysis revealed that age had a moderating and significant effect on the relationship between the independent variable and common stocks as p = 0.000 (p<0.05 as shown in Tale 4.35 above.

5 Conclusions And Recommendations

5.1 Conclusions

The findings indicate that most of the investors have been trading continuously for between five and ten years.

Further, most of the investors are in the age group of between 35 years and 45 years. In addition, it was established that most of the investors are married. Of this most of the transactions are made by males.

It was established that there is a positive correlation between attitude towards risk and individual portfolio choice in respect to common stocks at NSE. In addition, they were statistically significant meaning that attitude towards risk positively influence portfolio choice at NSE.

From the results, the regression model for the variable showed that the majority of respondents when faced with same return the generally take the one having lower risks. Further, they do not take chances once they see unnecessary fluctuations of security prices as they instead dispose such securities. Similarly, they strongly believe that to get a good return is to invest in a risky asset.

It was established that there is a positive moderating effect of investor's age on the relationship between attitude towards riskand individual portfolio choice on common stocks at NSE. With the interaction of the moderator the relationship is positive and significant with P value being less than 0.05. The majority of the investors are in the age group of between 35 and 45years. With the interaction of the moderator the relationship is positive and significant in the moderated model.

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