

# MODERATING EFFECT OF SELF-CONTROL ON THE RELATIONSHIP BETWEEN OVERCONFIDENCE AND INVESTMENT DECISION AMONG RETAIL INVESTORS IN THE NIGERIAN STOCK MARKET

<sup>1</sup>YUSUF Abdulrahim Otori, <sup>2</sup>IDRIS Ahmed Aliyu <sup>3</sup>SALISU Abubakar <sup>4</sup>MUHAMMAD Shehu Tijjani

<sup>1</sup>Department of Business Administration, ABU Business School ABU Zaria

<sup>2</sup>Department Of Actuarial Science and Insurance, ABU Business School ABU Zaria

<sup>3&4</sup>Department of Accounting, ABU Business School ABU Zaria

Corresponding author: [abdulrahimotori@gmail.com](mailto:abdulrahimotori@gmail.com)

## Abstract

*This study examined the moderating effect of self-control on the relationship between behavioural finance factors and investing decision of individual investors in the stock market using self-control as a moderator. The study employed sample of 388 investors and cross-sectional research survey design through questionnaire items adapted from past studies. The study employed Partial least square structural equation modeling through SmartPLS 4.0. The results showed that overconfidence and self-control were significant in predicting investing decision. It further revealed that self-control significantly moderate the relationship between overconfidence and investment decision. In line with the findings, the study concludes that investment decision is affected by overconfidence and self-control and self-control significantly moderates the relationship between overconfidence and investment decision. The study therefore recommended that the NSE management, investment advisors, and the capital market authority organizes trainings and workshops for the NSE investors and this will boost self-control strengths and raise their investing decision.*

**Keywords:** Herding, self-control, Investment, Decision, Stock Market,

## INTRODUCTION

The world economy has become more complex and thus, individual need to be active and smart in investment in order to manage the complexities associated with investing. Many individuals are interested in one investment or the other, they view investments to be fascinating because they make decisions and later see the outcomes of the decisions they made (Awais, Laber, Rasheed & Khursheed, 2016).

Arisanti and Oktavendi (2020) put forward that classical finance theory explains that the behaviour of investors in the capital market is rational, which means that decision of an investor is based on one's logic and rationality. This rational behaviour makes investors have the desire to get high returns and low risk. Further to this, Fama (1970) noted that an efficient market is characterized by situations where prices in the market reflect all available information and no one can obtain an abnormal return if he could identify mispricing opportunities. This argument was supported by some studies(e.g.,Keswani et al., 2019 & Dwipayana & Wiksuana, 2017).To some scholars, the assumption of investor rationality is not easily fulfilled (see, Tversky & Kahneman, 1992). Some of these traditional finance theories are not able to explain some inconsistencies (anomalies) of the capital market, for example, January effect, Day of the week effects, returns over trading and non-trading periods, Stock return volatility and the internet phenomenon (including capital market deadlock as the impact of the fall of internet-based stocks in the late 1990s)(Kartini & Nahda, 2021), among others. In reality the current market conditions to some extent are not clearly explained by classical financial theory, this might have justified the incorporation of behavioural finance so as to understand the different conditions that guide investment decisions.

According to Tversky and Kahneman (1992)'s prospect theory, individuals faced with risky prospects do not make decisions consistent with expected utility theory which estimates the likely utility of an action – when there is uncertainty about the outcome and suggests the rational choice with the highest expected utility. The

research into behavioural finance influences attempts to account for individuals' limited cognitive capacity, predispositions such as psychological characteristics and emotions in decision-making under risk. The theory of bounded rationality put forward that human beings are known to make decisions based on their intuitions and feeling rather than collecting sufficient information which will facilitate effective decision making. Accordingly, it is believed that the stock investing decisions are based on behavioural factors, some of which have been suggested to cause investors to buy shares more or less or not at all. Decisions by individual investors may be influenced by their overconfidence behaviour (see., Adiyani, 2020; Angelina & Batam, 2020; Osagie & Chijuka, 2021; Pratiwi, Tanjungpura, Tanjungpura, & Tanjungpura, 2020; Wibisono 2013; Alquraan, Alqisie, & Al-Shorafadi 2016; Riaz & Iqbal, 2015; Bakar & Yi, 2016; Khan, Azeem, & Sarwar, 2017; Jannah & Ady, 2017; Khalid et al., 2018; Mahanthe & Sugathadasa, 2018; Setiawan, Atahau & Robiyanto, 2018; & Malik, Hanif, & Azhar, 2019) and self control (Liang et al., 2022; Petpairote, 2023).

Extant studies have provided empirical support for the relationship between these variables, overconfidence, self control and investment decision but findings have not been consistent. For example, overconfidence was reported to have positive relationship with investing (see., Barber & Odean, 2001; Rizwan et al., 2018), and negative relationship (see., Shah et al., 2018 & Naveed & Taib, 2021). Reason for these may not be far from judgment lapses, perversion or lack self-control (see., Gathergood, 2012 & Younas et al., 2019). Excessive overconfidence leads to market inefficiency due to wrong prices and excessive instability (Shah, Raza & Khurshid, 2012). These investors, who are overly confident, invest more in the market because they have no idea about financial markets and lack information (Fuertes et al., 2014). It can be deduced here that lack of self control could perhaps be the cause of the mixed findings reported by previous researches.

Similar findings were recorded in the relationship between risk tolerance and investment decision. Going by the suggestion of Baron and Kenny (1986), where research findings become contradictory, a third variable exist that could explain the inconsistencies. Accordingly, self-control is a factor considered crucial in forming a person's behaviour (Lown, Kim, Gutter, Hunt, 2014 & Elshaer & Sobaih, 2023), because it helps improve and focus one's thoughts, attitude and actions regarding achieving a particular goal (see., Mpaata, Koskei & Saina, 2020). Self-control is the ability to break bad habits, resist temptations and overcome first impulses (She et al., 2021). Stromback et al (2017) found out that self-control predicts sound financial management behaviour. They further show that the ability to control impulses is undoubtedly a key factor for long-term success in many areas of life. Other studies have examined the relationship between self-control and financial management behaviour and found that people with low self-control are more likely to engage in unforeseen expenses (e.g. Gathergood, 2012). As a moderating variable, self-control also acts as a protective factor for life satisfaction (Park et al., 2014). Investors with high self-control tend to employ more positive and less negative strategies than those with low self-control, and the use of these positive strategies can result in a better bet (Li et al., 2016).

According to the Strength Model of Self-Control (Baumeister et al., 2007), individuals with high self-control have sufficient psychological resources like self-discipline, emotional regulations, and when they herd, these resources can be used to improve on their investment decision, which may bring more and better investing decision. Also, multiple studies reinforce that overconfident investors demonstrate excessive trading behaviour (Odean, 1998; Glaser & Weber, 2007), recent empirical evidence suggested that excessive trading frequency of investors, paired with overconfidence bias is resulting in losses (Michailova et al., 2017). Overconfident investors feel they can 'beat the market'. They are characterized by illusion of control, over ranking, wishful thinking, over estimation of personal talent and performance. Hence, they ignore the risk involved and invest far more than their less confident counterparts. They tend to buy overpriced assets, invest in riskier portfolios, and have lower returns. However, practicing some quick mental techniques like self-regulatory mechanisms such as avoiding wasteful behaviours and consider choices carefully and constantly think about the consequences of every actions (Chalimah, Martono & Khafid, 2019), could alert investors on what can go wrong and how that can impact their investment performance (Atmaningrum et al., 2021; Cascio et al., 2014; Fedyk,

2014). Thus, it is envisaged here that self-control interacts with overconfidence to create better investing decision.

According to Gottfredson and Hirschi (1990), Self-control is a behaviour resulting from self-control learning. A self-controlled person exhibits a great deal of willpower and personal control. They don't act impulsively and can regulate their emotions and actions effectively. Kocher et al. (2016), who manipulate traders' self-control in the bubble market paradigm introduced by Smith et al. (1988). They observe a higher degree of overpricing in markets if either all or only half of the participants' self-control is reduced. From these results, it seems reductions in self-control can have an effect on aggregate market outcomes possibly by being reinforced through the interaction of market participants. This implies that investors who are high risk takers may be guided by self-control.

Given these arguments in the literature and some scholarly recommendations, this study examines the moderating effect of self-control on the relationship between overconfidence and investment decision in the Nigerian stock market.

This paper is divided into 5 sections, section provided detailed introduction, section two review literature and theories, section three explored the research design and methodology, section four presented and analysed the data generated from the field and section five summarized the findings, conclude and recommendations are made.

## **LITERATURE REVIEW**

### **Concept of Investment decision**

Investing entails making a current sacrifice in exchange for a future benefit. Individuals, businesses, and governments are all in a position to determine whether or not to invest, as well as how to diversify among the available possibilities. Individual investment behaviour is concerned with decisions about small-scale securities purchases for one's own account (Jagongo & Mutswenje, 2014).

### **Concept of Overconfidence behaviour**

Overconfidence is a state in which people tend to think they are better than they really are (Trivers, 1991). Investors that exhibit overconfidence in their trading behaviour are likely to expect larger returns during periods of boom on financial markets and such investors also attribute their successes to their skills, while their failures are attributed to "bad luck". Overconfidence refers to overestimating the probability of being right. It is the tendency for individuals to overestimate the correctness of their initial assessment of a particular situation and reluctant in reviewing their initial assessment as a result of overconfidence. Overconfidence bias is a combination of both individual and related factors like individual age external equity (Bhutta & Shah, 2015).

### **Concept of self-control**

Financial self-control is another construct recognized by scholars and financial analysts as a predictor of financial behaviour and financial well-being. Self-control is the quality that allows you to stop yourself from doing things you want to do but that might not be in your best interest.

## **Empirical studies**

### **Overconfidence Bias and Investment Decision**

One aspect of behavioural biases that has received the most attention from researchers in the financial sector is overconfidence (Barber & Odean, 2001; Dittrich, Güth & Maciejovsky, 2005; Gervais, Heaton, & Odean, 2011; Glaser & Weber, 2007; Malmendier & Tate, 2005). Overconfidence is an unreasonable belief based on heart prompting, self-assessment, and excessive cognitive ability. Overconfidence makes someone feel smarter and has better information so that when the person predicts an event that he thinks is certain, often the reality is less than expected (Pompian, 2012). Overconfidence is also considered an overestimation of one's abilities,

performance and chances of success. Overconfidence is a belief of better judgment than others (over placement), as well as excessive certainty regarding the accuracy of one's beliefs (over precision) (Moore & Healy, 2008). Someone who is overconfident will tend to over-ride the information obtained because he is too confident in his own beliefs, too confident, and trusting in his views and knowledge so that other information that is actually related is important to be ignored. The negative impact of overconfidence is to make someone make a more extreme decision than they should do (Pikulina, Renneboog, & Tobler, 2017; Zacharakis & Shepherd, 2001)

Investors with this bias admit to having better ability and knowledge (Shefrin, 2000). Excessive overconfidence in making risky investment decisions is when people consider themselves better and superior than others (Larrick, Burson & Soll, 2007). Excessive overconfidence leads to market inefficiency due to wrong prices and excessive instability (Shah, Raza & Khurshid, 2012). These investors, who are overly confident, invest more in the market because they have no idea about financial markets and lack information. Someone with high overconfidence tends not to consider the impact of the risks that have been taken when choosing the type of investment. Overconfidence causes investors to overestimate the knowledge they have, and underestimate predictions made because investors overestimate their abilities (Baker & Nofsinger, 2011). Researchers have provided supports in the relationship between Overconfidence and investment decision. For example, the study of Pradikasari and Isbanah (2018) found that there is an effect of overconfidence in the investment decision. On the other hand, the research of Wulandari and Iramani (2014), showed that there is a negative effect of overconfidence behaviour in the investment decision.

Similarly, Qobri and Shabbir (2019) investigated the effect of behavioural biases on investor decision-making at the Islamabad Stock Exchange in Pakistan. The data were obtained using questionnaires from Islamabad Stock Exchange investors and brokers. Results from the research showed that the overconfidence in the Islamabad Stock Exchange has had a significant impact on investor decision making. The researcher also said that people think their expertise, background, and income have a great impact on investment decisions, whereas male investors are more optimistic than female investors.

Kartini and Nahda (2021) investigated the influence of various psychological factors on investment decision-making. The psychological factors that are investigated are differentiated into two aspects, cognitive and emotional aspects. From the cognitive aspect, the study examined the influence of anchoring, representativeness, loss aversion, overconfidence, and optimism biases on investor decisions. Meanwhile, from the emotional aspect, the influence of herding behaviour on investment decisions was analyzed. A quantitative approach was used based on a survey method and a snowball sampling that result in 165 questionnaires from individual investors in Yogyakarta. The findings show that all of the variables, anchoring bias, representativeness bias, loss aversion bias, overconfidence bias, optimism bias, and herding behaviour have a significant effect on investment decisions. This result emphasizes the influence of behavioural factors on investor's decisions.

Michailova, Mačiulis, and Tvaronavičienė (2017) analyzed individual financial decisions based on the study of Michailova and Schmidt, who ran an asset markets experiment with no informational asymmetries. Additionally, the study controls for differences in individual risk aversion. The data revealed that, in this setting, individual trading activity and performance were influenced by overconfidence only for female participants. Mistakes in future price forecasting, which were negatively correlated with overconfidence, partially accounted for this result.

Pratiwi et al., (2020) examined the effect of financial behaviour on perceptions of stock investment performance in the capital market with investment decisions as a mediator and financial literacy as a moderator. The study employed survey research design, with a population of all the investors in the Indonesian Stock exchange (IDX) Pontianak City (11,352 investors) and a sample selection using purposive sampling and snowball sampling with the criteria of investors who have invested  $\pm 1$  in order to obtain a sample of 100 respondents.

The data collection techniques used was questionnaires, documentary studies and literature studies. The result of the Structural Equation Modeling with WarpPLS. 6.0) showed a positive effect of overconfident on investment decision, and herding had no significant effect on investment decision.

Similar finding was reported in the study by Qadri and Shabbir (2014) who studied illusion of control analysis towards investment decision found that overconfidence creates this illusion of control. They found that investors with this tendency trades aggressively because they overestimate their own competence and make decision based on the illusion they know a lot more than other people. This is triggered by past returns. They found high positive significance between overconfidence and investment decision. The coefficients in this study shows psychological bias like overconfidence positively impacts decision making in investing. Overconfident investors trade more rapidly and disregard technical analysis before investing. Interestingly, in this study they also found male investors are more overconfident than female investors. However, no further explanation was given on why male investors tend to be more overconfident than female investors.

However, Abul(2019) investigated the effects of psychological factors on investor behaviour regarding the Kuwait Stock Exchange (KSE). These psychological factors are, namely: excessive optimism vs pessimism, herd behaviour and risk appetite. The data for this study obtained from KSE and a survey of a random sample of 398 individual investors. However, no evidence of overconfidence behaviour's effects on investors' decisions was discovered.

Agarwal (2021) identified the behavioural factors that affect the decision of the Investors and their impact on the investor in choosing the investment avenues. A sample of 273 respondents were taken in which Investors from different sector were surveyed with the help of standard questionnaire. Mean and t test was used to get appropriate results. It is found that there are different behavioural factors such as mood, emotional, heuristic, personality and overconfidence that influence the investors while making his investments and all the behavioural biases has a significant impact on the process of choosing the investment avenues

Gnawali (2021) examined the effect of the independent variables on investment decision making behaviour of individual in stock market. This study has used primary data to investigate the effect of the independent variables on investment decision making behaviour of individual in stock market of Nepal. The data related to the study was collected from the investors present in broker house which was used for calculating the correlation and regression. This study used both descriptive and inferential analysis. Correlation Test has found that all the independent have positive relationship except psychological factor has negative relationship. Regression analysis has found that only social interaction and regulatory policies has significant effect on investor's decision making behaviour for overall investors.

Alqurran, Alqisie, and Al Shorafa (2016) explored the behavioural finance factors influencing the stock investment decision of individual investors at Saudi Stock Market as one of the vital emerging markets in the Middle East. To conduct the study, (140) questionnaire were distributed to the participants on randomly basis. Cronbach's Alpha was used to test the validity of the instrument, in addition Multiple Linear Regression and ANOVA methods were used to test the hypotheses. Results of the study indicated that, behavioural finance factors (Loss Averse, Overconfidence, and Risk Perception) have significant effect on the stock investment decisions of individual investors in Saudi Stock Market, while Herd has insignificant effect. The demographic variables (Gender, Age, Education, Income, and Experience) don't make any significant differences in the investor decision, except the demographic variable (Education) make significant differences in the investor decision

Hadianto, Winarto and Nastiti (2020) analyzed the effect of overconfidence and herding on investors' decision to transact their stocks. The study's population is the investors in the investment gallery, becoming the partner of PT Sinar Mas Sekuritas, in Maranatha Christian University. The investors become the samples taken by a

simple random sampling method, and their number is calculated by the Slovin formula with the 10% border of inaccuracy. Based on this formula, the total investors are 74. Unfortunately, only 50 investors participate in this online survey; therefore, the response rate is 67.57%. Consequently, the structural equation model (SEM) based on variance suits the method to test data. After examining two proposed hypotheses, overall, this study concludes that overconfidence is the only determinant having a positive effect on the decision to invest

Novianggie and Asandimitra (2019) examined the influence of behavioural bias, cognitive bias, and emotional bias on investment decision, with financial literacy as a moderating variable. The research employed sample of 212 respondents from a college student in Investment Gallery Surabaya, using a detailed questionnaire, limited interview, and multiple regression analysis. The result obtains suggest that herding bias, risk perception, overconfidence, representativeness, and financial literacy have an effect significantly to an investment decision. While disposition effect and experience regret not to affect significantly to the investment decision. The result about research shows that college student in Surabaya in making investment decision base on advice from broker or friends and experience in other investment financial instrument in the past, and use information from magazine or news online investment decision. This study is based on decision theory, herding theory, behavioural finance theory, and prospect theory

Toma(2015) analyzed the investment decisions and behaviour of investors from Bucharest's Stock Exchange, Romania. Using financial transaction data, we wish to study some of the most prominent behavioural biases investors have shown to be prone to. Thus, the study wishes to see if traders exhibit overconfidence in their trading positions, whether they have a representativeness bias and a disposition effect

Noreen and Asif (2016) examined the excessive trading hypothesis; high overconfidence investors exhibit high investments, show excessive and aggressive trading behaviour due to high overconfidence as compare to low overconfidence investors. Data for the research is collected from the students of finance who have taken the courses of finance and investments but still they have just theoretical knowledge and they have not make investments in stock market. Independent samples t-test is used for the analysis and testing the hypothesis. Results of the study shows that high overconfident investors makes aggressive and excessive trading as compare to low overconfidence investors, furthermore there is almost no impact of any bad news on the investing behaviour of the overconfidence investors but results of the study shows that there is significant impact of bad news on the investment behaviour of low overconfident investors

Malik et al., (2019) assessed the impact of overconfidence bias on investment decisions and how risk tolerance mediates their relationship. A simple regression analysis was done to predict the relationship between the concerned variables using SPSS 23.00. The finding of the study indicates that overconfidence bias has a positive relation with investment decisions. Further it is also found that risk tolerance mediates their relationship.

Pratiwi et al., (2020) examined the effect of financial behaviour on perceptions of stock investment performance in the capital market with investment decisions as a mediator and financial literacy as a moderator. The results showed that overconfidence had a positive effect on investment decisions herding had no effect on investment decisions, financial literacy did not moderate the effect of overconfidence but moderates the negative effect of herding on investment decisions, and investment decisions mediate the effect of overconfidence on perceptions of investment performance but not for herding.

Gill, Khurshid, Mahmood and Ali(2018) investigated the factors affecting the investment decision making behaviour through the mediation role of information searches. Two factors i.e. overconfidence bias and economic expectations were used as independent variables while investment decision making behaviour is taken as dependent variable. A survey questionnaire was used to test the hypotheses and the population was investors of Lahore Stock Exchange of Pakistan and Faisalabad Trading Floor. Total of 229 questionnaires were used in the analyses. Simple and multiple regression analysis were used as statistical tool. The results showed positive

and significant relationship between economic expectations and investment decision making behaviour but when information search was included as mediator the relationship became insignificant and negative; which suggests full mediation in case of economic expectations. Overconfidence bias was also found to have positive and significant relationship with investment decision making behaviour. Osagie and Chijuka (2021) examined Behavioural Factors and Investment Decision Making in the Nigerian Stock Exchange (NSE). Using structured questionnaire and 75 investors with the application of a convenient sampling method. Using overconfidence bias, availability bias, conservatism, and herding effect to define the most important behavioural element affecting investment decision making by investors in the Nigerian. Multiple regression was used for the analysis. The findings of this study suggest that overconfidence, availability bias, and herding impact demonstrated a positive significant relationship with NSE investment decision-making except conservatism which showed a negative relationship with investment decision-making but at 0.01 levels statistically significant.

Armansyah (2021) discusses financial problems related to community investment decisions, special investments in real assets and financial assets. The data used are 250 respondents' data on Indonesian investors who invest in Indonesian capital markets. The results showed that overconfidence and mental accounting significantly affected investors' investment decisions in the Indonesian capital market. Similarly, Samsuri, Ismiyanti, Narsa, et al. (2019) studied the impact of psychological biases, spouse effect and level of engagement in investment decision making and investment performance through review of literature from secondary sources like Journals, magazines & periodicals. The findings of the literature review indicates the mediating effect of level of engagement and the moderating effect of spouse effect on investment decision making and investment performance. Investment advisors must frame strategies depending on these factors to ensure better investment decisions. This research paper is the first of its kind to include spouse effect and level of engagement in the role of mediating and moderating effects in decision making and investment performance.

Ni Luh Komang Arik and Luh Gede Sri, (2021) examined the effect of overconfidence and optimism bias on stock investment decisions with financial literacy as a moderator. The research population is active students at the Faculty of Economics and Business, Udayana University who are also stock investors. The sampling technique used was non-probability sampling with an accidental sampling approach. The analysis technique uses Partial Least Square (PLS). The results of the study show that Overconfidence has a significant positive effect on stock investment decisions; Optimism bias has a significant positive effect on stock investment decisions.

Septi et al., (2019) examine the effect of risk perception, risk tolerance, overconfidence, and loss aversion on investment decision making. There were 400 respondents taken using a questionnaire through the survey method. The results showed that risk perception has a significant and negative effect on investment decision making, risk tolerance and overconfidence have a significant and positive effect on investment decision making, while loss aversion has no effect on investment decision making. Adielyani & Mawardi (2020) examined the effect of overconfidence, herding behaviour, and risk tolerance to the stock investment decisions. The research employed 98 respondents taken using purposive sampling. The data was collected through questionnaires with Google form. Using similar data analysis technique with that Septi et al., (2019), the results showed that the overconfidence has a positive and significant effect on stock investment decisions of millennial investors in Semarang City. This is not in line with the outcome of Qobri and Shabbir (2019) who documented a significant negative effect of OC on investment decision. To this end, decision-makers incline to overestimate the knowledge and information that they possessed, also ignore the public information available. The investors with overconfidence bias override models and data because they convince themselves that they know better. They may not always know better, and by ignoring the early signs of potential damage, they cause themselves more harm than good. Researchers Kanojia, Singh and Goswami (2019) argue that overconfidence means that an investor recognizes the accuracy of information, potential and intelligence and underestimates the risks that will occur. Research by Grover and Singh (2015); Ni LuhKomangArikandLuhGede Sri, (2021), Javed and Marghoob (2020); Lisa (2019); Rehan and Umer (2017); Shusha and Touny (2016); Subramaniam and Velnampy

(2017); Kartini and Nugraha (2015); Pradikasari and Isbanah (2018); Sochi (2018); Madaan and Singh (2019); Areiqat, Abu-Rumman, and Al-Alani (2019); Halale and Gadekar (2019); Novianggie and Asandimitra (2019); Iqbal (2015) also shows that overconfidence has a positive and significant effect on investment decisions. Overconfidence behaviour has the potential to cause individuals to experience psychological bias because the decision-making process is not based on the highest prospects.

Going by the submissions of Ullah et al., (2020), Pratiwi et al., (2020), Michailova et al., (2017), Cao et al., (2021), Agarwal(2021), Gnawali (2021), Alqurran, Alqisie, and Al Shorafa (2016). Overconfident investors trade more rapidly and disregard technical analysis before investing. None of these results are in agreement with Abul (2019) who found no evidence of overconfident effect on investment decision. These differences in findings may have no other meaning but for further researches to incorporate a moderator.

The positive impact of overconfidence on investment decisions was confirmed in more research (Qasim, 2019; Rekha, 2020; Vuković & Pivac, 2021). This could indicate that overconfidence may contribute to the emergence of new ideas, which are beneficial to financial markets. However, some researchers have different findings, indicating that overconfidence and availability have a negative influence on decision making of investors, what makes their decisions less reliable (Shah, Ahmad & Mahmood, 2018; Rahman & Gan, 2020).

### **Self-control and Investment decision**

Sapkota (2023) examined the influence of emotional biases on equity investment decision of individual investors. This study was based on quantitative approach of research with the sample size of 385 individual investors. Evidence indicates that loss aversion bias, overconfidence bias, self-control bias and regret aversion bias had significant positive influence on equity investment decision. However, endowment bias and status quo bias had no significant contribution to the equity investment decision of the individual investors in Chitwan. Hence, the equity investment decision of investors in Chitwan is broadly depend upon easily and readily available information and strongly based on their own beliefs and emotions without resorting to deep research, investigation, information processing and analysis of the securities and the market with fundamental and technical analysis that leads to overtrading and overreaction to the market, holding on too losing stock enormously, holdings on to enormous risky portfolios, selling off gaining portfolio to early and finally, making investment decisions without proper analysis of the information, decisions are based on their own moods, beliefs, emotions, past experience and stock of knowledge

Petpairote (2023) examined the saving behaviour of income earners in Thai municipalities using a survey research method. The questionnaires were validated by experts, and data from 400 questionnaires were analysed using multiple regression analysis (including the mean and standard deviation). The results showed that most people had savings, which, if the savers had no main income, would be sufficient to sustain life for less than three months. Also, their incomes were mostly allocated for expenses, with the remainder deposited as savings. The proportion of savings per month was about 5–15%, and the overall purpose of saving money was to provide for old age or retirement. The main factor used to choose a form of savings was the rate of return. The savings trend is likely to continue in the future. The internet was a source of knowledge about saving plans, and most savings were in the form of money deposited with financial institutions. The researcher found that personal factors, such as income and occupation; financial skill factors, such as financial literacy, financial behaviour, and financial attitude; and self-control influenced the saving behaviour of income earners in Thai municipalities.

### **Self-control as a moderator**

According to Model of three Mental Resilience System mechanisms and the Strength Model of Self-Control (Baumeister et al., 2007; Davy-dov et al., 2010), individuals with high resilience have additional resources that can be used for harm reduction, health protection and promotion, and those who possess these resources have flexible self-regulating system that can enhance the moderating role of self-control. That is, higher resilient

individuals show higher self-esteem and a better ability to perform adaptive behaviours, which requires higher self-control in order to obtain positive mental health and well-being (Baumeister & Tierney, 2011). Hence, at a higher level of resilience, individuals may use cognitive strategies requiring self-control to adjust themselves to improving decision. In a word, for high resilient individuals, self-control may moderate the association between mindfulness and life satisfaction

Though, studies have been conducted on the relationship between behavioural biases and investment decision but results produced were inconsistent. For example, overconfidence was reported to have positive relationship with investing (see., Barber & Odean, 2001; Rizwan et al., 2018), and negative relationship (see., Shah et al., 2018 & Naveed & Taib, 2021). Reason for these may not far from judgment lapses, perversion or lack self control (Gathergood, 2012; Younas et al., 2019). Excessive overconfidence leads to market inefficiency due to wrong prices and excessive instability (Shah, Raza & Khurshid, 2012). These investors, who are overly confident, invest more in the market because they have no idea about financial markets and lack of information (Fuentes et al., 2014). It can be deduced here that lack of self control is the cause of the mixed findings reported by previous researches.

Tambun and Cahyati (2023) analyzed self-control moderation on the effect of financial behaviour and spiritual intelligence on financial planning. The results of this study recommend that students if they want to have good financial planning, they must be able to consider which needs are more important by controlling themselves and understanding how to make financial planning properly. In a study aimed to prove the role of self-control as a moderator, on the influence of economic literacy and financial management on financial planning. Tambun & Cahyati, (2023a) employed students in Jakarta with a sample of 175 respondents. The findings showed self-control is able to strengthen the influence of economic literacy on financial planning. The results of the study recommend that if you want to make good financial planning, then economic literacy and financial management are very important factors and support good financial planning.

### **Theory of Bounded Rationality**

Bounded rationality is a concept proposed by Herbert A. Simon, an American political scientist, in his 1957 book "Models of Man." Bounded rationality has come to broadly encompass models of effective behaviour that weaken, or reject altogether, the idealized conditions of perfect rationality assumed by models of economic man.

Bounded rationality comprehensively concerned with the manner actual decision-making process impacts the decisions that arrived (Kinoshita et al., 2013); (Ahmad Zamri, Ibrahim, Haslindar, Tuyon, 2017). The theory assumed that:

- i. People are not fully rational and not capable of making logical decisions as against the common belief in economic models that people are fully rational and capable of making logical decisions
- ii. Humans base their decisions on their limited knowledge and cognitive capacity.

This study considered this theory appropriate to underpin the model because it identified time limit, human reasoning abilities and limited knowledge as the driving factors in decision making. Time within which individual is expected to carry out analysis before making decision is limited and as such gives way to people to engage in some irrational mental short cuts like herding mentality. Likewise, bounded rationality also assumed individual limited knowledge, knowledge in this context include market information, this enable the individual to exercise some behavioural control while making investment decision. Thus, bounded rationality showed that individuals have biases and cognitive limitations, which forbid them from achieving full rationality at the time of decision-making.

### **RESEARCH METHODOLOGY**

The study utilized cross-sectional research design with the main objective of acquiring the knowledge to the subject matter and it involves a largely quantitative approach and hypotheses were statistically tested. The

population of this study comprised of all the retail investors in Nigeria. Nigerian stock exchange [NSE] (2020) put the number of retail investors to over three (3) million. This mean the actual number of individual investors in Nigeria is not known, thus the population here is treated as infinite.

The study, using Dilman 2007 sample size formula for infinite population, the study arrived at a sample of 385size. Dillman (2007) provides the following formula for estimating desired sample sizes:

, arrived at 385 investors as sample size. Using the following formula and parameters, the sample size result is as shown below.

$$n = \frac{(Z^2 \times p(1-p))}{MoE^2}$$

Where:

n= sample size ?

Z= critical value for the desired level of confidence = 1.96

P= the proportion being tested = 0.3

MoE = the desired margin of sampling error = 0.05

$$n = (1.96^2 \times 0.3 \times 0.7) / 0.05^2$$

$$n = 0.8067 / 0.0025$$

$$n = 322.68$$

$$n = 323$$

the current study increased the sample size by 50 percent and this bring our total sample size to 485.

The questionnaires were adapted from previous research studies. Mayfield et al., (2008)'s scale was used to measure the behaviour of individual investor towards investment decision. In order to measure overconfidence behaviour, this study adopted five items were also used to measure overconfidence in this study, which were adopted from Sarwar and Afaf (2016). The study employed the 13 item brief self control scale from Tangney, Baumeister, and Boone (2004). The questionnaire is converted to google form and the link sent to the sharcholder through the principal councils of the registered associations of shareholders. The study employed SPSS and PLS-SEM to code, clean the data and analysis.

## RESULTS AND DISCUSSIONS

Google generated data recorded 406 responses for which 5 were invalid and this was coded into SPSS. The data was subjected to preliminary analysis such as missing value, outliers and normality test. Missing values noted were replaced using serial mean. However, In the course of data screening, 13 outliers were noted and deleted from the data set there by bringing the number of usable responses to 388 usable for further analysis.

### 4.1 Measurement model

The study assessed the loading, validity and reliabilities of all the constructs of the study. The average variance extracted (AVE) was used to measure the convergent validity of the constructs of the study, whereas Fornel Lacker criterion and cross-loadings were employed for discriminant validity. To determine the internal consistency reliability and validity of all the constructs of this study and composite reliability (CR) was used.

Table 4.1 showed the construct reliability and validity. All items measuring the various construct of the study loaded above 0.5 which is the minimum loading recommended by Hair, Black, Babin, Anderson and Tatham (2013). However, items loading below this bench mark were deleted. Consequently, ID3, OC5, SC8, SC9, and SC13 were deleted

Table 4.1

*Loadings, construct reliability and convergent validity*

| Construct           | Item | Loadings | CR    | AVE   |
|---------------------|------|----------|-------|-------|
| Investment decision | ID1  | 0.701    | 0.846 | 0.649 |
|                     | ID2  | 0.901    |       |       |
|                     | ID3  | 0.803    |       |       |

|                |     |       |       |       |
|----------------|-----|-------|-------|-------|
| overconfidence | OC1 | 0.743 | 0.842 | 0.573 |
|                | OC2 | 0.629 |       |       |
|                | OC3 | 0.802 |       |       |
|                | OC4 | 0.838 |       |       |
| Self-control   | SC1 | 0.799 | 0.909 | 0.530 |
|                | SC2 | 0.618 |       |       |
|                | SC3 | 0.775 |       |       |
|                | SC4 | 0.716 |       |       |
|                | SC5 | 0.589 |       |       |
|                | SC6 | 0.846 |       |       |
|                | SC7 | 0.864 |       |       |
|                | SC8 | 0.646 |       |       |
|                | SC9 | 0.641 |       |       |

Note: CR=Composite reliability, AVE=Average variance extracted

From the table 4.1, All the constructs in the study met the composite reliability benchmark of .7 and average variance extracted of .5.

Also, for discriminant validity the study utilized the fornell and larker criterion which states that the square root of AVE must be greater than the correlation with other variable in the study. This is as presented in table 4.2 below

Table 4.2

*Discriminant Validity*

| Construct | ID           | OC           | SC           |
|-----------|--------------|--------------|--------------|
| ID        | <b>0.806</b> |              |              |
| OC        | -0.511       | <b>0.757</b> |              |
| SC        | 0.221        | -0.080       | <b>0.728</b> |

Source: SmartPLS 4 output, 2023

The square roots of AVE are presented in bolded font on the diagonal and it can be observed that the values are greater than the correlations among the constructs, thus this criterion is satisfied.

### Structural model (Inner model)

The structural model or inner model is the second part of the PLS-SEM. Hair et' al. (2013) identified four key criteria for assessing the structural model in PLSSEM. These include assessments of significance of the path coefficients, coefficient of determination ( $R^2$ ), the effect size ( $f^2$ ), and lastly (4) predictive relevance ( $Q^2$ ). However, to ascertain the effect of overconfidence behaviour and self-control on investment decision, it is important to carry out a bootstrapping analysis. Bootstrapping was done by using 5000 subsamples using 388 cases. Figure 4.3 presented the structural model of the direct effects.

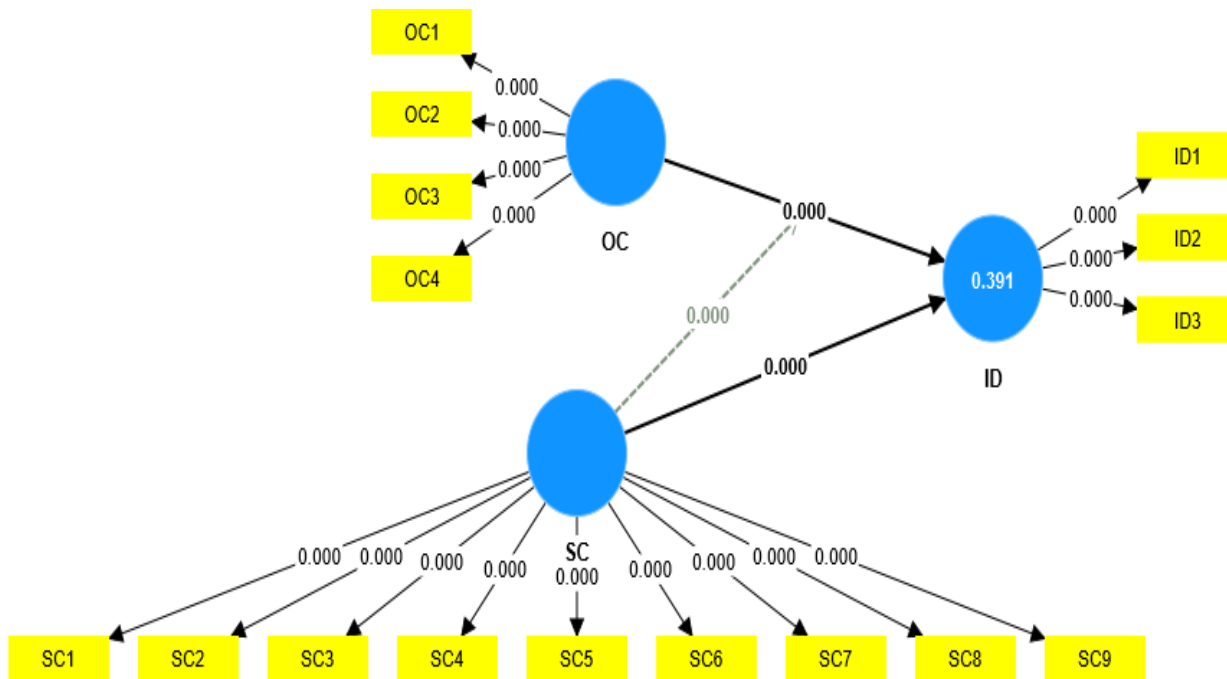


Figure 4.1: Structural model

Source: SmartPLS 4 output, 2023

#### 4.2.1 Test of hypotheses

On this section, the study tested for all the three hypotheses and table 4.3 presented the results of the structural model with the beta value of the relationships, t-statistic and p-value.

Table 4.3

Path coefficients

| Hypotheses      | Relationship | Beta   | Std Error | T-value | p-value | Decision     |
|-----------------|--------------|--------|-----------|---------|---------|--------------|
| H1              | OC->ID       | -0.542 | 0.032     | 16.903  | 0.000   | Rejected     |
| H2              | SC->ID       | 0.134  | 0.038     | 3.548   | 0.032   | Rejected     |
| H3              | SC x OC->ID  | 0.309  | 0.048     | 6.421   | 0.000   | Rejected     |
| <b>R square</b> |              |        |           |         |         | <b>0.391</b> |

Source: SmartPLS 4 & SPSS output, 2023

Three hypotheses were formulated for testing, they were tested using structural model from the SmartPLS 4 output. From Table 4.3, it can be seen that overconfidence has a significant negative effect on investment decision ( $\beta = -0.542$ , t-value = 7.094, p-value = 0.000). With this result, the first hypothesis ( $H_1$ ), OC does not significantly affect investment decision is rejected. Self-control has a significant positive effect on investment decision ( $\beta = 0.134$ , t-value = 2.141, p-value = 0.032), the study reject the second hypothesis, self-control does not significantly affect investment decision.

Finally, as expected in the study, it was discovered that self-control does not significantly moderate the relationship between herding behaviour and investment decision ( $\beta = 0.309$ , t-value = 6.421, p-value = 0.000). Thus, the study rejected the third hypothesis.

The r square stood at 0.391 which implies that 39.1% variation in the dependent variable is explained by herding behaviour, self-control and the interaction term. The remaining 51.9% is explained by variables not captured in this model.

### Effect size and Predictive relevance

The effect size of the model is presented in the table 4.4. The study assessed the effect size of the exogenous variables (herding behaviour and self-control) on endogenous variable (investment decision) using the  $F^2$ . Cohen (1988) recommended that  $f^2$  values of 0.02, 0.15, and 0.35, to represents small, medium, and large effects respectively.

Table 4.4

Effect size ( $f^2$ )

| Construct            | F square     |
|----------------------|--------------|
| OC                   | 0.470        |
| SC                   | 0.029        |
| SC x OC              | 0.161        |
| <b>Q<sup>2</sup></b> | <b>0.371</b> |

Source: SmartPLS 4 output, 2023

From table 4.4, Overconfidence has a large effect size with  $f$  square value of 0.470 and self -control a small effect size with  $f$  square value of 0.029. The interaction in term SC x OC has 0.161 effect size on the investment decision.

### Predictive relevance

The study also utilized  $Q^2$  to assess the predictive relevance of the exogenous variables on the endogenous variable.  $Q^2$  shows how well the data collected empirically can be reconstructed with the help of model and the PLS parameters. From Table 4.4, it is seen that the  $Q^2$  values of investment decision is 0.371. This value is greater than 0. This also means that all the exogenous variables has 37.1 relevance in predicting investment decision.

## DISCUSSION OF FINDINGS

Overconfidence has a significant negative effect on investment decision. This implies that the more investors overrate their abilities in decision making the less optimal in their decision making. This is in line with the studies by (Shah et al., 2018 & Naveed & Taib, 2021). Self-control has significant positive effect on investment decision. The greater the self-control the better the investing decision. Moreover, people with good self-control are able to prioritise needs over momentary desires. Self-control has a strong influence on determining investing decision, according to research by (Purwianti et al., 2022). Also consistent with the findings of this study are the studies conducted by (Konstantin, 2016; Sekścińska et al., 2021; Siska et al., 2021; Ullah, 2015). Such an association between self-control and investment decision is also in line with the theory of planned behaviour (TPB), introduced by Ajzen (1991). Also, self-control significantly moderate the relationship between overconfidence and investment decision. In this context, where investors have perfect self-control over his or her financial behaviour, the excesses of overconfidence on the part of individual is curtailed and result in better investment decision. In other words, investors ability to control his or her financial behaviour may interact well with overconfidence thus explains why there was significant moderating effect.

## CONCLUSION AND RECOMMENDATIONS

The study, based on the findings, concludes that overconfidence and self-control have significant effect on investment decision and self-control significantly moderate the relationship between overconfidence behaviour and investment decision. The study suggests the following recommendations.

- i. Investors should learn not overrate their abilities, skills and knowledge this will enable them to better decision making.
- ii. Self-control should cultivate the habit of resisting temptations, breaking bad habit and limiting first impulse, this will helps improve and focus one's thoughts, attitude and actions regarding achieving a particular goal and consequently improve investment decision

- iii. Self-control mechanisms should be developed to help curb the excesses of overreaction to personal abilities.

However, investors who are equipped with high sense of self-control will be able to resist bad habits in herding to achieve better investing decision.

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