Effect of Self-Attribution Bias on Investment in the Rwandan Stock Market

By Jacob Niyoyita Mahina, Dr. Willy Muturi & Dr. Memba Florence

Jomo Kenyatta University

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Keywords: self-attribution bias, investment, rwanda, stock, exchange.

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I. Introduction

a) Background of the Study

Behavioural finance is the new field that seeks to combine behavioural (aspirations, cognition, emotions) and cognitive psychological theory. It explains why investors makes a rational financial decisions on the stock market (Lodhi, 2014). It describes the outcomes of interactions between investors and managers in financial and capital markets; and it prescribes more effective behaviour for investors and managers. The investment is mostly influenced in a large proportion by psychological and emotional factors (Sukanya & Thimmarayappa, 2015).

Behavioural finance attempt to better understand and explain how emotional and cognitive errors influence investment on the stock markets (Subrahmanyam, 2008). The stock markets are able to positively influence the economic growth through encouraging savings amongst individuals and providing avenues for firm financing. Liquid stock markets may improve the allocation of capital and enhance prospects for long-term growth (Wasiu & Temitope, 2013).

Investment is not an easy process, since the assumption is that investors always expect to maximize the returns although not all investors are so rational (Sukanya & Thimmarayappa, 2015). Traditional financial theories assume that investors are rational and risk averse, and hold diversified, optimal portfolios (Bhamra & Uppal., 2015). However, this doesn't work in reality since investors must consider the behavioural biases in investing as this can help the investors to avoid some unnecessary mistake made in investment in order to maximize the return and minimize the risk (Sukanya & Thimmarayappa, 2015; Bhamra & Uppal., 2015).

According to Shefrin (2007) bias is nothing else yet the inclination towards failure. Bias is tendency to make decisions while the decision maker is already being subjected to an underlying credence or belief. There are so many biases in human psychology (Shefrin, 2010). These biases lay impact on individuals in such a way that they frequently deed on an obviously silly way, routinely disregard conventional ideas of risk aversion, and make foreseeable lapses in their conjectures and judgments (Sewell, 2007).

These biases play their part in shaping individual's choices, financial decisions in corporations and financial markets. Unreasonable choices hamper the investor's wealth and the execution of companies and additionally the productivity of business sector. Scholars have identified so many biases (Kafayat, 2014). Kahnemann and Tversky, (1979) wrote a paper in which they stated different states of mental biases that may impact the investment process; they are risk aversion, regret aversion and self-attribution and the locus of control (Barberis & Thaler, 2003).

According to Lam (2004) the investors' predictions of the market fluctuations with certain methods, may be technical or fundamental analysis used to predict money market. Technical analysis is used in forecasting stock price fluctuations while fundamental analysis attempts at differentiating the investment approach (Ince & Trafalis, 2007).

African stock markets have historically offered a limited, narrow range of products with the principle role of financial sector being the provision of the source of domestic funding to offset government budgetary deficits. Common factors still inhibiting stock market development include the lack of legal protection for

Author α σ ρ: Jomo Kenyatta University of Agriculture and Technology, Kenya. e-mails: niyomhj1@gmail.com, mmuturi2001@gmail.com, f.memba@jkuat.ac.ke

investors and creditors (Odera, 2012). Other constraints are that most African Stock Exchanges have limited trading hours and are closely synchronized with other regional markets (Piesse & Hearn, 2005). Trading in the majority of markets is overwhelmingly dominated by a handful of stocks, even if more securities are actually listed and bulk trading of a limited number of stocks in the smaller exchanges hinders activity on the domestic markets (Wójcik, 2011).

The first stock exchange in sub Saharan Africa was Zimbabwe Stock Exchange (ZSE), the official stock exchange of Zimbabwe which started in 1948. It has 64 listed companies and opened to foreign investment since 1993 (Mahonye, 2014). Zimbabwe Stock Exchange was established after Egyptian Exchange stock (EGX) which started in 1883. The EGX is the largest in Africa with 833 listed companies followed by Johannesburg Security Exchange or JSE that started in 1887 and in 2003 had an estimate of 472 listed companies. The Nigeria Stock Exchange (NSE) stated in 1960 and it has a population of 223 listed companies (Mawowa, 2013).

Prices in the African stock markets tend to be highly volatile and enable profits within short periods. Critics point out that the actual operation of the pricing and takeover mechanism in well-functioning stock markets lead to short term and lower rates of long term investment (Mbaru, 2003). This is because prices react very quickly to a variety of information influencing expectations on financial markets (Mahonye, 2014).

These problems are further magnified in developing countries especially sub-Saharan African economies like Rwanda, with their weaker regulatory institutions and greater macroeconomic volatility (Bizimana, 2010). The higher degree of price volatility on stock markets in developing countries reduces the efficiency of the price signals in allocating investment resources. These serious limitations of the stock market have led many analysts to question the importance of the system in promoting economic growth in African countries (Dailami & Atkin, 1990).

Some of the common mistakes made by investors in designing their investment are identified as follows: investors fail to design their investment avenues systematically; investors fail to diversify their investment choice (Sukanya & Thimmarayappa, 2015); investors generally overestimate their skills, attributing success to ability they don't possess and seeing order in information or data where it doesn't exist i.e., investors are overconfident while making investment; investors blindly follow the crowd (herd mentality) while making investment which leads to wrong investment; investors anchor on historical information; investors think that good times are permanent (Nofsinger, 2016). They feel that ones they earn a good profit from their investment avenue ,the investment would give them good returns permanently; investors are greed and they want to earn money quickly (instant gratification) which also leads to wrong investment. Finally, investor's generally make short term investments rather than long term investments (Shefrin, 2002).

Rwanda is one of the youngest stock market in East Africa with a small number of listed companies and low market capitalization, an indicator of low Stock Market development (Bizimana, 2010). The Rwanda Stock Exchange Limited (RSE) was incorporated in 2005 and launched officially in 2008. It is the principal stock exchange operating under the jurisdiction of Rwanda's Capital Market Authority (CMA), previously known as Capital Markets Advisory Council (CMAC), which in turn reports to the (MINECOFIN) Ministry of Finance and Economic Planning (Babarinde, 2012). Rwanda's Stocks Exchange is young compared to the other markets in EAC, like Nairobi Security Exchange (NSE) which was established in 1954, Dares Salaam Security Exchange in 1996 and Uganda Stock Exchange in 1997. Currently RSE has only three Initial Public Offering (IPO), Bralirwa, Bank of Kigali and Crystal Ventures as primarily listed in Rwanda and four IPO as secondarily listed in Rwanda includes: Kenya Commercial Bank Group and Nation Media Group, which are primarily listed in Nairobi Stock Exchange and cross listed on the Rwanda Stock Exchange (Kidd, 2012).

The government has ensured that investors in the Rwanda Stocks Exchange are protected, by advising and guiding companies seeking investment through provision of important infrastructures and conducive environment for business development (Mauwa, 2016).

Despite these efforts, investment in the Rwanda stock exchange is low and the Rwanda Stocks Exchange is not growing at the pace expected. Currently there are approximately 13,543 registered investors, all these investors are composed by the individual investors, group investors and institutional investors. The market capitalization of Rwanda Stocks Exchange is USD 3.7 billon with 7 listed companies (RSE, 2015). In comparison with Nairobi Securities Exchange, there are approximately 66 listed companies with a total market capitalization of approximately USD 23 billion (Mwangi, 2016).

II. Literature Review

a) Theoretical Background

There are a number of theories that explain the relationship between behavioral biases and investment decision. These include herding behaviour theory, prospect theory and heuristics theory. In addition, Marchand (2012) states that heuristics stands for the tendency that individuals make judgments quickly. Heuristics are strategies used to access complex problems and limit the explaining information. Investors tend to make rules of thumb in order to process the information so that they can make investment.

Waweru, Mwangi and Parkinson (2014) proposed that herding can drive property trading and create the momentum for trading. In the case of Rwanda Stock Exchange, the impact of herding behaviour may break down when it reaches a certain level because the cost to follow the herd may increase to get the increasing abnormal returns. Choices are made when people tend to give losses more weight than gain, where they focus on how much they gained or lost instead of how much they gained. Choices are also made where people are interested in their gains and losses as opposed to their final income and wealth. In the case of investment choice in the Rwandese Stock Exchange, investors may attribute choice of investments to own initiatives leading to self-attribution bias (Kahneman & Lovallo, 1993).

In general, heuristics are quite useful, particularly when time is limited (Waweru et al., 2008), but sometimes they lead to biases (Tversky & Kahneman, 1974; Ritter, 2003). In addition, Marchand (2012) states that heuristics stands for the tendency that individuals make judgments quickly. Heuristics are strategies used to access complex problems and limit the explaining information. Investors tend to make rules of thumb in order to process the information so that they can make investment.

b) Empirical Literature Review

Though the literatures of behavioural finance are very large, some of the empirical cases of behavioural finance, which are based on the psychology, attempt to understand how behavioural biases and cognitive errors influence individual investors' behaviours (Chaudhary, 2013). Hoffmann and Post (2014) conducted a study on self-attribution bias in consumer financial decision-making and how investment returns affect individuals' belief in skill in Netherlands firms. The study found that the higher the returns in a previous period are, the more investors agree with a statement claiming that their recent performance accurately reflected their investment skills and vice versa. The study further established that while individual returns relate to more agreement, market returns have no such effect.

Tine (2013) study focused on attribution bias and overconfidence in escalation of commitment the role of desire to rectify past outcomes. This research investigated two cognitive biases that we posit lead to IT escalation of commitment, namely, attribution bias and overconfidence in an escalation decision, as well as desire to rectify past outcomes (DRPO) for its potential role as a mediator. To test our research model, 160 IT managers participated in a web-based role-playing experiment. Attribution was manipulated at two levels (internal and external), creating two treatment conditions. We posited that the participants assigned to the internal attribution condition would escalate their commitment to the failing IT project to a greater extent

than participants assigned to the external attribution condition; that individuals that have a high, versus low, level of overconfidence would have a greater tendency to escalate; and that DRPO would mediate the effects of attribution and overconfidence on escalation of commitment. Attribution bias was significant at the level, but in the opposite direction of what was hypothesized; overconfidence showed a significant main effect on escalation. The effect of attribution bias on escalation was significantly mediated by DRPO, but the effect of overconfidence on escalation was not mediated by DRPO. Implications of these findings for both research and practice are discussed.

Malmendier and Tate (2005) in a study on CEO over-confidence and the market reaction found that the motivational process e.g. self-enhancement and self-preservation combines with cognitive factors e.g. self-esteem and locus of control creates self-attribution bias. In addition, chief operation officers (CEOs) suffering self-attribution bias credit the success of company because of their abilities, while failures are attributed to economic situation, CEOs suffering from self-attribution bias tend to overestimate their capabilities and therefore invest in such projects which are risky.

Schneider et al. (2012) found that self-attribution bias also builds up an individual's overconfidence Individual exposed to self-attribution bias think that they have more abilities than average, known as "Batter then average effect". As self-attribution enhances overconfidence, so the subjects who suffer from this bias will be overconfident in their decisions and judgments. Self-attribution bias affects the ability of a person to estimate his/her abilities and also affects the learning from past performances of that person to estimate his/her abilities and also affects the learning from past performances of that person.

Gervais and Odean (2001) in a study on the effects of previous performances of the investors on their behaviour, and found that success strengthens the overconfidence. Further, when an investor is successful, they credit this success with their own capabilities and skills and firm their beliefs regarding their ability too much, as a result they become overconfident. Finally, it was found that people suffering from self-attribution bias become more overconfident after a success and it affects the conception about own capabilities as it hinders the evaluation of past performance, this leads to overconfidence.

Yosef and Kumar (2012) found that investment agents (brokers) biased self-attribution bring excessive optimism. When confronted with uncertainty investors tend to be increasing biased self-attributing, which ultimately induce overconfidence in them. The study also found that individuals become more overconfident instead of going for self-assessment when affected by self-attribution bias. Investors are overconfident about the events which they hope will generate positive

outcomes and will personify them. So self-enhancement triggers overconfidence in investors.

Choi and Lou (2008) found in their study of self-attribution bias, that self-attribution bias affects the impression of people regarding their abilities and diverts them from learning from past successes. Self-attribution biases is a significant channel that hinder people to link their successes with their internal forces e.g. personal capabilities, and their non-successes with external forces. Furthermore the evidence shows that the investors who are not exposed or aware of the biases make rational decisions and thus they enjoy more favourable outcome. While on the other hand the rational investors will make optimal decisions and generate the desired results. So it is established that self-attribution motivates overconfidence hindering the investor from rational.

III. Research Methodology

The underlying epistemology of this research was positivist; focusing on examining earlier established theories under the assumption that reality is objectively given and can be described by measurable properties independent of the observer and the instruments.

The study used cross-sectional descriptive survey research design to assess and establish the effect of behavioural biases on investment at the Rwanda stock exchange. The design was suitable for the proposed study because it attempted to determine current status of the phenomenon. The cross-sectional descriptive survey method was suitable for this study since data was collected at one particular time (Silverman, 2013) across the respondents in the Rwanda Stock Exchange. The target population of this study comprised of individual, group and institutional investors at the Rwanda Stock Exchange which are approximately 13,543 RSE, 2015. There are approximately 10,662 local investors, 2,474 from EAC and 407 registered as foreigner investors, all these investors are composed by the individual investors, group investors and institutional investors (Directory, Rwanda Stocks Exchange, 2015).

Stratified random sampling was used and it involved dividing the population into homogeneous subgroups followed by a simple random sample (Kombo & Tromp, 2006).

To determine the sample size for small populations, we use the normal approximation to the hyper-geometric distribution, similar studies (Morris, 2014) have adopted the hyper-geometric distribution due to its ability to estimate sample sizes from small populations accurately. The sample size formula for small (hyper-geometric) populations is shown as follows:

$$n = \frac{NZ^2 pq}{\{E^2(N-1)+Z^2 pq\}}$$...............Equation (1) Morris, 2014)

Where;

n= is the required sample size
N= is the population size (13,543)
Z= is the level of confidence of the sample size (set at 95%) thus Z=1.96
P and q are the population proportions (Each set to 0.5).
E sets the accuracy of the sample proportions (set to 0.05).

Therefore;

$$\frac{13543 \times 1.96^2 \times 0.5 \times 0.5}{0.05^2(13543-1)+1.96^2 \times 0.5 \times 0.5}$$

n = 13006.6972 ÷ 34.8154

Hence, 374 was the suitable sample size for the population of 13543 investors from Rwanda Stock Exchange. The sample size is 374, were selected using the simple random sampling. A semi-structured questionnaire was used to collect the primary data. The semi-structured questionnaire was designed to contain both closed and open-ended questions and a five-point Likert scale. The questionnaire was divided into three parts: (a) demographic information (b) investment (c-g) information on biases. Data analysis involved the use of descriptive and inferential statistics in order to help the researcher to establish the relationship between emotional bias and investment. Descriptive statistics such as mean, standard deviation and the inferential techniques such as regression and correlation will be used as well. Data was also analyzed and expressed in terms of charts and tables for quick references. In relation to inferential statistics, the linear and multi linear regression models were utilized to further give inferences to the data obtained using the Statistical Package for Social Sciences (SPSS). The study used the model below to test the hypothesis.

$$Y = \beta_0 + \beta_1 X_{1} + \varepsilon$$

Where:

Y= Investment in Rwanda Stock Exchange
β_0= Constant
β_1...........β_4=Represents the regression coefficients
X_1= Self Attributing Bias
ε = Represents the Error Term

H0: Self attributing bias has no significant effect on investment in the Rwandan Stock Exchange.

IV. Analysis, Findings and Discussions

The study administered a total of 374 to selected individual investors in Rwanda stock market. A total of 350 questionnaires were dully filled and returned. This represented a response rate of 93.6%.

a) Respondents Background Information
Table 1 presents the demographic characteristics of the respondents. This was aimed at

describing the sample that was used in this study. The study sought to establish the age bracket of the respondents, genders of the respondents and there highest education qualifications.

Table 1: Respondents Background Information

Bio Data	Response	Percent
Age	21-30years	48.3
	31-40years	41.4
	41-50 years	3.4
	51-60 years	6.9
Gender	Male	68.9
	Female	31.1
Highest level of education attained	Undergraduate	20.9
	Graduate	65.1
	Post Graduate	14
Total		100

b) Descriptive Results

Table 2 contains the descriptive findings on the effects of self-attributing on investment in the Rwandan stock market.

Table 2: Descriptive Results on Self Attributing Bias

	SD	D	NS	A	SA	Mean	Std Dev
I consider my investment performance to be always well thought out	18.6%	17.7%	20.0%	25.4%	18.3%	3.07	1.38
Loss making is a result of investment advice taking from other people	24.9%	27.4%	21.1%	11.1%	15.4%	2.65	1.37
I consider losing stock as a results of poor advice from others	22.0%	30.0%	20.6%	16.9%	10.6%	2.64	1.28
I view buying 'hot' stock as result of my proactive knowledge of the stock market	20.3%	20.6%	20.9%	22.3%	16.0%	2.93	1.37
I know when to trade and how much to invest in the stock market without making loss	21.1%	16.6%	24.6%	19.1%	18.6%	2.97	1.40
I consider my investment performance to be always well thought out	14.9%	24.3%	22.3%	23.4%	15.1%	3.00	1.30
My skills and knowledge of stock market always help me to outperform the market	24.0%	13.1%	23.4%	26.6%	12.9%	2.91	1.37
I always rely on my predictive skills to time and outperform the stock market	17.4%	23.7%	19.1%	22.3%	17.4%	2.99	1.36
I ensure my reaction is as quickly as possible to the changes of the market and follow the reactions to the stock market	20.9%	21.1%	17.7%	26.0%	14.3%	2.92	1.37
I consider the information from close friends and relatives as the reliable reference for investment in the stock market	23.4%	23.4%	23.4%	19.7%	10.0%	2.69	1.30

The study sought to find out whether investors considered their investment performance to be always well thought out, the results showed that 25.4% of the respondents agreed, 18.3% strongly agreed while 18.6% and 17.7% strongly disagreed and disagreed respectively. The finding further revealed that 27.4% and 24.9% disagreed and strongly disagreed that loss making is a result of investment advice taking from other people. Those who agreed and strongly agreed were 11.1% and 15.4% respectively.

On whether investors at Rwanda stock exchange considered losing stock as a result of poor advice from others, 30.0% and 22.0% of the respondents disagreed and strongly disagreed respectively. The findings further showed that 16.9% and 10.6% agreed and strongly agreed respectively. The mean of 2.64 confirmed that majority of the respondents disagreed with the statements. The study further sought to establish whether respondents viewed buying 'hot' stock as result of their proactive knowledge of the stock market, the findings showed that 20.6% disagreed, 20.3% strongly disagreed, 20.9% were not sure, 22.3% agreed while 16.0% strongly agreed.

The results further revealed that 21.1% strongly disagreed, 16.6% disagreed, 24.6% not sure 19.1% agreed and 18.6% strongly agreed that they knew when

to trade and how much to invest in the stock market without making loss. Similarly, the findings of this study established that respondents were divided on whether they considered their investment performance to be always well thought out as shown by the mean response of 3 and standard deviation of 1.30.

The study sought to find out from the respondents whether their skills and knowledge of stock market always helped them to outperform the market, the findings showed that 26.6% and 12.9% agreed and strongly agreed while 24.0% strongly disagreed and 13.1% disagreed. The results further revealed that majority of the respondents disagreed they always relied on my predictive skills to time and outperform the stock market as shown by the mean of 2.99. This study further sought to establish whether, investors at Rwanda stock market ensured their reaction was as quickly as possible to the changes of the market and followed the reactions to the stock market; the findings showed that 20.9% and 21.1% of the respondents disagreed while 26.0% agreed and 14.3% strongly agreed.

Finally, the study sought to establish whether investors considered the information from close friends and relatives as the reliable reference for investment in the stock market. The findings showed that 23.4% strongly disagreed, another 23.4% disagreed, 19.7% agreed and 10.0% strongly agreed. The statement had a mean of 2.69 which further confirmed that majority of the respondents disagreed while the standard deviation of 1.30 indicated wide varying from the mean in the responses received.

These findings implied that investors at Rwanda stock market lacked self-attribution bias and this could explain why they don't invest heavily in securities. Schneider et al. (1979) found that self-attribution bias builds up an individual's overconfidence Individual exposed to self-attribution bias think that they have more abilities than average, known as "Batter then average effect. Self-attribution enhances overconfidence, so the subjects who suffer from this bias will be overconfident in their decisions and judgments.

Self-attribution bias affects the ability of a person to estimate his/her abilities and also affects the learning from past performances of that person to estimate his/her abilities and also affects the learning from past performances of that person. Gervais and Odean (2001) also found that people suffering from self-attribution bias become more overconfident after a success and it affects the conception about own capabilities as it hinders the evaluation of past performance, this leads to overconfidence and investors place too much weight on information they collect themselves due to excessive optimism.

c) Correlation Tests

The researcher investigated the association between the dependent variable and the independent variables as well as between the independent variables themselves using the correlation coefficient matrix as recommended by (Dancy & Reidy, 2004) as shown in table 3.

Table 3: Correlation Results

		Self-Attribution Bias
Investment In RSE	Pearson Correlation	0.550
	Sig. (2-tailed)	0.000
	N	350

The findings also established that the correlation between Investment in Rwanda Stock Market by individual investors at the Rwanda stock market and Self-Attribution Bias was 0.550 with a corresponding p value of 0.000. These findings implied that there existed a positive and significant association between Self-Attribution Bias and Investment in Rwanda Stock Market by individual investors at the Rwanda stock market. The findings further implied that if Self-Attribution Bias increases individuals Investment in Rwanda Stock Market also increases.

Schneider et al. (1979) found that self-attribution bias builds up an individual's overconfidence Individual exposed to self-attribution bias think that they have more abilities than average, known as "Batter then average effect. Self-attribution enhances overconfidence, so the subjects who suffer from this bias will be overconfident in their decisions and judgments. Gervais & Odean

(2001) also found that people suffering from self-attribution bias become more overconfident after a success and it affects the conception about own capabilities as it hinders the evaluation of past performance, this leads to overconfidence.

d) Regression Results for Self-Attribution Bias and Investment in RSE

The study employed a linear regression analysis to test the relationship between independent variables and the dependent variable. According to Kothari (2014), regression is the determination of a statistical relationship between two or more variables. In simple regression, there are two variables, one variable (defined as independent) is the cause of the behavior of another one (defined as dependent variable).

Table 4: Model Summary Results for Self-Attribution Bias

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.648	.420	.417	.37518

The study conducted a regression analysis to test the effect of Self-Attribution Bias sub constructs which included success self-attribution tendency and failures external attribution tendency on investment in Rwanda stock exchange. The finding showed that model had R-squared of 0.420 which indicated that 42.0% of the variation in investments in Rwanda stock market can be accounted for by Self-Attribution Bias sub constructs.

Table 5: ANOVA Results for Self-Attribution Bias

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	35.436	2	17.718	125.875	.000
1	Residual	48.844	347	.141		
	Total	84.280	349			

The results of ANOVA test show F-statistics =125.875 with a corresponding p-value = 0.000 which was less than 0.05, meaning that there is a relationship between Self-Attribution Bias subcontracts and Investment in Rwanda stock market.

Table 6: Regression Results for Self-Attribution Bias and Investment in RSE

	B	Std. Error	Beta	t	Sig.
(Constant)	3.004	0.062		48.192	0.000
Self-Attribution Bias	0.249	0.02	0.55	12.281	0.000

The model Y= β_0+ β_1 X1+ε therefore became Investment in Rwanda stock market = 3.004 +0.249 (Self-Attribution Bias) +ε.

The results on the beta coefficient of the resulting model showed that the constant α = 3.004 is significantly different from 0, since the p- value = 0.000 is less than 0.05. The coefficient β = 0.249 is also significantly different from 0 with a p-value=0.000 which is less than 0.05. The results imply that change in self-attribution bias will result in 0.249 units change in Investment in Rwanda stock market. This further confirms that there was a significant positive linear relationship between self-attribution bias and Investment in Rwanda stock market.

These findings concurs with those of Schneider et al. (1979) who found that self-attribution bias builds up an individual's overconfidence Individual exposed to self-attribution bias think that they have more abilities than average, known as "Batter then average effect. Self-attribution enhances overconfidence, so the subjects who suffer from this bias will be overconfident in their decisions and judgments. Gervais & Odean (2001) also found that people suffering from self-attribution bias become more overconfident after a success and it affects the conception about own capabilities as it hinders the evaluation of past performance, this leads to overconfidence. Conclusion

The coefficient of over-optimism bias in the multivariate regression analysis revealed a statistically significant relationship between over-optimism bias and investment in the Rwandan Stock Exchange. Hence the study rejected the null hypothesis and concluded that over-optimism bias has a significant effect on investment in the Rwandan Stock Exchange. Based on the findings, the study also concluded that over optimism bias affects the financial decision making of many investors at the stock markets. Over-optimism bias occurs majorly when investors place too much weight on past information.

V. Conclusions

The coefficient of over-optimism bias in the multivariate regression analysis revealed a statistically a significant positive linear relationship between self-attribution bias and Investment in Rwanda stock market. The coefficient of self-attribution bias in the multivariate regression analysis revealed a statistically significant relationship between loss aversion bias and investment in the Rwandan Stock Exchange. Hence the study rejected the null hypothesis and concluded that self-attribution bias has a significant effect on investment in the Rwandan Stock Exchange.

VI. Recommendations

The study finding established that self-attribution bias is a significant channel that hinders people to link their successes with their internal forces and their non-successes with external forces. The study recommends that investors should be keen to identify such bias to increase their rationality in stock trading.

References Références Referencias

1. Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. Handbook of the Economics of Finance, 1, 1053-1128.
2. Bhamra, H. S., & Uppal, R. (2016). Does Household Finance Matter? Small Financial Errors with Large Social Costs.
3. Bizimana, H. (2010). Drivers that influence susceptibility to HIV infection among students of higher institute of agriculture and animal husbandry (ISAE)-Rwanda.
4. Chaudhary, A. K. (2013). Impact of behavioural finance in investment decisions and strategies-A fresh approach. *International Journal of Management Research and Business Strategy*, *2* (2), 85-92.
5. Choi, D., & Lou, D. (2008). A Test of the Self-Serving Attribution Bias: Evidence from Mutual Funds. Working Paper, (December).
6. Dailami, M., & Atkin, M. (1990). *Stock markets in developing countries: key issues and a research agenda* (Vol. 515). World Bank Publications.
7. Gervais, S., & Odean, T. (2001). Learning to be overconfident. *Review of Financial studies*, *14* (1), 1-27.
8. Hoffmann, A. O., & Post, T. (2014). Self-attribution bias in consumer financial decision-making: How investment returns affect individuals' belief in skill. *Journal of Behavioral and Experimental Economics*, *52*, 23-28.
9. Ince, H., & Trafalis, T. B. (2007). Kernel principal component analysis and support vector machines for stock price prediction. *IIE Transactions*, *39* (6), 629-637.
10. Kafayat, A. (2014). Interrelationship of biases: effect investment decisions ultimately. *Theoretical and Applied Economics*, *21* (6 (595)), 85-110.
11. Kahneman, D., & Lovallo, D. (1993). Timid choices and bold forecasts: A cognitive perspective on risk taking. *Management science*, *39* (1), 17-31.
12. Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American psychologist*, *39* (4), 341.
13. Kidd III, C. E. (2012). *The Social Implications of Sub-Saharan Financial Markets: Case Analysis From the Nairobi and Johannesburg Stock Exchanges* (Doctoral dissertation, Howard University).
14. Kombo, D. K., & Tromp, D. L. (2006). A (2006). *Proposal and Thesis Writing: An Introduction Paulines Publication Africa Nairobi Kenya*.
15. Lodhi, S. (2014). Factors influencing individual investor behaviour: An empirical study of city Karachi. *Journal of Business and Management*, *16* (2), 68-76.
16. Mahonye, N. (2014). *Capital markets development, financial structure and economic development in Africa* (Doctoral dissertation).
17. Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. *The Journal of Economic Perspectives*, *29* (4), 37-60.
18. Marchand, M. (2012) Behavioral biases in financial decision making.
19. Mauwa, J. (2016) Determinants of Financial Performance of Firms Listed On the Rwanda Stock Exchange.
20. Mawowa, S. (2013). *Political Economy of Crisis, Mining and Accumulation in Zimbabwe* (Doctoral dissertation, University of KwaZulu Natal Durban).
21. Mbaru, J. (2003). *Transforming Africa: New Pathways to Development: Selected Speeches and Papers on Financial Reform and Development*. East African Publishers.
22. Mwangi, J. M. (2016). Effect of Financial Structure on Financial Performance of Firms Listed at East Africa Securities Exchanges.
23. Nofsinger, J. (2016). *The psychology of investing*. Routledge.
24. Piesse, J., & Hearn, B. (2005). Regional Integration of Equity Markets in Sub-Saharan Africa. *South African Journal of Economics*, *73* (1), 36-
25. Ritter, J. R. (2003). Investment banking and securities issuance. *Handbook of the Economics of Finance*, *1*, 255-306.
26. Schneider, K., Bzdok, D., Schilbach, L., Vogeley, K., Laird, A. R., Langner, R., & Eickhoff, S. B. (2012). Parsing the neural correlates of moral cognition: ALE meta-analysis on morality, theory of mind, and empathy. *Brain Structure and Function*, *217* (4), 783-796.
27. Schneider, CW., Suyemoto, MM. & Yarish, C. 1979. An annotated checklist of Connecticut seaweeds. Conn Geol Nat Hist Surv Bull. 108:1–20.
28. Sewell, M. (2007). Behavioural finance. *University of Cambridge. Available from internet: http://www. Behavioural finance. net/behavioural-finance. pdf*.
29. Shefrin, H. (2002). *Beyond greed and fear: Understanding behavioral finance and the psychology of investing*. Oxford University Press on Demand.
30. Shefrin, H. (2010). Behavioralizing finance. *Foundations and Trends® in Finance*, *4* (1–2), 1-184
31. Silverman, D. (2013). *Doing qualitative research: A practical handbook*. SAGE Publications Limited.
32. Subrahmanyam, A. (2008). Behavioural finance: A review and synthesis. *European Financial Management*, *14* (1), 12-29.
33. Sukanya, R., & Thimmarayappa, R. (2015). Impact of Behavioural biases in Portfolio investment decision making process. *International Journal of Commerce, Business and Management (IJCBM)*, *4* (4), 1278-1289.
34. Tine, D. C. (2013). Attribution Bias and Overconfidence in Escalation of Commitment: The Role of Desire to Rectify Past Outcomes.

35. Wasiu, O. I., & Temitope, M. W. (2013) Financial Market Integration and Economic Growth: An Experience from Nigeria.
36. Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, *1* (1), 24-41.