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EFFECTS OF EMOTIONAL INTELLIGENCE VARIABLES ON INVESTOR BEHAVIOUR IN GHANA

Asamoah, G. ^{1*} Baah-Adade, A. K. ² Ayikpah, Y.A. ³

^{1.} Research & Data Science Department, TREMMBiT CONSULT, ACCRA, Ghana.

^{2.} University of Ghana Business School, Accra, Ghana.

^{3.} Research & Data Science Department, TREMMBiT CONSULT, ACCRA, Ghana

***Corresponding author:**

Godfried Asamoah. *Economic Research & Analysis Department, TREMMBiT Consult, ACCRA, Ghana.*

Tel: +233 244 103250. E-mail: go4df4@yahoo.com or tremmbitconsult@gmail.com

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Asamoah, G. TREMMBIT CONSULT, ACCRA-GHANA. Email: go4df4@gmail.com Mobile: +2332 44103250.
Baah-Adade, A.K. UNIVERSITY OF GHANA, LEGON, ACCRA-GHANA. Email: akba94@hotmail.com Mobile: +233 505254830.
Ayikpah, Y.A.A. TREMMBIT CONSULT, ACCRA-GHANA. Email: awoayikpah55@gmail.com Mobile: +233209433532

EFFECTS OF EMOTIONAL INTELLIGENCE VARIABLES ON INVESTOR BEHAVIOUR IN GHANA

ABSTRACT

Purpose/
Objective

This study sought to investigate and broaden the understanding of how EI affects investment behaviour and decisions of investors. In particular, the study analysed the effects of emotional intelligence variables/factors on investor behaviour in Ghana and also investigated the indirect effect of emotional intelligence on investor behaviour through the mediating role of financial literacy.

Paradigm/
Design/
Methodology/
Approach

This study adopted Goleman's (1995) four clusters model, which are self-knowledge, self-control, social awareness, and relationship management, to describe emotional intelligence. Measurement items for investor behaviour and financial literacy were constructed by the author based on an extensive literature review of existing theories. The study utilised an objectivist ontological paradigm, a positivist epistemological viewpoint, and sound axiological (ethical) principles in dealing with study respondents. A non-experimental, quantitative, survey-based, and cross-sectional research design was employed to collect primary data from respondents using the self-completion questionnaire method. Three hundred initial questionnaires were sent to 300 respondents who were selected using convenience and snowball sampling techniques. Two hundred and fifty-five (255) of the questionnaires were retrieved, yielding a response rate of 85.00%. By applying Descriptive Statistics, Exploratory Factor Analysis, Reliability Analyses on the Measurement Instruments on the face of the Questionnaire, conducting the Structural Equation Modeling (SEM) analyses, the study found answers to the five main research questions that were pursued.

Findings
&
Further
Studies

The first research question was: *What is the total direct effect of emotional intelligence on the behaviour of investors in Ghana?* According to the results, emotional intelligence has a statistically significant direct positive effect on investor behaviour. The second research question was: *To what extent do the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching?* The results indicate that emotional intelligence dimensions exerted differential effects on each of the investor behaviour variables. The third research question was: *How does emotional intelligence indirectly affect investor behaviour through the mediating role of financial literacy?* The analysis revealed that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy, meaning that highly emotionally intelligent investors with higher financial literacy levels are more likely to make better and successful investment decisions. The fourth research question was: *Which of the emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors?* The results revealed that the majority (27%) of the respondents expressed the self-management aspect of their EI more than the other aspects. The fifth and final research question was: *Which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switching do Ghanaian investors frequently exhibit?* The analysis shows that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors. For further studies, it is recommended, among other suggested areas, an exploration into the neurological foundations of emotional intelligence and investor behaviour in Ghana. The findings from such a study would be very interesting and revealing.

Originality/
Value

The main value of this study is that it contributes to the empirical educational literature as it throws more light on the extent to which emotional intelligence variables affect the investment selections of individual traders in Ghana. Hence, the findings of the study could add to extant know-how in the fields of behavioural finance and economics.

Key words: Emotional Intelligence, Investor, Behaviour.

1. INTRODUCTION

1.1 Background of the Study

For long, it was believed that success in the place of work or life was once contingent upon people's degrees of Genius or the Intelligence Quotient (IQ) which is normally mirrored as our examination grades, educational degrees, accomplishments, and so on. In different words, it was the frequent belief that academic credentials such as excelling in school, university, achieving excessive marks in IQ assessments had been among the things educators regarded as intelligence. But how sensible are you in managing life's hardest moments? Here you require some other degree of intelligence, which can be defined as emotional intelligence (Singh, 2015) [95].

Emotional intelligence (EI) additionally acknowledged as Emotional Quotient (EQ) was first proposed by Salovey and Mayer (Salovey & Mayer, 1990) [85]. *Emotional Intelligence (EI)* is defined as the capacity/ability for identifying our very own emotions and those of others, motivating ourselves, and coping with our emotions and relationships accurately (Goleman, 1998) [42]. Many experts are now of the view that an individual's emotional quotient (EQ) may additionally be more quintessential than their intelligence quotient (IQ) and is without a doubt a more advantageous predictor of high-quality relationships, success, and happiness in its totality.

Better administration of one's emotions leads to a route toward profitable decision-making. Emotions play a considerable function in the liking of things for an individual (Leary, Reilly & Brown, 2009). Planning, assessment, and implementation of great choices for individuals, companies, and businesses are correlated with the intrinsic and extrinsic factors (Hess & Bacigalupo, 2011) [51]. Emotional intelligence is the potential of a person to convey his feelings and bond them to those he acquires from his environment for decision-making and relationship administration (Ahangar & Rooshan, 2010) [3].

Investors, like any other human being, also possess and convey their emotions. It is acknowledged that traders will create more beneficial choices when they perceive and comprehend their emotions, as it will make them minimise the struggles related to the decision-making system (Hess & Bacigalupo, 2011) [51].

It has been referred to in preceding studies that emotions or feelings are convolutedly bound up in the manner that humans think, behave, and attain choices (George, 2000, as mentioned in Sashikala and Chitramani, 2017) [36]. To capture the function of emotions and feelings in human behaviour, the term emotional intelligence was once proposed by Salovey and Mayer (Salovey & Mayer, 1990) [85]. According to them, emotional intelligence refers to the ability to realise one's own emotions and to utilise the facts to control one's wondering and behaviour (Salovey & Mayer, 1990) [85]. To elucidate the idea further, Goleman (1995, 1998) [40] [42] a four-dimension model of emotional intelligence, namely, 1) *Self-Awareness*, 2) *Self-Management*, 3) *Social Awareness* and 4) *Relationship Management* and argued that this expertise in emotional intelligence is imperative and extraordinarily demanding for successful leaders and efficient decision-making. Goleman (1998) [42] similarly asserted that emotional intelligence is the mightiest indicator of human success. In his perspective, our feelings play a quintessential function in individual success, decision-making, and thinking (Goleman, 1998) [42]. So how does emotional intelligence affect the behaviour of investors? To what extent are investors' investment selections influenced and affected by their emotional intelligence? These questions are very necessary and represent the



major purpose for the conduct of this study, as the study hopes to find some answers to these questions.

In proceeding with the discourse, it is imperative to observe that traders are, firstly, human beings. As human beings, they also have feelings and always show up some level of emotional intelligence. It has been cited in some preceding research that private investors are not constantly rational; they exhibit plenty of behavioural biases (Barber & Odean, 2011, mentioned in Sashikala & Chitramani, 2017) [14]. Investors' common propensity is to think about investments that would give them excessive returns. Hence, the variable risk impacts the investor's behaviour to a greater extent. Yet, the risk-taking behaviour varies from one investor to another. Moreover, prior research in behavioural finance suggests that investors are regularly pressured by their feelings to make choices that are not optimal for their bodily health and well-being. This might also be, in part, because investors are seldom in a position to accurately determine the future overall performance of shares and investment portfolios (Michael Ann, 2012, noted in Sashikala & Chitramani, 2017) [67].

Other researchers have observed that investors with a high degree of emotional intelligence have more likelihood, to invest accurately by trading less regularly and employing low-cost fund selections (e.g., Ameriks, Wranik & Salovey, 2009) [6]. When an investor becomes risk-averse, he/she is sure to use his/her emotional intelligence (Reza Pirayesh, 2013, mentioned in Sashikala & Chitramani, 2017; Charles & Kasilingam, 2014) [81] [22]. People with greater characteristics of EI are more probable to invest in comparison to individuals with lower qualities of EI (Petridis & Furnham, 2001, cited in Sashikala & Chitramani, 2017) [76]. Experiments have revealed that human beings put in certain tricky cases can make magnificent choices by the usage of their innate gut feelings (emotional intelligence) as a substitute than deliberate wondering [1].

In effect, investors behave in very special ways when it comes to how they invest their wealth, money, and assets. The behaviour of traders concerning their investment choices is generally termed as *Investor Behaviour (IB)*. IB in itself has been found to manifest itself in quite a few varieties or rather, recognised to be influenced by different exogenous variables which are normally understood in the literature to be influenced by certain structural, cultural, and psychological anomalies [2]. Typical investor behaviours include *Herd Behaviour* which according to Banerjee (1992) arises when investors do what absolutely everyone else does, even when their data suggests they need to undertake an alternate decision. Another investor behaviour is *Loss Aversion* and refers to the tendency for investors to opt for evading losses rather than amassing gains. Kahneman and Tversky (1979) [56] delivered the concept beneath the premise that losses have a higher effect on choices than that of the advantages of gains (Benartzi & Thaler, 1993) [17]. *Mental Accounting* is some other sort of investor behaviour. In the view of Thaler (1999) [100], MA alludes to a set of cognitive operations used by men and women and households to coordinate, assess, and maintain the track of economic activities. Overconfidence (OC) is another unique investor behaviour and known to manifest when traders tend to overestimate the chance of accuracy of their information, their successes, and abilities (De Bondt & Thaler, 1995) [30]. *Overreaction* is some other variety of investor behaviour concept which asserts that traders and merchants react disproportionately to new data about given security causing the security price to alternate dramatically so that the price will no longer thoroughly replicate the security's proper price immediately following the event (Soares & Serra, 2005) [96]. The opposite thinking of

¹ (See for example, Ameriks, Wranik & Salovey, 2009; Charles & Kasilingam, 2014; Christelis, Jappelli & Padula, 2010; Creevy et al., 2011).

² (Refer to, Shiller, 2000, cited in Sashikala & Chitramani, 2017; Baker et al., 2002, mentioned in Sashikala & Chitramani, 2017).

overreaction is *Underreaction* and is recognised to manifest when buyers predict the future and tend to get anchored by using salient previous events, consequently, causing them to underreact or under respond to contemporary information (Barberis, Shleifer & Vishny, 1998) [15]. Another sort of investor behaviour is *Portfolio Diversification* and it is generally understood in the finance and investment planning literature as referring to the risk management method of combining a range of assets to minimise the average risk of an investment portfolio. *Frequency of Trading* is additionally an investor behaviour which refers to a technique of buying and selling in which some sophisticated traders make use of effective computer applications to transact a massive range of orders in fractions of a second (Chen, 2019) [24]. Sometimes investor behaviour is echoed in the form of *Portfolio Switching*. According to Chen (2017), *portfolio switching* refers to the procedure of transferring investments. That is to say, inside the investment market, the investor may additionally want to switch from one fund to another, or the investor may additionally select to transfer their brokerage property from one portfolio to another or liquidate an asset/security in exchange for different securities. The last, but not the least type/manifestation of investor behaviour is known as Excessive Trading (ET) and it refers to immoderate buying and selling of stock by either a broker or an individual trader (Chen, 2019) [24].

The above evaluation and outcomes indicate that investing behaviour is determined by way of character differences in perceiving and dealing with emotions (Rubaltelli et al., 2015) [83]. They further illustrate that the quality of investment selections and investors' success and behaviour are influenced to a great extent, by their degree of emotional intelligence. But, how precisely and to what extent emotional intelligence influences and impacts the behaviour of investors is the most important crux of this study.

1.2 Research Problem

Some preceding research has examined a variety of factors of emotional intelligence, particularly in *India* [3]. Others investigated the relationship between parent-child relationship and emotional regulation in youngsters throughout 4 countries, namely, *Argentina, Ghana, India, and Zambia* (Hapunda et al., 2019) [47]. However, most of the preceding studies looked at person or group emotional intelligence and its connection with *workplace performance* (e.g. Bartz et al., 2018, the USA; Ackon, 2012, Ghana; Lebeck & Chighizola, 2018, the USA; Mishra & Shrivastava, 2018, India) [16] [1] [60] [68], *employee commitment* (Yuvaraj & Eveline, 2018, India; Akudugu, 2015, Ghana) [102] [4]; *Quality of Leader-Follower Relationship* (Mahadi, 2011, Malaysia) [66], *job satisfaction* (Rahmati & Mohebi, 2016, Iran) [80], *students' writing capabilities* (Ebrahimi, Khoshsima & Zare-Behtash, 2018, Iran) [33], *Personality expression and Implicit Aggression* (Lee, 2018, Korea) [61], *academic, social, personal, and workplace success* (Brackett, Rivers & Salovey, 2011, USA) [19]; *teachers' feelings* (Suhaila, 2018, Oman)⁴; *gender variations in emotion appreciation* (Fischer, Kret & Broekens, 2018, Netherlands) [34]; *economic performance* (Danquah, 2015, Ghana) [29]; *client satisfaction and service quality* (Opuni & Adu-Gyamfi, 2015, Ghana) [74].

³ (e.g. Radha, Bhavani Shree, Bharathi, 2018; Navas & Vijayakumar, 2018; Gupta & Bajaj, 2018).

⁴ Alhashemi, S. E. (2018). Evaluating and improving emotional intelligence among teachers: a case of schools in Duhfar Governate. International Journal of Business and Applied Social Science, 4(5), 1-13. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-57488-2>



Very few studies exist globally, that analysed the nexus between *emotional intelligence and some factors of investor behaviour/investment choices*, and this research was carried out in the *USA* (e.g., Ameriks, Wranik & Salovey, 2009) [7]; *India* [5]; *Pakistan* [6]; and *Vietnam* (Luong & Ha, 2011) [65].

Most of the studies carried out in different African nations (other than Ghana) centered on subject matters such as *investor behaviour and stock market response in Kenya* (Cherono, 2018) [25]; *factors influencing investment decisions in Kenya* (Mutswenje, 2009; Jagongo & Mutswenje, 2014) [69] [7], and *determinants of private investment behaviour in Uganda* (Aggrey, 2014) [2]. Only a few of these previous research centered on emotional intelligence, however, even then, they did not particularly hyperlink it to investor behaviour, e.g. in Nigeria (Igbafe, 2016) [52].

In Ghana, some studies have been carried out on such subjects as *financial literacy and investment decisions* (Oteng, 2019) [75]; *investment behaviour of informal sector workers* (Tettey, 2019) [99]; *investor behavioural pattern* (Tetteh, Hayfron, 2017) [98]; *determinants of mutual fund investment decision* [8]; *behavioural elements and investment choices* (Donkor, Akohene & Acheampong, 2016) [32]; *determinants of private investment behaviour* (Asante, 2000) [8]; *investment behaviour of rural families* (Amu, Offei-Ansah & Gavor, 2012) [7]; and *determinants of saving and investment in disadvantaged district capitals* (Issahaku, 2011) [53]. But none of this research particularly analysed the impact of emotional intelligence on investor behaviour. It is against this backdrop that this study is being performed with the general motive of examining the degree to which emotional intelligence influences and impacts the investment decisions and behaviour of investors in Ghana.

1.3 Research Questions

The study seeks to furnish solutions to the following research questions;

1. What is the total direct effect of emotional intelligence on the behaviour of investors in Ghana?
2. To what extent do the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, frequency of buying and selling and portfolio switching?
3. How does emotional intelligence indirectly affect investor behaviour through the mediating role of financial literacy?
4. Which of the Emotional intelligence scopes of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors?
5. Which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching do Ghanaian investors frequently exhibit?

⁵ (e.g. Jain & Tripathi, 2019; Sashikala, 2017; Sarkar & Sahu, 2017; Karthikeyan & Lalwani, 2017; Saikia et al., 2015; Ph & Uchil, 2016)

⁶ (e.g., Gill et al., 2018; Hadi, 2017; Tanvir, Sufyan & Ahsan, 2016), Bangladesh (Dhar, Kalbin, Salema & Saha, 2017).

⁷Jagongo, A., & Mutswenje, V. S. (2014). A Survey of the Factors Influencing Investment Decisions: The Case of Individual Investors at the NSE. *International Journal of Humanities and Social Science*, 4(4), 92-102.

⁸ (See, Awunyo-Vitor, Aveh, Donkor & Addai, 2015).



1.4 Research Hypotheses

The study checks three foremost hypotheses. Each hypothesis is examined at a significance level of $\alpha=0.05$ or 0.10 corresponding to confidence levels of 95% and 90%, respectively.

Hypothesis 1

H₀₁: Emotional intelligence has no statistically significant total effect on the behaviour of investors in Ghana.

H_{a1}: Emotional intelligence has a statistically significant total effect on the behaviour of investors in Ghana.

Hypothesis 2

H₀₂: The emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management exert no statistically significant effects on the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching in Ghana

H_{a2}: The emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management exert some statistically significant effects on the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching in Ghana.

Hypothesis 3

H₀₃: Emotional intelligence does not exert any statistically significant indirect effect on investor behaviour in Ghana through the mediating role of financial literacy.

H_{a3}: Emotional intelligence does exert some statistically significant indirect effect on investor behaviour in Ghana through the mediating role of financial literacy.

1.5 Research Objectives

The study has the following targets; To

1. Analyse the effect of emotional intelligence on investor behaviour in Ghana.
2. Understand the individual effects of each of the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management on each of the investor behaviours of herding, loss aversion, portfolio diversification, immoderate trading, overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching in Ghana.
3. Study the indirect effect of emotional intelligence on investor behaviour in Ghana through the mediating role of financial literacy.
4. Find out which of the Emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors.
5. Ascertain which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching Ghanaian investors do frequently exhibit.



1.6 Contribution of the Study

This study is very substantial to the empirical literature on behavioural finance. Firstly, the study addresses the empirical hole on the emotional intelligence-investor behaviour nexus in Ghana when you consider that there is a constrained variety of empirical research in Ghana that particularly pays attention to the consequences of emotional intelligence on investor behaviour. Since most of the preceding works investigated emotional intelligence as a stand-alone idea (e.g. Radha, Bhavani Shree, Bharathi, 2018; Navas & Vijayakumar, 2018; Gupta & Bajaj, 2018; Hapunda et al., 2019) [79] [70] [43] [47] or investigated its connection with different variables such as workplace performance (e.g., Bartz et al., 2018, Ackon, 2012; Lebeck & Chighizola, 2018; Mishra & Shrivastava, 2018) [16] [1] [60] [68], employee dedication (Yuvaraj & Eveline, 2018; Akudugu, 2015) [102] [4]; Quality of Leader-Follower Relationship (Mahadi, 2011) [66], job satisfaction (Rahmati & Mohebi, 2016) [80], students' writing capabilities (Ebrahimi, Khoshsima & Zare-Behtash, 2018) [33], personality expression and Implicit Aggression (Lee, 2018) [61], workplace success, personal, social, and academic (Brackett, Rivers & Salovey, 2011) [19]; teachers' emotions (Suhaila, 2018) [4]; gender variations in emotion appreciation (Fischer, Kret & Broekens, 2018) [34]; financial performance (Danquah, 2015) [29]; and consumer satisfaction and service quality (Opuni & Adu-Gyamfi, 2015) [74], this study will become very applicable as it adds up to the few empirical studies that have been carried out on emotional intelligence and investor behaviour in Ghana.

Secondly, the study is very relevant to researchers and other analysts inside the Ghanaian investment panorama as it could serve as a reference or resource material on the emotional intelligence and investor behaviour linkage. The findings of the study could be used by analysts and financial advisors to furnish private advice to individual investors on how to make sensible investment decisions by deploying the applicable aspects of emotional intelligence. Considering the recent economic scandals in Ghana and the large financial losses buyers have experienced due to the MenZGold and GN Bank (Gold Coast Securities) debacles, a study like this could be very imperative as it could assist both investors and analysts apprehend the function of emotional behaviour in investment choices and if possible, furnish some recommendation or roadmap on how investors ought to keep away from such big investment losses in the future.

Thirdly, the study contributes to the empirical educational literature as it throws more light on the extent to which emotional intelligence variables affect the investment selections of individual traders in Ghana. Hence, the findings of the study could add to extant know-how in the fields of behavioural finance and economics.

1.7 Organisation of the Paper

The study is structured into five chapters. Chapter one focuses on the introduction, background of the study, statement of the problem, objectives, research questions, hypotheses, the significance of the study, the purpose of the study, and the organisation of the study. Chapter two deals with an evaluation of related literature. Chapter three mainly covers the methodology of the study. It provides details of how the research will be conducted. These encompass the tools, population, research approach, and sampling techniques employed. Chapter four covers the details of presentations, analysis, and discussions of the data collected. Chapter five deals with the summary, the conclusion, and recommendations primarily based on the findings of the study.

1.8 Definition of Terms

As far as this study is concerned, the following terms are described as follows:
1. *Investor Behaviour* - The common behaviour of investors regarding how they make precise



investment decisions and invest the money, recognised in the literature to be determined by structural, cultural, and psychological anomalies (Shiller, 2000, noted in Sashikala & Chitramani, 2017; Baker et al., 2002, cited in Sashikala & Chitramani, 2017) [93] [12].

2. *Herd Behaviour* - A kind of investor behaviour that happens when individuals do what every person else does, even when their personal information suggests they must take a unique selection (Banerjee, 1992) [13].

3. *Loss Aversion* - the tendency for investors to prefer avoiding losses rather than accruing gains (Kahneman & Tversky, 1979; Benartzi & Thaler, 1993) [56] [17].

4. *Mental Accounting* - A set of cognitive operations used by individuals and households to organise, assess, and keep track of their financial activities and investments (Thaler, 1999) [100].

5. *Overconfidence* - A variety or manifestation of investor behaviour that takes place when investors tend to overestimate the probability of accuracy of their information, their successes, and skills (De Bondt & Thaler, 1995) [30].

6. *Overreaction* - A sort of investor behaviour that causes investors and merchants to react disproportionately to new information about given security, causing the security price to change dramatically so that the price will no longer fully reflect the security's authentic value immediately following the event (Soares & Serra, 2005) [96].

7. *Underreaction* - A manifestation or kind of investor behaviour that occurs when investors predict the future and tend to get anchored via salient past events, consequently, causing the investor to underreact and under respond to modern-day news (Barberis, Shleifer & Vishny, 1998) [15].

8. *Portfolio Diversification* - A variety of investor behaviour in which traders tend to adopt the approach of combining a range of assets to decrease the usual hazard of their investment portfolio (Cumova & Nawrocki, 2014)⁹.

9. *Frequency of Trading* - A method of buying and selling in which state-of-the-art buyers employ powerful computer programs to transact a massive variety of orders in fractions of a second, usually utilising complex/sophisticated algorithms to investigate multiple markets and put into effect orders primarily based on market stipulations (Chen, 2019) [24].

10. *Portfolio Switching* - Another type of investor behaviour in which the investor switches or changes from one investment fund to another, or chooses to transfer their brokerage assets or liquidate their investments in a change for different higher-earning securities/investment portfolios (Chen, 2017) [23].

11. *Excessive Trading* - It refers to immoderate buying and selling of stock with the aid of both a broker and/or an individual trader (Chen, 2019) [24].

12. *Emotional Intelligence* - the capability to screen one's very own and others' impressions and emotions, to differentiate among them, and to utilise this information to influence one's thinking, moves (Salovey & Mayer, 1990) [85], and investment decisions.

13. *Self-awareness* - the ability to read and apprehend one's emotions and discover their impact while using innate feelings to guide choices (Goleman, 1998) [42], especially those related to investments.

14. *Self-management* - ability to manipulate one's feelings and impulses and adapt to changing circumstances (Goleman, 1998) [42] concerning investment decisions.

15. *Social Awareness* - the capacity to feel, apprehend and respond to others' emotions while comprehending social networks (Goleman, 1998) [42] barring being wrongly influenced through other people's emotions to produce incorrect or irrational investment decisions.

⁹ Cumova, D. & Nawrocki, D. (2014). Portfolio optimization in an upside potential and downside risk framework. *Journal of Economics and Business*. 71. 68–89. 10.1016/j.jeconbus.2013.08.001.



16. *Relationship management* - the capability to motivate, guide, and control people's feelings (Goleman, 1998) [42] in connection to investment decisions.

17. *Financial literacy* - is the ability to comprehend how money works in the world, how one succeeds to earn or produce it, how that individual handles it, and how he or she invests/utilises it (Atkinson & Messy, 2012) [10].

2. LITERATURE REVIEW

2.1 Conceptual Literature Review

2.1.1 Origins of the Concept of Emotional Intelligence

The beginnings of emotional intelligence can be traced to Charles Darwin's early work on the significance of emotional manifestations for survival. Although traditional definitions of intelligence in the 1900s highlighted cognitive features such as memory and problem-solving, later on, numerous researchers investigating the theory of intelligence begun to recognise the essence of the non-cognitive traits. Psychologists centered principally on the cognitive elements such as recollection and problem-solving when they commenced to conceive and write about intelligence. Nevertheless, some researchers acknowledged that the non-cognitive components had been also influential in intelligence.

E. L. Thorndike, in 1920, used the expression of social intelligence to depict the artwork of appreciation and dealing with other individuals. That is to say, he proposed that people possess various sorts of intelligence and referred to one type of it as social intelligence, or the capacity to apprehend and cope with men and adult females, male youngsters and girls, and also to act accurately in human dealings. Twenty years later, David Wechsler, in 1940, the first person to have developed the Wechsler Adult Intelligence Scale (WAIS), alluded to both non-intellective and intellective aspects of intelligence. He depicted the outcomes of non-intellective elements on intelligent behaviour. The non-intellective factors included personal, emotional, and societal factors, and later conjectured these were very imperative for forecasting one's capacity to win in life. He moved alongside to contend that our simulations of intelligence would not be completed until we can efficaciously become aware of these elements.

In 1983, Howard Gardner's *Frames of Mind: The Theory of Multiple Intelligences* blanketed both Interpersonal intelligence (the power to be aware of the aims, motivations, and needs of other masses) and Intrapersonal intelligence (the functionality to apprehend oneself, to respect one's feelings, concerns, and motivations). In Gardner's point of view, traditional types of intelligence, such as IQ, failed to make clear the cognitive capacity to the full. So, there was once a mutual feeling that normal definitions of intelligence were notably anaemic and deficient in their power to explain performance issues completely.

Psychologists John Mayer and Peter Salovey, the early Nineteen Nineties came along and innovated the notion of emotional intelligence. They perceived emotions are internal activities that direct physiological reactions, intellects, and conscious alertness of individuals. They demarcated emotional intelligence as the potential to identify emotions, to approach and generate feelings to aid thoughts, to apprehend feelings and emotional knowledge, and to monitor emotions reflectively to encourage emotional and rational development. As a consequence of the increasing needs of EI, the research on the theme was in the process, till the publication of Daniel Goleman's (1995) best seller book *Emotional Intelligence: Why It Can Matter More Than IQ* was published and then the term became widely popular. The article of Nancy Gibbs in Time magazine in 1995



emphasised Goleman's book and this made EI trend in media. Consequently, articles on EI started to emerge with an increasing variety across a full range of academic and popular magazines.

In 1996, Dr. **Reuven Baron** elucidated that Emotional Intelligence mirrors our propensity to deal efficiently with other human beings and with our beliefs. He developed the Baron EQ-I and this invention is the initial scientifically developed and licensed measure of emotional intelligence that displays one's capacity to dole out with everyday environmental challenges and helps for one's success in professional and private life. The *Multi-Health Systems* in 1996 first published the Bar-On Emotional Quotient Inventory (EQ-i). Intrapersonal, interpersonal, adaptability, stress management, and general mood are the five areas the EQ-I test covers.

Richardson and Evans in 1997 investigated some techniques for tutoring social and emotional aptitude within a culturally diverse society. They aimed to aid students to partner with each other, to assist them in growing interpersonal, intrapersonal, and emotional intelligence, indicating that these phrases are vital for private achievement. That same year, **Ediger** asserted that the emotions, feelings, and values were very massive for a person's well-being and accomplishment in one's lifetime. He too cited that science teachers need to emphasise the emotional place that can't be distinct from the cognitive area. He also pointed out that feelings and pleasant emotions help students to offer their best potential in school. The college students who hate to learn and think negatively cannot pay attention for a long time when studying, have extra difficulty in attaining their potential than others.

In the year 1997, the senior editor of *Educational Leadership*, **Pool**, wrote in an article that emotional well-being is a predictor of success in educational success and job success among others. **Finegan (1998)** ^[10] also asserted that schools help college students discover the competencies of emotional intelligence. Possessing all or some of those competencies can lead to the better attainment of formal education from infancy to adolescence at workplaces and in society. In 2001, **Elias** observed that teaching social and emotional abilities are very imperative at school, it significantly influences the academic achievement of students not solely for the year they have been taught but for a lifetime. Teaching these capabilities has a long-standing impact on achievement. In the view of **Nelson and Low (2000)** ^[11] emotional intelligence is the single most substantial variable in private achievement, career success, leadership, and life satisfaction. They feel that an emotionally healthy individual is capable of identifying, understanding, experiencing, and expressing human feelings in healthful and environmentally friendly ways.

2.1.2 Emotions and the Brain

Emotions are concerned with the entirety of what people do: each action, decision, and perspicacity. Emotionally intelligent human beings identify this and use their thinking to handle their emotions in preference to being controlled through them. In the course of the last three to four decades, the Emotional Intelligence (EI) concept has become a completely substantial indicator of a person's knowledge, skills, and abilities in the workplace, school, and personal life. The overall outcome of research advocates that EI performs a momentous role in successful leadership, management, motivation, job performance, and decision-making. Thus utilising the EI technique in higher education may have many blessings for college students. It not only

¹⁰ Finnegan, J. E. (1998). Measuring emotional intelligence: Where we are today. Montgomery, AL: Anbum University of Montgomery, School of Education. ERIC Document Reproduction Service No .ED426087, p. 23.

¹¹ Nelson D. B., & Low G. R. (2000). Emotional intelligence: achieving academic and career excellence. Instructor's Manual, p. 12.

accomplishes their desire but also makes them more competent in their field. All individuals experience and relate their emotions and feelings in day-to-day life. Emotions have valuable data about relationships, behaviour, and every prospect of human life around us. The most recent research indicates that emotions are constructive and do contribute to boosting performance and better decision-making both in private life and at a job. Emotion is an instinctive phenomenon related to temperament, mood, disposition, and personality.

Emotion is a feeling that is individual and subjective. Humans can communicate an unusual series of circumstances, which they can sense or experience. Emotion is a case of emotional stimulation, an expression, or a display of differentiating autonomic and somatic responses. This significance advocates that emotional states are 'a multifaceted feeling state with somatic, psychic, and behavioural elements which affect mood' (Kalpan & Sadock, 1998) ^[12]. Emotion affects one's behaviour and it can have a damaging impact on studying (Johnson et al., 2000)^[13]. It is a convoluted physiological and psychological event involving the position of an individual's mind and its connection between that person and her/his environment. An emotion among humans ultimately includes 'physiological anticipation, expressive actions, and conscious awareness' (Myers, 2001, cited in Mishra & Shrivastava, 2018) ^[14].

Emotion is associated with mood, attitude, motivation, and personality. Ekman (1972) (Professor of Psychology, University of California) described six primaries 'happiness, surprise, disgust, fear, rage, and sadness' (cited in Mishra & Shrivastava, 2018) ^[68].

Emotions are responses to stimuli or circumstances which have a strong effect on an individual. According to Webster-Stratton (1999) (as cited in Mishra & Shrivastava, 2018) ^[15], emotional reactions occur mainly at three levels:

- ❖ *Cognitive level* - The cognitive level of emotional response is defined by a person's use of language to identify their feelings.
- ❖ *Behavioural level* - Emotions are reflected in the actions of a person in the second stage of emotional response.
- ❖ *Neurophysiological & biochemical level* - the biochemical and neurophysiological emotional reactions are characterised by heart rate fluctuations, blood flow, respiration, and hormonal secretions.

2.1.3 MacLean's Triune Brain Model

American neuroscientist, Paul MacLean, developed the 'Triune Brain' concept in the 1960s, which is based upon the division of the human brain into three distinct regions. MacLean's model supports the human brain being organised into a hierarchy based on an evolutionary view of brain development. The following are the three regions:

¹² Kaplan, H. I., & Sadock, B. J. (1998). Kaplan and Sadock's synopsis of psychiatry: Behavioral sciences/clinical psychiatry (8th ed.). Williams & Wilkins Co.

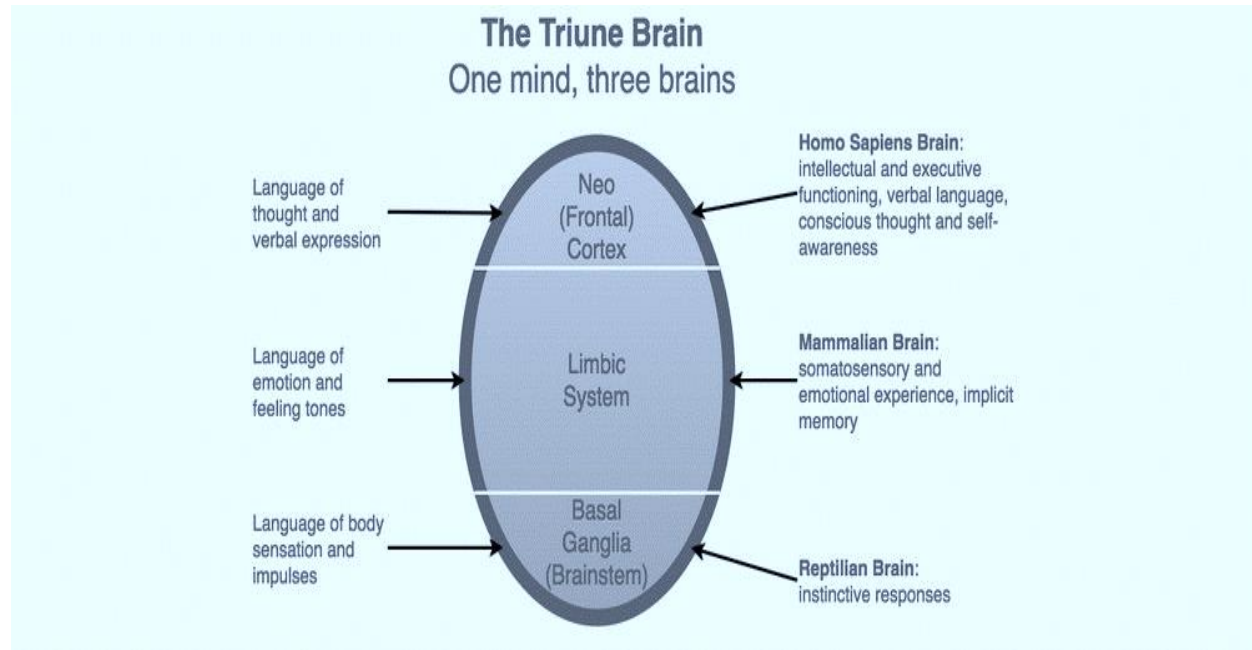
¹³ Johnson, C., Ford, R., & Kaufman, J. (2000). Emotional Reactions to Conflict: Do Dependence and Legitimacy Matter? *Social Forces*, 79(1), 107-137. doi:10.2307/2675566

¹⁴ Myers (2001), cited in: Mishra, P. & Shrivastava, D. (2018). A Study of the Factors of Emotional Intelligence, Determining the Performance of Management Teachers. *Journal of Business and Management*, 20(2), 26-39. Retrieved: 28 October 2019, from www.iosrjournals.org.

¹⁵ Webster-Stratton (1999), cited in: Mishra, P. & Shrivastava, D. (2018). A Study of the Factors of Emotional Intelligence, Determining the Performance of Management Teachers. *Journal of Business and Management*, 20(2), 26-39. Retrieved: 28 October 2019, from www.iosrjournals.org.

1. Primal or Reptilian Brain (Basal Ganglia)
2. Emotional or Paleomammalian Brain (Limbic System)
3. Rational or Neomammalian Brain (Neocortex)

Figure 2.1: MacLean's Triune Brain Model



Source: Komninos, A. (n.d.). The Concept of the 'Triune Brain'. Retrieved from: <https://www.interaction-design.org/literature/article/the-concept-of-the-triune-brain>, January 21, 2020.

1. **Primal or Reptilian (Lizard) Brain (Basal Ganglia)** - The reptilian (or primal) brain is believed to be the oldest portion of the brain, from an evolutionary viewpoint. It is responsible for muscle activity, balance, and essential autonomic functions such as blood pressure, heart rate, and breathing. It comprises the brain stem and the cerebellum which appear to dominate in reptiles. That portion of the human brain is violent in terms of behaviour, territorial, uncontrollable, and does not learn from mistakes.
2. **Emotional or Paleomammalian Brain (Limbic System)** - The limbic or paleomammalian brain (also called emotional brain) is the predominant seat of thoughts, focus, and emotionally charged memories and appears to predominate in mammals. Instincts like eating, fighting, escaping, and sexual activity are rooted in this, as are our instinctual, social, and emotional needs to feel connected, safe, and cared for. Structurally, the emotional brain contains the hypothalamus, the master gland that generates both oxytocin and CRH (corticotropin-releasing hormone), the precursor to the hormone cascade that ultimately contributes to the creation of adrenaline; the hippocampus, which compares external images to stored memories; and the amygdala, which sends a warning to flood the body with fighting or flight chemicals when the hippocampus senses danger.

3. **Rational or Neomammalian Brain (Neocortex)** - The newest of the three is the third part of the brain, the neocortex, and particularly the prefrontal cortex or neomammalian brain. It is responsible for what we consider to be our higher cognitive functions, such as abstract thinking, dialects, improved learning and memory, self-reflection, and knowledge. It is the portion of our brain that rehearses and thinks about the future, rehashes and evaluates the past, makes plans and logical claims, and tries to solve problems.

A huge network of neurons interlinks all three areas of our brain. While we would like to assume that the newest part of our brain, the more logical, 'thinking' neocortex, is in control, it seems that the limbic system, the seat of our emotions, can influence our actions too easily. The three areas of the brain together form our experience from the bottom up as we go through daily life, learning from and adapting to each other and our environment according to the patterns of our culture, our language, our complex personal and emotional background, and our personality, all of which contribute to our understanding of ourselves and the world we live in.

MacLean hypothesised that these three 'complexes' not only constituted three distinct phases of brain development but remained three separate, semi-independent brains, '[each] with its unique intelligence, its objective reality, its sense of time and space and its consciousness'. MacLean said, in other words, that each human brain comprises three autonomous subjective thoughts and memories.

A breakdown of coordination between the sections of the triune brain has been suggested to often be responsible for pathological behaviour. The difference between logical thought and emotion found in schizophrenia would be an example. More generally, most of us have certainly encountered what could represent a fairly mild and temporary event of a breakdown in neuro-communication at one time or another. Specifically, it occurs when we spontaneously erupt in an emotional outburst while at the same time our logical mind is conscious of the occurrence but unable to control the actions. In that instance, we may believe we are two individuals in one: the paleomammalian and proto-reptilian brain which is doing the acting, and that which is passively perceiving the logical neomammalian brain. Perhaps the prefrontal connection between the neocortex and the limbic system (which is the main link between these two brain divisions) gets briefly blocked due to hyperactivity in the paleomammalian brain when we are overly emotionally excited. As a result, our irrational, instinctive actions cannot be controlled by the logical brain.

MacLean has proposed that it is the paleomammalian brain, the seat of emotion, rather than the logical, neomammalian brain that is responsible for the understanding of what is true. Furthermore, it is the Paleomammalian brain that is responsible for the feelings of oneness with the world associated with magical, spiritual, religious, and drug states (as shown by the aura of psychomotor/temporal lobe-limbic system epilepsy). MacLean argues that his work's most profound philosophical assumptions are that our so-called rational conceptions of reality are merely neocortical rationalisations for emotions that emanate from the limbic system, the seat of emotion.

The hierarchical organisation of the human brain, according to MacLean, reflects the incremental development through the evolution of the brain structures. The triune brain model indicates that the basal ganglia were first developed, which is thought to be responsible for our primitive impulses, followed by the limbic system, which is responsible for our emotions or affective function, then the neocortex, which is thought to be responsible for logical and objective reasoning.

MacLean's mannequin states that interaction in the three brain regions (basal ganglia, limbic system, and neocortex) is in truth awesome when we take part in any of the above-mentioned



intellectual tasks. For instance, when we are in danger and need to react quickly, as an act of self-preservation, the reptilian structure is excited, preparing us for motion by initiating the launch of chemical substances throughout the body. When we see a shocking information story or get hold of a troubling message, the limbic device is activated, and, once again, chemical substances are released that set up our emotional experience. Ultimately, as we make decisions, remedy issues, or think, we involve the neocortex, besides enticing the other brain structures.

Modern brain imaging research has shown several brain areas are involved during basic, emotional, and logical experiences. These consequences led to MacLean's dismissal of the notion of a triune brain in neuroscience. Nevertheless, while this model is genuinely an oversimplification, in addition to the relationship between the structure and functions of the human brain, the notion of a triune brain provides us a precious way of assessing the human processing of sensory data (Bailey, 2002)^[16].

2.1.4 The Concepts of Intelligence and Intelligence Quotient (IQ)

Intelligence, classically measured as the Intelligence Quotient (IQ), is considered one of the most important attributes of personality in present-day society. It's no surprise IQ examinations are currently being employed for many purposes including discovery, diagnosis, and assessment in all areas of society. Traditionally, IQ has been seen as the single and best predictor of the overall performance of a character at college and task (Andoh, 1998) ^[17], but it has been criticised recently. A few IQ critics trust that intelligence is quintessentially an end product of an individual's ability to acquire skills and knowledge in a given situation.

They emphasise that successful studying in college depends on many personal attributes such as school involvement, willingness to learn, and persistence. The support received from peers, family, and teachers for educational achievement is also vital, along with numerous cultural factors.

Another critique of IQ testing is that the tests fail when used to assess later-life results, such as income or work performance.

However, as conditions or activities shift, IQ tests become less successful in the population. For example, some studies suggest that IQ strongly predicts leadership quality only under conditions of low stress but fails to do so under harsh environmental circumstances.

The validity of IQ tests is another matter. Several human intelligence researchers in the early 1980s, such as Robert Sternberg (1985) ^[18] and Howard Gardner (1983) ^[19], pointed out that IQ tests only assess a small dimension of human intellectual ability. These researchers have emphasised the critical importance of focusing on the cultural context for a rational assessment of individual success.

Besides, IQ tests were criticised for being focused exclusively on Western beliefs that cannot be generalised to other cultures that could have different values. This provides strong support to the

¹⁶ Bailey, K. (2002). Upshifting and downshifting the triune brain: Roles in individual and social pathology. In G. A. Cory, Jr. & R. Gardner, Jr. (Eds.), Human evolution, behavior, and intelligence. The evolutionary neuroethology of Paul MacLean: Convergences and frontiers (p. 317–343). Praeger Publishers/Greenwood Publishing Group.

¹⁷ Andoh, N. D., (1998). Get Smart: I.Q. and Emotional Intelligence, from <http://serendip.brynmawr.edu/bb/neuro/neuro01/web3/DawsonAndoh.html>

¹⁸ Sternberg, R. J. (1985). Beyond IQ: A triarchic theory of human intelligence. CUP Archive.

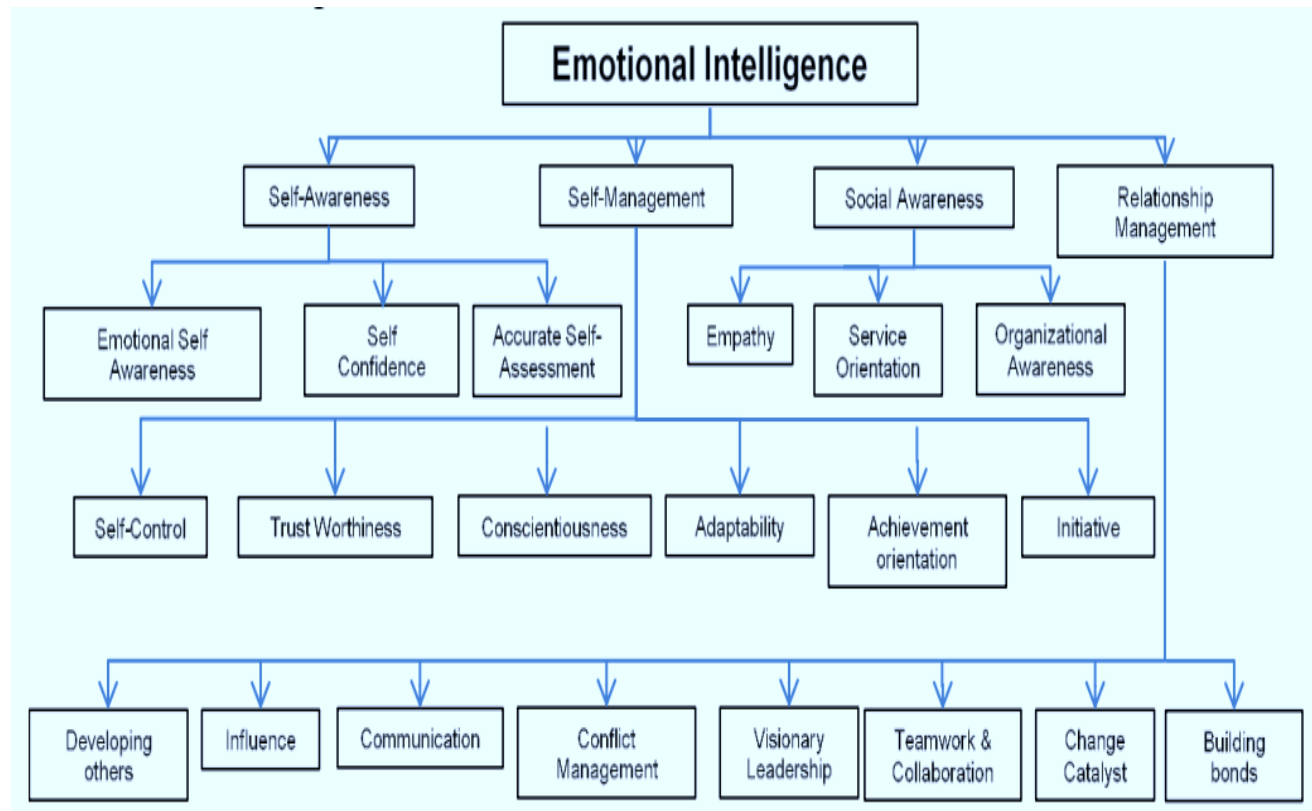
¹⁹ Gardner, H. (1983). Frames of Mind. New York: Basic Books.

notion of the presence of many kinds of intelligence, and recent studies suggest that the concept of intelligence should be expanded further to include emotional intelligence (EI).

2.1.5 Emotional Intelligence: Some Definitions of the Concept

Emotional intelligence is a concept used to describe the intricate ability to control our inspirations, knowing and expressing others 'feelings, and being able to avoid or rapidly recover from challenging situations (Moradi & Ardahaey, 2011)^[20]. Emotional intelligence is, according to Goleman (1995) [40], the capacity to understand our feelings and those of others, to empower ourselves, to control emotions well within ourselves and in our relationships. According to Salovey and Mayer's (1990) view, emotional intelligence is the capacity to track the thoughts and emotions of one's own and of others, distinguish between them, and use this knowledge to direct one's thought and behaviour. Goleman (1995) used four clusters to describe emotional intelligence, which is self-knowledge, self-control, social awareness, and management of relationships. This study adopts Goleman's (1995) [40] model (See Figure 2.2 below).

Figure 2.2: The Hierarchical Model Developed by Daniel Goleman (1995, 1998) to Measure the Emotional Intelligence



²⁰ Moradi, H. & Ardahaey, F. (2011). The Role of Emotional Intelligence in Organizational Commitment. SSRN Electronic Journal. 10.2139/ssrn.1848523.

A range of definitions of EI exist, and every one of them highlights the viewpoints of its authors. However, as the subject is increasing so quickly, researchers are consistently altering their interpretations. Some interpretations are as follows:

In the thinking of **Salovey and Mayer (1990)** [85], emotional intelligence is: ‘the potential to track the ideas and thoughts of one’s very own and others, differentiate between them and use this know-how to direct one’s thoughts and actions’.

Reuven Bar-On (1996) [21] describes emotional intelligence as: “A set of non-cognitive (emotional and social) capacities, competencies and skills that affect one’s capability to cope with environmental needs and pressures.”

Emotional intelligence was also explained by **Peter Salovey, John Mayer, and Carsuo (2004)**[22] as the ability to identify emotions, to get admission to and produce feelings to aid thought, to apprehend feelings and emotional meanings, and to manipulate feelings reflectively in ways that promote emotional and mental development.

Emotional intelligence from **Hein’s standpoint (2005, 2008, 2009)** is:

- 1) ‘The mental ability with which we are born that offers us emotional resilience and potential for emotional administration competencies that assist us to enhance our long-term well-being, happiness, and survival’ (2005), or
- 2) “Knowing how to distinguish excellent feelings from unhealthy feelings, and how to flip negative feelings into great ones’ (2008). Or
- 3) “Emotional intelligence alludes to the natural capacity for thinking, using, talking, identifying, recalling, getting to know about, controlling, understanding, and describing emotions” (2009).

‘Emotional Intelligence (EI) is the capacity to learn and exercise understanding about your emotions and different people’s emotions,’ says **Byron (2007)** [23]. ‘You can use the details about what you experience to assist you to make higher choices on what to say or do (or not to say or do) next.

2.1.6 Advantages of Emotional Intelligence

The blessings of emotional intelligence are as below:

- Improves relationships with human beings;
- Improves verbal exchange with people;
- Makes higher empathy skills;
- Aids in acting with integrity;
- Helps you to gain social recognition and get respect from others;
- Can enhance career prospects;
- Helps in managing change more confidently;
- Enables employees to enjoy and work wholeheartedly;
- Makes people feel confident and become fantastic in their attitude;

²¹ Bar-On, R., (1996). The Emotional Quotient Inventory (EQ-i): a test of emotional intelligence. Toronto: Multi-Health Systems, from <https://ecom.mhs.com/>

²² Mayer, J. D., Salovey, P., & Carsuo, D. R., (2004). Emotional Intelligence: Theory, findings, and implications. *Psychological Inquiry*, 15(3), p. 197.

²³ Byron, K. (2007). Male and female managers’ ability to read emotions: Relationships with supervisor’s performance ratings and subordinates’ satisfaction ratings. *Journal of Occupational and Organizational Psychology*, 80, 713–733. doi:10.1348/096317907X174349



- Can minimise stress levels;
- Increases creativity and innovations;
- Enables people to learn from, and mature through their mistakes.

2.1.7 Concept of Investor Behaviour

Individual investors' investment activity is very different from institutional investors'. According to Gerald Appel (2006)^[24], cited in Sarkar and Sahu (2017), investor behaviour (IB) is one that an investor shows in the quest for the acquisition, use, evaluation, and disposal of products, services, ideas, or experiences to fulfil their needs and wishes. Four forms of biases such as heuristic biases, prospect biases, market biases, and herding biases affect individual investor behaviour.

IB has been observed to manifest in many ways, or rather, reported being affected by certain exogenous variables that are commonly understood in the literature to be affected by other social, cultural, and psychological anomalies (Shiller, 2000, cited in Sashikala & Chitramani, 2017; Baker et al., 2002, cited in Sashikala & Chitramani, 2017) [93] [12]. Typical investor behaviours used in this study are as follows;

1. *Herd Behaviour* - This happens when people do what any other person does, even though their private information suggests that they should take an alternate decision (Banerjee, 1992) [13].
2. *Loss Aversion* - This conduct relates to the investor's propensity to favour loss avoidance rather than accruing profits. Kahneman and Tversky (1979) [56] formulated the hypothesis on the assumption that losses have a greater effect on expectations than the advantages of gains (Benartzi & Thaler, 1993) [17].
3. *Mental Accounting* - It is another form of action by investors. In Thaler's (1999) [100] view, MA alludes to a series of cognitive operations used by individuals and households to coordinate, evaluate, and monitor financial behaviour.
4. *Overconfidence* - Another typical activity of investors is known to occur when investors appear to overestimate the probability of precision, performance, and capacity of their knowledge (De Bondt & Thaler, 1995) [30].
5. *Overreaction* - This principle of investor behaviour asserts that investors and traders respond excessively to new knowledge about provided security causing a drastic shift in the security price so that the price does not completely reflect the true value of the security immediately after the event (Soares & Serra, 2005) [96].
6. *Underreaction* - It is the opposite theory of overreaction, which is believed to arise when investors forecast the future which appears to be driven by exceptional past events, thus allowing them to underreact to current news (Barberis, Shleifer & Vishny, 1998) [15].
7. *Portfolio Diversification* - This is another form of investor activity commonly understood in the literature on finance and investment planning as referring to the risk management technique of combining a variety of assets to minimise the total risk of a portfolio of investments (Cumova & Nawrocki, 2014) [9].
8. *Frequency of Trading* - refers to a trading system in which some professional investors use powerful computer programs to transact several orders in fractions of a second (Chen, 2019) [24].
9. *Excessive Trading* - Finally, this is another form/expression of investor behaviour which refers to the excessive purchase and sale of stock by either a broker or an individual trader (Chen, 2019) [24].

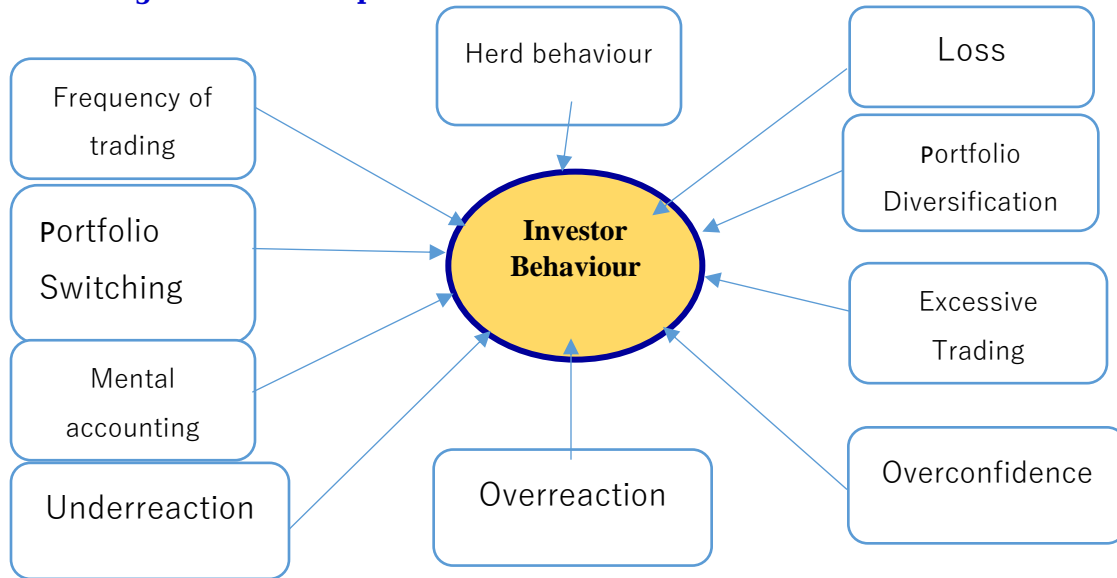
²⁴ Gerald Appel (2006), cited in: Sarkar, A. K. & Sahu, T. N. (2017). Factors influencing behaviour of individual investor in stock market: a case study in West Bengal. International Journal of Commerce and Management Research, 32-39.



10. *Portfolio Switching* – Another type of investor behaviour in which the investor switches or changes from one investment fund to another, or chooses to transfer their brokerage assets or liquidate their investments in change for different higher-earning securities/investment portfolios (Chen, 2017) [23].

Figure 2.3 below is a Conceptual Framework of Investor behaviour as it is applied in this study. The conceptual framework postulates the dependent variable of Investor Behaviour is a multidimensional construct that could be measured with the proxies of *Herd Behaviour, Loss Aversion, Mental Accounting, Overconfidence, Overreaction, Underreaction, Portfolio Diversification, Frequency of Trading, and Portfolio Switching, and Excessive Trading*.

Figure 2.3: Conceptual Framework of Investor Behaviour used in the Study



Source: Authors' (2020) Conceptualisation based on Literature Review.

2.2 Theories and Models of Emotional Intelligence

Over the previous two decades, EI researchers have developed three predominant models, namely, the ability, blended, and trait EI models. The key distinction between these three fashions is whether or not the authors interpret their EI as an inherent human attribute or ability which can be set up systematically over time. Therefore, calculating EI varies from strict talent testing with right and improper solutions to subjective self-report measurement forms per standard. The ability, mixed and trait EI models are defined quickly below:

1. Ability EI Models

John Mayer and Peter Salovey suggest the capability mannequin of emotional intelligence. The mannequin describes EI as the capability of a man or woman to acknowledge and apprehend emotional data (Mayer & Salovey, 1997) [25]. It has a capability that shares the highest similarity with

²⁵ Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), Emotional development and emotional intelligence (pp. 3–34). New York: Basic Books.

cognitive intelligence (Mayer, Salovey & Carsuo, 2000) ^[26]. The notion of emotional intelligence was first coined in 1990 via John Mayer and Peter Salovey who proceeded to discover the definition of the concept. A pure emotional intelligence theory, in their view, accommodates the principal concepts from the fields of intellect and emotion. They published further that emotional intelligence is primarily based on an intelligence replica. It implies that emotional intelligence consists of two fields: *experiential* (capacity to interpret, react and manipulate emotional know-how besides honestly understanding it) and *strategic* (capacity to recognise and manipulate feelings barring actually perceiving emotions well or experiencing them fully).

With this model, Mayer & Salovey (1997) persevered to set up four divisions of EI. The model's very first branch is emotional perception. *Emotional perception* refers to the capability to be emotionally self-aware and to efficiently communicate feelings and emotional wishes to others. Emotional perception additionally consists of the aptitude to distinguish between honest and misleading emotional gestures.

The second division of Mayer & Salovey's (1997) EI concept is *emotional assimilation*, and it alludes to the capability to differentiate between a variety of feelings such as emotions and comprehend those that affect the individual's thought processes.

The third branch is *emotional understanding* and is characterised as the capability to apprehend a couple of feelings (such as experiencing two emotions at a time) and the knack for diagnosing transitions from one feeling to another.

The final and the fourth branch of Mayer & Salovey's (1997) EI model is emotional management. *Emotional management* is the ability, in a given situation, to join or disconnect from an emotion, relying on its utility or usefulness to the individual.

2. The Mixed Approach

Reuven Bar-On (2006), director of the Institute of Applied Intelligences in Denmark and consultant for a range of institutions and companies in Israel, created the unique emotional intelligence measuring device that was used as the term – Emotional Quotient. The Mixed Model combines both non-cognitive (Bar-On, 2006) ^[27] and competency-based models (Goleman, 1995) [40]. The non-cognitive model pays attention to the non-cognitive capabilities whilst competency-based models pay attention to skills. Such blended models correlate fairly with other existing personality models (Cherniss, 2010) ^[28].

Bar-On described emotional intelligence in terms of being in a position to recognise oneself and others, to relate properly to humans and to adjust to, and cope with, the immediate surroundings, and to be more fantastic in addressing environmental requirements. Bar-On's emotional intelligence mannequin applies to the success and performance prospects, rather than the success and performance itself, and is often viewed as process-oriented rather than outcome-focused (Bar-

²⁶ Mayer, J. D., Carsuo, D. R. & Salovey, P., (2000). Models of Emotional Intelligence In R. Sternberg(Ed.) Handbook of Intelligence, Cambridge University Press, Cambridge, UK.

²⁷ Bar-On, R., (1996). The Emotional Quotient Inventory (EQ-i): a test of emotional intelligence. Toronto: Multi-Health Systems, from <https://ecom.mhs.com/>

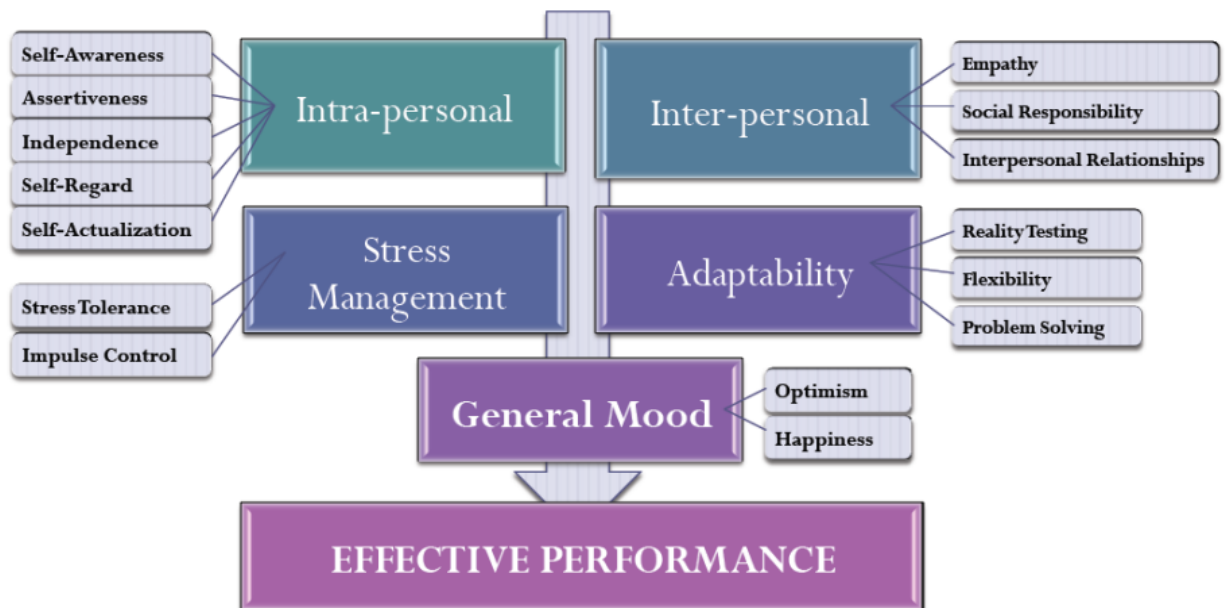
²⁸ Cherniss, C. (2010). Emotional intelligence: Toward clarification of a concept. *Industrial and Organizational Psychology*, 3(2), 110-126.



On, 1996)^[29]. The Bar-On (2006)^[30] model centres on (1) a class of emotional and social skills, inclusive of the ability to be conscious of, apprehend and express oneself, and understand and relate to others, (2) the potential to cope with sturdy emotions, and the capability to reply to change and resolve issues of a social or private nature (Bar-On, 1997)^[31]. Bar-On indicated that emotional intelligence grows over time and that teaching, programming, and therapy can beautify it (Bar-On, 1996) ^[29]. Bar-On has established that humans with greater than common E.Q.'s are normally extra affluent in meeting environmental necessities and pressures and emotional intelligence deficiencies can result in a lack of success and emotional problems. In general, Bar-On cogitates emotional intelligence and logical talent to make a contribution equal to the general genius of an individual, which then provides an indicator of one's capacity to be successful in life.

Bar-On outlines 5 dimensions of emotional intelligence in his model: intrapersonal, interpersonal, adaptability, stress control, and general mood. All elements have subcomponents, set out in Fig. 2.4.

Fig. 2.4: Bar-On's EI model



Source: <http://www.cakitches.com/books/reuven-bar-on.html>

²⁹ Bar-On, R., (1996). The Emotional Quotient Inventory (EQ-i): a test of emotional intelligence. Toronto: Multi-Health Systems, from <https://ecom.mhs.com/>

³⁰ Bar-On, R., (2006). The Bar-On Model of Emotional-Social Intelligence (ESI). Consortium for Research on Emotional Intelligence in Organizations–Issues in Emotional Intelligence from www.eiconsortium.org

³¹ Bar-on, R. (1997). Bar-On Emotional Quotient Inventory(EQ-I). Toronto: Multi Health Systems.



2.2.3 Goleman: A Mixed Emotional Intelligence Model

Salovey and Mayer's writings were observed in the 1990s via Daniel Goleman, a psychologist and science author who had before reported for the New York Times on brain and behaviour studies. Inspired by their findings, he commenced doing his work in the discipline and subsequently wrote Emotional Intelligence (1995), the pioneering book that made the emotional intelligence notion famous to both the public and non-public sectors. (Goleman, 1998) [42].

Goleman's (1998) [42] first framework of EI described five fields or dimensions, with twenty-five competencies in emotional intelligence. Three dimensions; self-awareness, self-regulation, and motivation defined personal competencies relating to self-knowledge and emotional control. The remaining two dimensions; empathy and social awareness, explaining social competencies linked to understanding and controlling others' emotions. When Goleman refined his model, the distinction between self and others would remain an important aspect of his typology of emotional intelligence. Mathematical analysis by Richard Boyatzis (2000) confirmed the breakdown of the 25 competencies into 20 and the 5 domains into 4, namely self-management, self-awareness, relationship management, and social awareness (Boyatzis, Goleman & Rhee, 2004) [39].

Although the study fundamentally validated that the advantage nest inside each EI area, it additionally suggested that the differentiation between the social awareness cluster and that of relationship management might also be more theory-based than empirically oriented.

Fig. 2.5 shows Goleman's new model of the EI model. It reflects Goleman's empirical definition of EI and as well as the associated interpersonal skills.

Fig. 2.5: Goleman's EI model



Source: http://www.transgrowth.com/transgrowth_website/ei_competencies.php, accessed, February 2020.

Goleman's model outlines four main EI constructs:

1. The Self-awareness Domain

The capacity to examine one's thoughts and comprehend their impact whilst using gut emotions to guide choices is self-awareness. Goleman (1998) [42] suggests that self-awareness is imperative to understanding and exhibiting concern for others. The abilities in the vicinity of self-awareness enable human beings to become aware of their personal feelings and ideas, as well as individual strengths and shortcomings.

- ❖ *Emotional Self-Awareness*-Emotional self-awareness is the first section of emotional intelligence, and it alludes to understanding what one feels and why. Emotional self-awareness is, per Goleman (2001) [32], the potential to apprehend one's feelings and their consequences on oneself and others.
- ❖ *Accurate Self-Assessment* - Awareness of oneself is the secret to the appreciation of one's strengths and weaknesses. Individuals who score high in unreliable self-assessment are very conscious of their capabilities and shortcomings, seek guidance and learn from their errors, and understand the place they need to improve, and where to collaborate with others who have complementary strengths.
- ❖ *Self-Confidence* - Self-confidence is a trust in one's personal potential to carry out a mission and the ability to choose an excellent solution to a challenge or hassle (Goleman, 1998) [42]. This definition consists of self-assurance in one's skills as mirrored in ever more demanding conditions coupled with faith in one's selections or opinions.

2. The Self-Management Domain

Emotional Self-Management, the second area of emotional intelligence, refers to the ability to control distressing effects such as anxiety and frustration, and suppress emotional impulsivity (Goleman, 2001) [32]. Self-management encompasses the competencies of motivation, optimism, and cognitive regulation of emotional intelligence.

- ❖ *Emotional Self-Control* - Goleman (1998) [42] defined emotional self-control as the ability to regulate and suppress one's impulsive feelings and emotions when provoked when met with resistance or aggression from others, or even when working under pressure.
- ❖ *Transparency* - Transparency, also called honesty, means getting one's actions in line with what one says. This requires freely and clearly expressing thoughts, ideas and emotions and embracing authenticity and integrity, even in difficult circumstances.
- ❖ *Adaptability* - Adaptability is the ability to be versatile and function efficiently with various individuals or groups, in many changing circumstances. It has been shown that superior managers demonstrate this competency.
- ❖ *Achievement Orientation* - Achievement isn't just about accomplishing things. Alternatively, it is accomplishing things with one's actions, against a straightforward, demanding level of excellence. In conditions that provide immediate, direct input from a reliable source, this expertise is most effectively involved.
- ❖ *Initiative* - The initiative is the ability to recognise and take steps to resolve existing or potential challenges or opportunities by defining an issue, challenge, or opportunity.
- ❖ *Optimism* - Goleman (1998) [42] described optimism as the determination, despite difficulties and setbacks, of pursuing objectives. Optimism is a crucial component of success because it can assess one's response to adverse events or circumstances.

³² Goleman, D. (2001). Emotional intelligence: Issues in paradigm building. In C. Cherniss & D. Goleman (eds.). The emotional intelligent workplace. San Francisco: Jossey Bass.

3.The Social-Awareness Domain

The area of social awareness requires three competencies: empathy, organisational sensitivity, and orientation of service. Social awareness is the ability to feel, perceive, and respond to the emotions of others while recognising social networks. Social Awareness skills affect the way we treat our relationships.

- ❖ *Empathy* - Empathy gives a shrewd awareness of the emotions, concerns, and needs of others. The empathic person can read emotional currents, take on nonverbal signals such as voice tone or facial expressions (Goleman, 1998) [42].
- ❖ *Organisational Awareness*-Organisational awareness refers to one's ability to understand and know the relationships between internal and external control in an organisation. The skill in organisational awareness requires one's ability to recognise specific decision-makers and prominent individuals (Goleman, 1998) [42].
- ❖ *Service Orientation* - Service orientation is a desire to support others or to serve others, to improve their lives. It means concentrating one's attention on the exploration and fulfilment of the needs of the consumer or company and separating star sales performers from average ones.

4.The Relationship Management Domain

The area of Relationship Management includes competencies that have the most direct effect on relationships with others.

- ❖ *Relationship management* - the capacity to inspire and influence others when resolving conflicts. The success of one's interpersonal skills depends, in a fundamental sense, on one's ability to attune or manipulate another person's emotions.
- ❖ *Developing Others* - Developing Others involves recognising the developmental needs of individuals and helping them construct their capabilities. Although this capacity is essential to those who handle the lead job, it has also emerged as a critical skill for successful high-level leadership (Goleman, 2004) [33].
- ❖ *Inspirational Leadership*-Inspirational leadership requires a willingness to direct others. Inspirational leaders can express and excite a passion for a common vision and purpose, advance as required, direct others' success while keeping them responsible and accountable, and lead others by their example.
- ❖ *Influence* - Influence is the power to inspire, convince, or influence others to get support on a specific agenda or course of action.
- ❖ *Conflict Management* - Conflict management is the ability to use patience and persuasion to handle challenging parties, groups of people, or stressful situations. This competency includes seeking the best solution to a particular problem or discrepancy.
- ❖ *Teamwork and Collaboration* - Teamwork and collaboration reflect the desire to cooperate with others, be part of a team, and work together as opposed to working independently or in a competitive manner.

The Goleman model is the most appropriate model for the realistic application of emotional intelligence, although it has been generally accepted that the Mayer and Salovey (1997) model is the most common of all emotional intelligence models. Hence, this analysis will employ the intelligence model of Goleman.

³³ Goleman, D. (2004) 'What Makes A Leader?' Harvard Business Review, 82(1), 82-91.



3. Trait Emotional Intelligence Models

Aside from the EI Ability and Mixed Models, there is the EI Trait Model. Trait EI is characterised as a constellation of self-perceptions at the lower tiers of the hierarchies of personality (Petrides, Pita & Kokkinaki, 2007)^[34]. Simply put, the EI trait model entails the expectations human beings have of their emotional abilities. The Trait EI principle presents an operationalization that recognises the inherent subjectivity of emotional experience. The trait EI classification displays the truth that the distinct notions mentioned in the literature under the phrases 'emotional intelligence' or 'EQ'^[35] perpetually discover diversifications of character traits, such as empathy, expression of emotion, the potential to adapt, and self-control, which are psychometrically orthogonal (unrelated) to intellectual ability.

The principle of Trait EI holds that some profiles of feelings would be beneficial in sure cases, but not in others. For example, being reserved and non-supportive is not an attribute of emotional dimness but a trait of character that occurs to be extra adaptive than sociability and emotional exercise in, say, scientific contexts (Rushton, Murray & Paunonen, 1983) ^[36].

Evaluation in the area of emotional and different elements of intelligence would not be notably unique from persona assessment, where the profiles of humans need to be matched to specific job descriptions asking for distinct personality profiles (Pervin, 1968)^[37]. It follows that there is no best profile of the 'emotionally intelligent' individual, who will excel in all aspects of life, recalling, that high-trait EI rankings are no longer inherently adaptive and low ratings are not usually ill adaptive. It needs to be noted, therefore, that very excessive ratings may also be reflective of hubris and self-promotion on EI instruments. Beyond that, there are conditions where excessive ratings may additionally have unintended consequences. For example, participants with high-trait EI rankings in Petrides and Furnham (2003) ^[76] exhibited increased deterioration of mood following the presentation of a brief distressing video segment in contrast to members with low scores, whilst excessive scorers in Sevdalis, Petrides, and Harvey (2007)^[38] confirmed increased deterioration of mood following the reminder of a terrible selection in actual life. However, low-trait EI scorers are more probable to be direct and less likely to be plagued via a need for self-verification and identity control than their high-scoring peers. Especially when it comes to predicting behaviour, the desirability of special trait EI profiles will regularly rely on the context and shape of behaviour, which one is attempting to predict. In conclusion, the EI trait mannequin ambitions to psychometrically quantify certain character traits and behavioural patterns of human beings that are believed to be affected by the emotions people express when put in some situational settings.

³⁴ Petrides, K. V., Pita, R., & Kokkinaki, F. (2007). The location of trait emotional intelligence in personality factor space. *British Journal of Psychology*, 98, 273–289.

³⁵ (Bar-On, 1997; Goleman, 1995; Payne, 1985; Salovey & Mayer, 1990)

³⁶ Rushton, J. P., Murray, H. G., & Paunonen, S. V. (1983). Personality, research creativity, and teaching effectiveness in university professors. *Scientometrics*, 5, 93–116.

³⁷ Pervin, L. (1968). Performance and satisfaction as a function of the individual-environment fit. *Psychological Bulletin*, 69, 56–68.

³⁸ Sevdalis, N., Petrides, K. V., & Harvey, N. (2007). Trait emotional intelligence and decision-related emotions. *Personality and Individual Differences*, 42(7), 1347-1358



2.3 Financial Literacy

Financial literacy is the capability to understand how money works in the world, how it can be obtained or made, how it is dealt with through people, and how it is spent. Investors looking to make fantastic funding picks want economic literacy, which is a key skill. Customers employed in a dynamic monetary setting also need this essential skill of financial literacy (Atkinson & Messy, 2012) [10].

Financial literacy is the ability that a family needs to prepare for retirement better and to accomplish such a goal (Lusardi & Mitchell, 2006) [39]. The primary issue explaining the diversification of portfolios is financial literacy (Guiso & Jappelli, 2008) [40]. Financial literacy is the capacity to grasp fundamental finance concepts such as inflation, compounding, and returns on investment (Hastings & Mitchell, 2011) [41]. Those with preliminary financial literacy and engaging in economic literacy have a more desirable strategy to better funding decisions, with excessive returns (Jappelli & Padula, 2011) [42].

Robert Toru Kiyosaki, a multimillionaire, believes financial education and monetary literacy are very essential if people want to grow to be affluent and wealthy. An American businessman and writer from Hilo, Hawaii, Kiyosaki, is also the founder of the Rich Dad Company and Rich Global LLC. He is additionally the developer of the digital video games and the cashflow board that is used to teach business and monetary principles to both adults and children. His net worth as of March 2020 was about \$80 million. Kiyosaki says he got rich and wealthy due to the fact he learned financial literacy values at an early age. He also, asserts that the academic system that exists these days does not adequately prepare people for financial success. Because of this, becoming financially literate through proper education and training is frequently the result of a self-directed pursuit, Kiyosaki, also, argues. Kiyosaki, therefore, advises people to be in control of their financial education which will, in the end, enable them to grow to become successful investors, wealthy entrepreneurs, and rich business people (Kiyosaki, 2012) [43].

Kiyosaki's experiential findings on the key role of financial education/intelligence in effectively predicting financial/investment success have empirical support from other studies [44].

Consequently, financial literacy was included as a variable mediating between emotional intelligence and investor behaviour.

³⁹ Lusardi, A., & Mitchell, O. (2006). Financial literacy and retirement preparedness: Evidence and implications for financial education. *Business Economics*, 42(1), 35-44.

⁴⁰ Guiso, L., & Jappelli, T. (2008). Financial literacy and portfolio diversification.

⁴¹ Hastings, J. S., & Mitchell, O. S. (2011). How financial literacy and impatience shape retirement wealth and investment behaviors.

NBER Working Paper, 16740. National Bureau of Economic Research.

⁴² Jappelli, T., & Padula, M. (2011). Investment in financial literacy and saving decisions. *Journal of Banking & Finance*, 37(8), 2779-2792.

⁴³ Kiyosaki, R.T. (2008) _Increase Your Financial IQ: Get Smarter with Your Money ' . First Edition, Grand Central Publishing, United States of America

⁴⁴ (e.g., Al-Tamimi & Kalli, 2009; Oteng, 2019; Mugo, 2016; Hawati et al., 2016; Kalsum et al., 2018).

2.3.1 Theories of Investors' Behaviour

1. Contrarian/Overreaction Hypothesis

Contrarian investment strategy argues that the losers of today are the winners of tomorrow and the winners of today are the losers of tomorrow and thus the investment strategy focused on buying the losers of today and selling the winners of today will produce superior returns. Alexander (1961) was a previous advocate of the contrarian hypothesis, who devised the filter technique to check the commonly held assumption among market professionals that market prices are slowly adapting to new knowledge. The author has defined stock price changes through the x-filter technique i.e. if a security's prices dip by a percentage, buy and keep the security until its price rises by a percentage, then you sell it for a profit. Fama and Blume (1966) ^[45] demonstrated that a reaction to the stock market was a dependent model on which successive price changes relied on investor actions.

Levy (1967) stated that a trading principle that purchases company stocks at current prices that were significantly higher than their mean prices over the past 27 weeks, created significant abnormal returns. But Jensen and Bennington (1970) ^[46] evaluated Levy's trading rule's productivity over a long period that was well beyond Levy's original sample era. The authors found that Levy's trading rule in their sample period did not outperform a strategy of buying and keeping and thus attributed Levy's finding to a bias in selection.

But it was clarified by De Bondt and Thaler (1987), that stock prices usually over-respond to knowledge, implying that abnormal returns are produced by contrarian strategies which fundamentally encapsulates the trading behaviours of buying past losers and selling past winners. The authors interpreted this result as compatible with the investor overreactions of behavioural hypotheses based on firm size and risk differences as calculated by CAPM-betas and found regular price reversals for stocks experiencing significant long-term gains or losses. Former losers significantly outperform past winners according to them (De Bondt & Thaler, 1987) ^[47].

Brown and Harlow (1988) speculated that investors could be said to overreact when unforeseen favourable or unfavourable announcements triggered trading activity resulting in price appreciation or depreciation.

Mun, Vasconcellos, and Kish (2001) ^[48] demonstrated that the Contrarian/Overreaction Hypothesis suggested buying (long) previous losers and selling (short) previous winners simultaneously to obtain excess returns. Cooper, Gutierrez, and Hameed (2004) ^[49] found the state of the economy as an indicator of investor sentiment and risk aversion and found that momentum gains only occurred when the economy was bullish, which may be in support of the overreaction principle. The reasoning was that the investors were overconfident and overreacting to their

⁴⁵ Fama, E. F., & Blume, M. E. (1966). Filter rules and stock-market trading. *The Journal of Business*, 39(1), 226-241.

⁴⁶ Jensen, M., & Bennington, G. A. (1970). Random Walks and Technical Theories: Some Additional Evidence. *Journal of Finance* (May 1960).

⁴⁷ De Bondt, W. F., & Thaler, R. H. (1987). Further evidence on investor overreaction and stock market seasonality. *Journal of Finance*, 557-581.

⁴⁸ Mun, J.C., Vasconcellos, G. M., & Kish, R. (2001). The contrarian/overreaction hypothesis: An analysis of the US and Canadian stock markets. *Global Finance Journal*, 11(1), 53-72.

⁴⁹ Cooper, M.J., Gutierrez, R.C., & Hameed, A. (2004). Market states and momentum. *The Journal of Finance*, 59(3), 1345-1365.



private details. This attitude, linked to Self-Attribution Bias, produced high rates of overconfidence in up-markets.

demonstrated that past losers outperformed past stock market winners by describing the hot-hand and recency hypotheses as consistent with this observation. In up-markets, this sentiment is indicated by the recency hypothesis that investors overestimate recent information; winners are too positive and losers too pessimistic. The hot-hand hypothesis clarified that in a business or team's record, traders sought to uncover patterns, thus overestimating the series 'autocorrelation. Frank's (2004) study observed that if the market goes up too far after good news or moves down too far after poor news, overreaction was said to occur. He further clarified that the cause of the volatilities in stock market behaviour was the erratic trading behaviours of investors. Daniel and Hirshleifer (2015)^[50] speculated that the relationship between investor behaviour and market volatility had been argued that irrational investors were destabilising prices by buying when prices were high and selling when prices were small, as opposed to reasonable investors who led prices toward their principles by buying low and selling high. Stock market responses were predictable return trends that made the stock market unproductive, unprofitable active trading due to mispriced stocks triggered by excessive price volatility, not to mention excess trading that led investors to lose opportunities to earn profits on their investments.

In brief, the Contrarian/Overreaction Hypothesis is a valid hypothesis that helps us understand the impact of investor activity on financial market overreactions of stock. The Contrarian Hypothesis helps to measure and analyse investor conduct by purchasing (long) previous losers simultaneously and selling (short) previous winners to achieve excess or abnormal returns. The hypothesis assumes that some adverse news and events underestimate previous losers due to investor overreaction. However, given sufficient time, the market will be outperformed by prior losers. Conversely, previous extreme winners in subsequent times will be underperforming in the market over time.

2. Underreaction Theory

The Underreaction principle argues that when the market goes up, traders end up optimistic, assuming they will continue to do so. Inversely, amid downturns, lenders are extraordinarily pessimistic (Hong & Stein 1999) ^[51]. The principle of under-reaction arose from the conservatism bias of an experiment carried out (Edwards, 1968) in which there had been two urns, one containing 3 blue balls and 7 crimson ones, and the other containing 7 blue balls and 3 crimson balls. A random draw of 12 balls out of one of the urns, with substitution, yields 8 crimson and 4 blues. The drawing of 8 crimson and 4 blue balls in Edwards' experiment is not particularly representative of both urn, possibly leading to an overreliance on prior information. Behavioural finance, however, claims that this behaviour might also be driven through conservatism as indicated in Edwards's (1968) experiment, where conservative traders underweighted and slowly processed new information that was in the end, built-in into the prices.

Several empirical studies questioned the hypothesis of underreaction to explain the momentum effect found in returns, and suggested alternative hypotheses. It was the proposition of Lo and MacKinlay (1990)^[52] that much of the abnormal return was due to a delayed response in stock

⁵⁰ Daniel, K., & Hirshleifer, D. (2015). Overconfident investors, predictable returns, and excessive trading. *The Journal of Economic Perspectives*, 29(4), 61-87.

⁵¹ Hong, H., & Stein, J. C. (1999). A unified theory of under-reaction, momentum trading, and overreaction in asset markets. *The Journal of finance*, 54(6), 2143-2184.

⁵² Lo, A. W. & MacKinlay, A.C. (1990). When are contrarian profits due to stock market overreaction? *Review of Financial studies*, 3(2), 175-205.

prices, mainly attributable to common factors, rather than to overreaction. Jegadeesh (1991) [53] provided evidence to support this interpretation regarding the relationship between short-term return reversals and bid-ask spreads. Abarbanell and Bernard (1992) [54] found that, after positive earnings results in the preceding period, average returns around the quarterly earnings announcements were highly significant. The authors argued that this data validated the underreaction hypothesis. The first authors to refer to underreaction trends in stock returns were Jegadeesh and Titman (1993) [55]. They (Jegadeesh & Titman, 1993) [55] found that, for high volume stocks, the momentum premium was higher for both the winner and the loser portfolios. A strategy of purchasing stocks from high volume winners and selling stocks from high volume losers yielded superior returns compared to the simple market momentum strategy.

Dreman and Berry (1995) [56] demonstrated that Mispricing-Correction Hypothesis was optimistic and that negative earnings surprises affected best high-P/E and worst low-P/E stocks in an uneven manner that favoured worst stocks using the Abel Noser database in New York. Long-term reversal to the mean in which the worst stocks experienced above-market returns while the best stocks posted below-market outcomes, regardless of the sign of surprise, persist for at least 19 quarters after the report. Such findings were consistent with mispricing or overreaction to incidents, and a corrective price move was consistent with under-reaction after the shock. The author clarified the superior returns of contrarian approaches, the premise that corrective market behaviour (Mispricing Correction Hypothesis-MCH) preceded the initial mispricing.

The results of Chan, Jegadeesh, and Lakonishok (1996) [57] were consistent with investors' under-reaction, as they observed momentum and a continuing pattern in earnings surprises around announcement dates. Fama (1998) found discrepancies split randomly between underreactions, and overreactions were consistent with research methodology-based market performance.

Barberis, Shleifer, and Vishny (1998) [15] delivered an investor sentiment mannequin that confirmed underreaction of stock prices to information such as revenue reports and stock rate overreactions to a sequence of good or terrible news. The author constructed a model in which the incidence of previous trend reversals was used by investors as an indicator of the possibility of future reversals. The writer argued that traders had been at the start underrating new information due to conservatism bias but would eventually overreact to a collection of comparable data. This latter influence, the so-called bias in representativeness, interacted with conservatism bias to produce the temporal developments observed in stock returns. Amir and Ganzachb (1998) [58] examined theories derived from the concept of behavioural selection about instances that contributed to overreaction and underreaction in profits forecasts by analysts. The authors determined that three heuristics collectively had a shared impact on earnings predictions: leniency, representativeness, and anchoring and adjustment. The authors furnished a mannequin for the simultaneous impact of these heuristics on forecast mistakes and examined three predictions of this model: that there used to be a propensity closer to an overreaction in prediction

⁵³ Jegadeesh, N. (1991). Seasonality in stock price mean reversion: Evidence from the US and the UK. *The Journal of Finance*, 46(4), 1427-1444.

⁵⁴ Abarbanell, J. S., & Bernard, V. L. (1992). Tests of analysts' overreaction/under-reaction to earnings information as an explanation for anomalous stock price behavior. *The Journal of Finance*, 47(3), 1181-1207.

⁵⁵ Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of finance*, 48(1), 65-91.

⁵⁶ Dreman, D. N., & Berry, M. A. (1995). Overreaction, underreaction, and the low - P/E effect. *Financial Analysts Journal*, 51(4), 21-30.

⁵⁷ Chan, L. K., Jegadeesh, N., & Lakonishok, J. (1996). Momentum strategies. *The Journal of Finance*, 51(5), 1681-1713.

⁵⁸ Amir, E. & Ganzachb, Y. (1998). Overreaction and under-reaction in analysts' forecasts. New York: Columbia University.



adjustments and underreaction in forecast revisions, that there was an over-reaction to beneficial forecast adjustments and under-reaction to bad forecast changes, and that these biases accelerated with the horizon of prediction.

Lee and Swaminathan (2000) ¹⁵⁹ looked at the connection between the momentum effect and volume of turnover. The volume will be a proxy for investor interest rates in a stock. Shane and Brous (2001) ¹⁶⁰ presented proof of underreaction corrected by analysts and investors in response to the next announcement of earnings and non-earnings surprise of the details available between announcements of earnings. Evidence from the author also indicated that analysts and investors were underrating the information reflected in changes to the earnings forecast by analysts and that non-earnings-surprise information also tends to correct this underreaction. Controlling for corrective non-earnings-surprise information greatly increases estimates of the extent to which forecasting activity by analysts can explain return drifts after both earnings announcements and analysts' earnings forecast revisions.

Raedy, Shane, and Yang (2006) ¹⁶¹ presented empirical evidence that, with the forecast horizon, underreaction in the earnings forecasts of financial analysts increased and offered a rational economic explanation for this result. Empirical evidence from the author suggested that earnings forecasts by analysts were underrating to both types of information, and the underreaction increased with the forecast horizon. The authors 'incentive-driven rationale for underreaction offered an alternative to theories based on psychology and proposed avenues for further study.

Caylor, Christensen, Johnson, and Lopez (2015)¹⁶² explored whether the latest quarter earnings expectation trend identified by the forecast revision signs and earnings surprise provided information on potential firm results and the degree to which analysts and investors responded to that information. The findings showed that analysts under reacted more to earnings information disclosed through paths of consistent-signal earnings expectations than to earnings information conveyed through paths of inconsistent-signal expectations. The authors found that, even after accounting for the sign and magnitude of the surprise earnings, the current earnings expectation direction provided incremental explaining power for potential abnormal returns.

The crux of the underreaction theory is that stock market prices often underreact to new information due to the bias of analysts and investors in processing the information in paths of expectation of consistent signal earnings.

The importance of this theory is that it describes the impact on the capital markets of investor activity on the under-reaction of the stock market. Conservative investors are underweight and slowly absorbing the latest information that is increasingly being introduced into stock prices causing stock market underreaction ¹⁶³.

⁵⁹ Lee, C., & Swaminathan, B. (2000). Price momentum and trading volume. *The Journal of Finance*, 55(5), 2017-2069.

⁶⁰ Shane, P., & Brous, P. (2001). Investor and (Value Line) Analyst Underreaction to Information about Future Earnings: The Corrective Role of Non-Earnings-Surprise Information. *Journal of Accounting Research*, 39(2), 387-404.

⁶¹ Raedy, J. S., Shane, P., & Yang, Y. (2006). Horizon-Dependent Under-reaction in Financial Analysts' Earnings Forecasts. *Contemporary Accounting Research*, 23(1), 291-322.

⁶² Caylor, M. L., Christensen, T. E., Johnson, P. M., & Lopez, T. J. (2015). Analysts' and Investors' Reactions to Consistent Earnings Signals. *Journal of Business Finance & Accounting*, 42(9-10), 1041-1074.

⁶³ (Raedy, Shane & Yang, 2006; Caylor, Christensen, Johnson & Lopez, 2015).



3. Regret-Theory

Regret theory deals with the emotional response that people undergo when they know they committed a blunder in judgment. Faced with the possibility of selling a stock, investors are influenced emotionally by the price they purchase the stock at. So, they stop selling it as a way of avoiding the guilt of having made a poor investment, and the shame of recording a loss.

Regret theory can also hold for buyers who discover a stock they'd considered purchasing but weren't sure the price would go up, increasing its value. Many investors escape the risk of experiencing this remorse by adopting the traditional wisdom of purchasing the stocks that everybody else buys and rationalising their decision by 'everybody else does it' (Pareto, 1997, cited in Jagongo & Mutswenje, 2014) ^[64].

4. Theory of Mental Accounting

The Mental Accounting Theory states that people have a natural propensity to place particular occasions in intellectual compartments, and the distinction between these cubicles over time impacts our behaviour extra than the occasions per se. The hesitation to sell an investment that once had substantial positive aspects and now has a modest reap illustrates first-class an investment instance of mental accounting. People get accustomed to wholesome returns, even on paper, at some stage in an economic boom and bull market. They are extra likely to sell at a lower profit margin when the market downturn deflates the net worth of the investor. For the advantages they once had, they construct intellectual cubicles which cause them to wait for the return of that gainful period (Thaler, 2001) ^[65].

According to Thaler (1985) ^[66], who formulated this theory, people were attempting to code results to make themselves as comfortable as possible i.e. the hedonic hypothesis of editing. The hedonic editing hypothesis defined decision-makers as value maximisers who, depending on which mental representation was more appropriate, mentally separated, or incorporated outcomes. On mental accounting and mental budgeting, the author indicated that hedonic, luxury goods were under-consumed by people. The author argued that for purposes of self-control, hedonically pleasurable luxuries were often under-consumed which was why they were desirable gifts.

Kahneman and Tversky (1984)^[67] addressed the mental accounting mechanism in which people arranged transaction results and explained the anomalous existence of consumer behaviour. In particular, they asserted that an option's acceptability depended on whether a negative outcome was measured as an expense or uncompensated loss.

It was speculated by Shefrin and Statman (1985)^[68] that the underlying mental accounting was that decision-makers appeared to segregate into separate accounts the various forms of gambles faced. The author proposed that if selling a stock at a loss was painful, the pain would be reduced by selling the losers at the same time as according to mental accounting standards. On behavioural

⁶⁴ Pareto (1997), cited in: Jagongo, A., & Mutswenje, V. S. (2014). A Survey of the Factors Influencing Investment Decisions: The Case of Individual Investors at the NSE. *International Journal of Humanities and Social Science*, 4(4), 92-102.

⁶⁵ Thaler (2001). *Theory of mental accounting*. New York: Academic Press.

⁶⁶ Thaler, R. (1985). Mental accounting and consumer choice. *Marketing science*, 4(3), 199-214.

⁶⁷ Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American psychologist*, 39(4), 341.

⁶⁸ Shefrin, H., & Statman, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of finance*, 40(3), 777-790.



life-cycle theory, Shefrin and Thaler (1988) ^[69] proposed that people psychologically distributed resources over classifications of existing income, current assets, and potential profits. From the current income account, the tendency to spend was highest, whereas sums defined as future income were viewed more conservatively. In theory, individuals may randomly divide or combine gains and losses to maximise their happiness. There were also limitations to the extent to which results could be psychologically separated and incorporated. Thaler and Johnson (1990) ^[70] clarified that risk aversion could be observed after prior losses based on their quasi-hedonic editing hypothesis since subsequent losses were not combined with the previous outcome. As with previous defeats, the one-stage formulation did not establish the same sense of being ahead in the mental account, so the risk aversion prediction of the prospect theory was predicted for the one-stage version.

Heath and Soll (1996) ^[71] found that mental budgets in categories such as entertainment and clothing led people to under-consume. Over time, however, consumers have come to understand that such spending within a fair range has increased their quality of life, in many cases without dramatically impacting their ability to meet their basic needs. Mental accounting was a specific type of framing in which individuals were segregating those decisions. For example, with one investment account, an investor took a lot of risks but developed a rather conservative stance with another account dedicated to educating her child.

Statman (1997)^[72] suggested that mental accounting was consistent with the irrational preference of some investors for high-cash-dividend stocks; the investors felt free to spend dividend income but did not dip into the capital by selling a few shares of another stock with the same overall rate of return and a propensity to ride the losing stock position too long. Prelec and Loewenstein (1998)^[73] found out that when buyers made purchases they frequently experienced an immediate payment pain which weakened or even completely prevented the pleasure derived from consumption. There is no doubt that the stress of paying had an important part to play in customer self-control. The pain of paying, no doubt, had an important role in consumer self-control. Kivetz and Simonson (1999) ^[74] demonstrated that consumers feared their inability to manage resources wisely between hedonic and required consumption in advance.

Shefrin (2002) ^[75] discussed that mental accounting described the desire for cash dividends, and concentrated on self-control. The investor positions cash dividends and capital gains in different mental accounts and this is one way of maintaining spending leverage. The investor is worried that he expended his savings too soon because he chose to finance consumption by spending part of his portfolio. The saying 'Don't dip into money' is also equivalent to 'Don't kill the goose that lays the golden eggs.' As stock prices decrease, dividends act as a silver lining and the investor continues holding the losing stocks.

⁶⁹ Shefrin, H. M., & Thaler, R. H. (1988). The behavioral life-cycle hypothesis. *Economic inquiry*, 26(4), 609-643.

⁷⁰ Thaler, R. H., & Johnson, E. J. (1990). Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. *Management science*, 36(6), 643-660.

⁷¹ Heath, C., & Soll, J. B. (1996). Mental budgeting and consumer decisions. *Journal of consumer research*, 23(1), 40-52.

⁷² Statman, D. (1997). Virtue ethics.

⁷³ Prelec, D., & Loewenstein, G. (1998). The red and the black: Mental accounting of savings and debt. *Marketing science*, 17(1), 4-28.

⁷⁴ Kivetz, R., & Simonson, I. (1999). *The joyless consumer: Using self-control strategies to increase hedonic consumption*. Stanford: Stanford University working paper.

⁷⁵ Shefrin, H. (2002). Behavioral decision making, forecasting, game theory, and role-play. *International journal of forecasting*, 18(3), 375-382.



Mental accounting theory's significance is that it's a deep-seated prejudice with multiple forms that cause investors several problems. The most fundamental of these problems is the positioning of investment assets in distinct 'buckets' according to the asset class, irrespective of the possible associations that link investment across categories.

6. Prospect Theory

Tversky and Kahneman (1974)^[76] suggested the theory of prospects by experimenting with how investors can overrate recent knowledge by neglecting or attributing less value to past data, in their revisions of prospects, based on their probability assessments. This would give rise to excessive optimism about good news, and extreme pessimism about bad news. Under these conditions, stock prices will briefly deviate a mean-reverting effect from their intrinsic values, which exist in the medium to long-term. Kahneman and Tversky (1979) [56] found that human decisions deviate from those predicted by Standard Finance Theory under conditions of uncertainty. Investors cannot optimally interpret the data because of insufficient cognitive ability. Human cognition has many irrational components even when trying to make rational decisions. The authors examined prospect theory and psychological research on heuristics and biases in assessing facts and presented a detailed model of why people make decisions on what appears to be irrational grounds.

The importance of Prospect Theory in this study was that variable loss aversion of the investor conduct and mental accounting are biases that clearly cannot be accepted in financial decision-making. The exact opposite of what investors want to be was being instigated: higher risk, with lower yields. Investors should take the risk not to reduce losses but to increase profits.

6. Loss Aversion Theory

Kahneman and Tversky (1979) [56] also proposed the descriptive model of risk-taking decision-making, prospect theory, which used experimental evidence to suggest that gains and losses in wealth made people valuable rather than absolute rates. The basic result known as loss aversion was that people were more vulnerable to losses than gain. The study also made use of more recent literature on contextual aspects of loss aversion, as the system was inter-temporal. This evidence indicates that the magnitude of loss aversion relied on earlier gains and losses: A loss that comes after earlier gains were less painful than usual because those earlier gains cushioned it. On the other hand, a loss that preceded other losses was more devastating than usual: People became more prone to further defeats after being devastated by the first loss.

Schoemaker (1982) ^[77] noticed quite early that people's decisions were sensitive to how the issue or decision was presented. Such findings, translated into the realm of loss aversion, suggested that the degree of loss aversion depended on whether people concentrated on the negative or the positive. Shefrin and Statman (1985) ^[78] outlined the idea of utility representation embedded in the effect of a disposition. The disposition effect was the tendency to hold losing investments as a risk-seeking behaviour too long and to sell winning investments as a risk-avoidance behaviour too quickly.

⁷⁶ Tversky, A. & Kahneman, D. (1974). Judgments under Uncertainty: Heuristics and Biases, *Science*, 1124-1131.

⁷⁷ Schoemaker, P. J. (1982). The expected utility model: Its variants, purposes, evidence and limitations. *Journal of economic literature*, 529-563.

⁷⁸ Shefrin, H., & Statman, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of finance*, 40(3), 777-790.



As an explanation for the endowment effect, **Kahneman, Knetsch, and Thaler (1990)**^[79] clarified loss aversion, the idea that people put a higher value on a good they owned than on an equivalent good they did not own. Loss aversion and the endowment effect contributed to a Coase Theorem violation that resource allocation was independent of the assignment of property rights when costless trading was feasible. While there was a strong understanding of the nature of loss aversion, there was still work to be done to establish clearer knowledge of its origins, limits, and implications. For example, researchers typically assumed that potential gains had to be around twice the size required to compensate for potential losses.

Tversky and Kahneman (1991) ^[80] introduced a loss aversion coefficient of the Gains to Losses ratio, G: L (Gains: Losses) which made it appropriate to equally win G or lose L. The authors detected a gain to a loss ratio of 2 (2:1) in their experiments, showing that on average gains had to be twice as high as the losses to make a reasonable even probability of winning, G or losing, L. Losses outnumbered the related gains. In prospect theory, loss aversion was referring to people's propensity to strongly prefer loss avoidance to gain.

In economics and decision theory, **Tversky and Kahneman (1992)** ^[81] clarified that loss aversion refers to the investor's propensity to strongly prefer loss avoidance to gain acquisition. **Thaler, Tversky, Kahneman, and Schwartz (1997)**^[82] found that if people used one year to assess stock market investments then myopic risk aversion explained the high equity premium.

Loss aversion also clarified one of the most common investment errors: investors reviewing their stock portfolio were most likely to sell stocks that rose in value or dropped the least. The relevance of the theory of loss aversion was that it explained loss aversion bias which could simply not be accepted in financial decision-making. The exact opposite of what investors want to be was being instigated: increased risk, with lower returns. Investors should take the risk not to reduce losses but to increase profits. The principle of loss-aversion points to another explanation of why investors opted to keep their losers and sell their winners: they might expect that the losers of today will soon outperform the winners of today. Investors sometimes make the mistake of following market activity by engaging in the most attention-giving stocks or funds. Essentially, the Loss-Aversion-Theory implies people show a greater degree of emotion towards profits than losses. Individuals are more worried about future losses than optimistic for equivalent profits. An investment manager won't automatically get overwhelmed by her client's calls when she announced, say, a gain of \$500,000 in the client's portfolio. But, if it reports a \$500,000 loss, you can bet the phone will ring! A loss still seems greater than a gain of a similar size-the value of money shifts as it goes deep into our wallets. The principle of prospects also explains why investors are hanging on to losing stocks: people often take more risks to prevent losses than to make profits. That is why investors happily remain in a risky stock position, hoping that the price will bounce back. Gamblers on a losing streak will behave similarly, doubling bets in an attempt to recover what's already lost. So given our reasonable desire to get a return on the risks we take, we continue to value something we own that is higher than the price we would usually be willing to pay for it. The theory of loss-aversion points to another explanation of why investors would want

⁷⁹ Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1990). Experimental tests of the endowment effect and the Coarse theorem. *Journal of political Economy*, 1325-1348.

⁸⁰ Tversky, A., & Kahneman, D. (1991). Loss aversion in riskless choice: A reference dependent model. *The quarterly journal of economics*, 1039-1061.

⁸¹ Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and uncertainty*, 5(4), 297-323.

⁸² Thaler, R. H., Tversky, A., Kahneman, D., & Schwartz, A. (1997). The effect of myopia and loss aversion on risk taking: An experimental test. *The Quarterly Journal of Economics*, 647-661.

to keep their losers and sell their winners: they might think that the losers of today might soon outperform the winners of today. Investors sometimes make the mistake of following market activity by engaging in the most cautious stocks or funds. Research indicates that money flows more quickly into high-performance mutual funds than capital flows out of underperforming funds (Kahneman & Tversky, 1979) [56].

7. Expected Utility Theory

The Expected utility theory describes a philosophy of how to make economically beneficial and financially optimal decisions under risk conditions. The theory was developed in Switzerland in the 18th century and became popular in the mid-20th century after it was formalised. Bernoulli (1713)^[83] was the first proponent to explain the problem of St. Petersburg with infinite expected values, leading two Swiss mathematicians to establish the expected theory of utility as a solution. The theory identified scenarios that were more practical where expected values were finite. Neumann and Morgenstern (1944) believed that preferences were established over a lottery domain and that any model attempting to understand asset prices or trading behaviour was an approximation of investor preferences or how investors assessed risky gambles. Many of the early models of investor decision-making believed investors were analysing gambles in keeping with the expected utility structure until Friedman and Savage (1948)^[84] proposed that a relatively simple extension of orthodox utility analysis could rationalise a large class of individuals' reactions to risk. In their view (Friedman & Savage, 1948)^[84] individuals also have to or may choose among alternatives that vary in the degree of risk to which the individual would be exposed, among other items. The expected utility theory states that the person optimises his expected return based on the weighted sum of the various possible outcomes, with each weight equal to the likelihood that the resulting outcome will be realised.

Besides, the principle states that the utility of a final state depends only on the final state; it is meaningless how the final state was reached. Kahneman and Tversky (1979) [56] clarified that the theory typically presumed that an individual was risk-averse and that a prospect was appropriate to an individual as an expected benefit if the benefit resulting from the combination of the prospect with the assets of the individual surpassed the use of those assets, $u(w)$. The utility function concavity was not required for the predicted utility theory but it was commonly presumed to reflect a representative individual's preferences and suggested that the typical individual was risk-averse. Kahneman and Tversky (1982)^[85] found that the anticipated utility theory was also used as a descriptive theory, a theory of how people make decisions or as a predictive theory, a theory that, although it could not precisely model the decision-making psychological processes, correctly predicted the choices of people. Expected utility theory made faulty assumptions about people's decisions in many cases of real-life choice; however, this did not settle how people would make decisions based on expected utility considerations.

Caplin and Leahy (2001)^[86] applied the expected utility principle to cases where agents felt anticipatory feelings before ambiguity was resolved. The authors showed how those anticipatory feelings could lead to inconsistencies in time. The authors presented an example from portfolio theory to explain the possible effect of anticipation on asset prices that could account for recurrent

⁸³ Bernoulli, J. (1713). *Ars conjectandi*. Fratrum: Impensis Thurnisiorum.

⁸⁴ Friedman, M., & Savage, L. J. (1948). The utility analysis of choices involving risk. *The journal of political economy*, 279-304.

⁸⁵ Kahneman, D., & Tversky, A. (1982). Variants of uncertainty. *Cognition*, 11(2), 143-157.

⁸⁶ Caplin, A., & Leahy, J. (2001). Psychological expected utility theory and anticipatory feelings. *Quarterly Journal of economics*, 55-79.



gambling, given the rates span the preference time. **Hartley and Farrel (2002)** ^[87] explored the potential to compensate for simultaneous gambling and insurance under the anticipated utility theory. Contrary to a previous argument that borrowing and lending in ideal capital markets removed the need for gambling, the authors revealed the expected utility principle explained gambling with non-concave utility functions. If interest rates and time choice is equivalent, agents search for gambling when income fell under a finite range of values. When they varied, revenue was abundant where games were needed. Different rates of borrowing and lending could account for persistent gambling provided the rates span the preference amount of time. The importance of the expected utility principle is to capture as parsimoniously as possible the attitudes of people towards risk gambling. Expected utility theory is an important component of any model that seeks to explain asset prices or trading actions as an interpretation of investor desires, or how investors judge risky gambles.

8. Efficient Market Hypothesis

Traditional classical economists have constantly assumed that the funding market is efficient, for this reason, the Efficient Market Hypothesis (EMH). The EMH is centred on the premise that, at the moment, stock prices regularly characterise the full details reachable on the market. **Fama (1970)** ^[88] supported the efficient market hypothesis that described an efficient market as one in which the prices represented all the information accessible on the market at the time. Nevertheless, there has been a developing interest in the study of investor actions in the capital markets and how they affect stock prices both in the brief period and in the long term. Behavioural finance has two constructing blocks: a limit to arbitration that claims that it would be tough for rational merchants to reverse the dislocation created through much less rational traders; and psychology that describes the varieties of deviations from full reasoning.

Shiller, Fischer, and Friedman (1984) ^[89] clarified a basic flaw in the case for a paradigm of efficient markets. The writers felt it ignored the fact that the statistical analyses had not shown that returns were not predictable; they had only shown that returns were not predictable. The efficient market model may be equally consistent with the normal finding in the literature of event studies that events had their effect on returns as soon as the details were public and afterward had a little predictable impact.

Buffett (1984)^[90] protested against EMH, arguing that value investors 'preponderance among the world's best money managers refutes EMH proponents' argument that chance is the reason some investors tend to be more successful than others. **Malkiel (1999)**^[91] found that more than two-thirds of qualified portfolio managers were outperformed by the S&P 500 Index over the 30 years (to 1996) and, to the point, there was no overlap between those who outperformed in one year and those who outperformed in the next.

⁸⁷ Hartley, R., & Farrell, L. (2002). Can expected utility theory explain gambling? *The American Economic Review*, 92(3), 613-624.

⁸⁸ Fama, E. F. (1970). Multi-period consumption-investment decisions. *The American Economic Review*, 60(1), 163-174.

⁸⁹ Shiller, R. J., Fischer, S., & Friedman, B.M. (1984). Stock prices and social dynamics. *Brookings papers on economic activity*, 1984(2), 457-510.

⁹⁰ Buffett, W. E. (1984). The super investors of Graham-and-Doddsville. *Hermes*, 4-15.

⁹¹ Malkiel, B.G. (1999). *A random walk down Wall Street: including a life-cycle guide to personal investing*. Retrieved from: WW Norton & Company.

Fama (1998) ^[92] analysed over twenty studies of behavioural finance, finding that their obvious challenge to the market efficiency hypothesis was, in most cases, disappointing due to the prevailing focus of the studies on EMH anomalies: overreaction and under-reaction to market events, which resulted in either over or undervaluation of stocks and assets and indicated that the market was not as effective as theorised in EMH. Fama (1998) ^[92] critiqued behavioural finance research as not being mere event studies and therefore did not fully participate in the precepts of modern finance methodology. The rejection of behavioural financial attacks by Fama's theory is based on the fact that it was technically and methodologically inconsistent as an area of study. In doing so, Fama (1998) ^[92] demonstrated that market efficiency defied the literature challenge of long-term fluctuations in returns. In line with the hypothesis of market efficiency that the anomalies were chance outcomes, apparent overreaction to information was as usual as underreaction, and pre-event continuation of abnormal returns was about as frequent as the post-event reversal. Most significantly, consistent with the prediction of market efficiency that obvious anomalies may be due to techniques, the majority of long-term return anomalies disappeared with fair technique changes.

Lo (2005) ^[93] suggested a new paradigm that would balance market performance with behavioural alternatives by applying to financial relationships the concepts of competition evolution, adaptation, and natural selection. The writer asserted that much of what behaviourists cited as counter-arguments to economic rationality are loss aversion, overconfidence, overreaction, mental accounting, herding, and other behavioural biases, was consistent with an evolutionary model of individuals adapting to a dynamic environment through simple heuristics.

The significance of the Efficient Market Hypothesis is that it published the flaws in CAPM and APT's regular finance, or Modern Portfolio Theory, and all present-day finance. It defined how behavioural economists disputed both empirically and theoretically the efficient market speculation and attributed imperfections in monetary markets to an aggregate of cognitive biases, such as overreaction, overconfidence, herd behaviour, mental accounting, loss aversion, representative bias, information bias, and a variety of forecastable human errors in reasoning and information.

9. Theory of Overconfidence

The overconfidence theory suggests that people in their abilities usually perceive themselves as being above average. They often overestimate the accuracy of their expertise relative to others and their experience. Many investors believe they're able to time the market consistently. Yet there's a vast amount of evidence of the fact that proves otherwise. Overconfidence contributes to unnecessary sales, with gains from denting trading costs (Tapia & Yermo, 2007) ^[94].

This theory was introduced by Kahneman and Tversky (1979) ^[56] as an anomaly in human judgement which psychologists demonstrated in several experiments. The authors clarified that there was no more prevalent and potentially more devastating issue in judgement and decision-making than overconfidence bias. Plous (1993) ^[95] stated that people were overconfident by suggesting that the differences between precision and confidence were not linked to the intellect

⁹² Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance1. *Journal of financial economics*, 49(3), 283-306.

⁹³ Lo, A. W. (2005). Reconciling efficient markets with behavioral finance: the adaptive markets hypothesis. *Journal of Investment Consulting*, 7(2), 21-44.

⁹⁴ Tapia, W. & Yermo J, (2007). Implications of behavioural economics for mandatory individual account pension systems (OCED). Working papers on insurance and private pensions No 11.

⁹⁵ Plous, S. (1993). *The psychology of judgment and decision making*. London: McGrawHill Book Company.

of a decision-maker. Daniel, Hirshleifer, and Subrahmanyam (1997) ^[96] suggested a theory focused on investor overconfidence and skewed self-attribution to explain some of the patterns of return on securities that appeared anomalous from a reasonable investor's perspective of efficient markets.

They also (Daniel, Hirshleifer & Subrahmanyam, 1998) ^[97] proposed a theory of underreaction and overreaction in the stock market based on two well-known psychological biases: investor overconfidence in the accuracy of private information; and self-attribution biases, which triggered asymmetric changes in investor confidence as a function of their investment performance. The hypothesis also gave some untested implications for policy on corporate finance.

Odean (1998) ^[98] built a theoretical model that assessed whether market participants' overconfidence overestimated their capacity to interpret information. Every market participant assumed that he or she was better at gathering and processing information and that the quality of the collected information was also above average.

The model predicted investors were overtrading. Under this system, overconfidence triggered rises in market volume and volatility in stock prices and decreases in stock price performance. The author (Odean, 1998) ^[98] further proposed that overconfident investors exaggerated the precision of their judgements resulting in risk underestimation and increased differences of opinion between traders, resulting in a higher volume of trading.

Shefrin (2000) ^[99] clarified that overconfidence and anchoring appear to be part of the post-earnings-announcement drift explanation. There were two key consequences of investor overconfidence. The first was that investors took bad bets because they failed to know they were at a disadvantage from details. The second was they traded more often than they were cautious, contributing to a disproportionate volume of trading. In fostering the high level of trade witnessed in the financial markets, overconfidence seemed to be a fundamental factor. There was little trade in financial markets, without such overconfidence. However, induced overconfidence appeared to be a fundamental factor fostering the high volume of trade observed in financial markets.

Barber and Odean (2001) ^[14] contrasted the trade operation and average returns in men's and women's brokerage accounts. The authors find that single men are doing much more actively than women, in line with the greater overconfidence among men. Individuals tended to overestimate their particular convictions or expectations and tended to overestimate their abilities. This overconfidence may be responsible for the prevalence of active or passive investment management itself as a phenomenon among essentially market hypothesis adherents. Daniel, Hirshleifer, and Teoh (2002) ^[100] examined detailed evidence on how investor actions and prices are influenced by psychological biases. Systematic mispricing triggered the misallocation of considerable resources. The author argued that insufficient attention and overconfidence induced credulity among investors about knowledgeable market participants' strategic incentives. Hoffman

⁹⁶ Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1997). Investor Psychology and Security Market Under and Overreaction. *Advances in Behavioral Finance*, 2, 460-501.

⁹⁷ Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. *The Journal of Finance*, 53(6), 1839-1885.

⁹⁸ Odean, T. (1998). Do investors trade too much? Available at SSRN 94143.

⁹⁹ Shefrin, H. (2000). Recent developments in behavioral finance. *The Journal of Wealth Management*, 3(1), 25-37.

¹⁰⁰ Daniel, K., Hirshleifer, D., & Teoh, S. H. (2002). Investor psychology in capital markets: Evidence and policy implications. *Journal of monetary economics*, 49(1), 139-209.



(2005)^[101] defined the principle of overconfidence derived from a broad variety of cognitive psychological tests and surveys in which participants overestimated their predictive abilities as well as the quality of the information provided to them. People were poorly trained in predicting events that they felt were certain to happen because they often knew that such events had less than a 100 percent chance of happening. In short, people thought they were more educated and they had better information than they did. For instance, they got a tip from a financial consultant or read something on the internet, and then they were ready to act based on their perceived knowledge advantage, like making an investment decision. The theory's relevance is that overconfidence, one of five heuristics components among Gambler's fallacy, availability bias, Anchoring, and Representativeness. One of the goals of this research was the impact of investor overconfidence on the market reaction at the Nairobi Securities Exchange. Past research in this theory found that overconfidence in the financial markets has triggered overreactions and underreactions.

10. Herding Theory

Herding is said to be prevalent in a market when investors choose to imitate the trading activities of those they consider better educated, rather than acting on their values and private knowledge. Grossman and Stiglitz (1976)^[102] were very early supporters of herding theory who demonstrated that uninformed traders could be manipulated in a market sense by mimicking price information from better-informed investors in such a way that private information was aggregated correctly and efficiently. Throughout the literature, two types of hypotheses are established to examine herd behaviour, one was herd-investor behaviour towards stock and the other was market-wide herding. As for herding towards the stock, individuals or a group of investors focus only on a subset of securities simultaneously by neglecting other securities with similar characteristics.

The relationship between investor behaviour and market volatility was clarified by Friedman (1953)^[103]. He showed how irrational investors are destabilising markets, that is, how rational investors are moving markets towards their basic values. Hellwig (1980)^[104] explained how uninformed or liquidity trading drives volatility. Bikhchandani, Hirshleifer, and Welch (1992)^[105] demonstrated that when investors made the optimal choice by imitating the actions of previous investors without relying on their knowledge, an information cascade emerged.

Froot, Schafstein, and Stein (1992)^[106] looked at how investors imitate each other, and this caused volatility. The possibility of taking the wrong action was still present even though as a group all the participants had clear evidence in support of the right action. Stock prices could be influenced by what was known as herd instinct, which was a tendency for people to imitate a larger group's behaviour. For instance, as more and more people bought a stock, driving the price higher and higher, others jumped on board as if all the other investors were right or knew something not everyone else knew.

¹⁰¹ Hoffman, R.R. (2005). *The psychology of intelligence analysis revisited: An update from developments in cognitive science post-1980*. UK: Taylor & Francis.

¹⁰² Grossman, S. J., & Stiglitz, J. E. (1976). Information and competitive price systems. *The American Economic Review*, 66(2), 246-253.

¹⁰³ Friedman, M. (1953). *The methodology of positive economics*. UK: Taylor & Francis.

¹⁰⁴ Hellwig (1980). Cited in: Cheron, I. (2018). Effect of Investor Behaviour on Stock Market Reaction in Kenya. Unpublished Doctor of Philosophy Dissertation, Jomo Kenyatta University of Agriculture and Technology.

¹⁰⁵ Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *Journal of political Economy*, 992-1026.

¹⁰⁶ Froot, K.A., Scharfstein, D.S., & Stein, J.C. (1992). Herd on the street: Informational inefficiencies in a market with short-term speculation. *The Journal of Finance*, 47(4), 1461-1484.

Christie and Huang (1995) ^[107] described the presence of investors' herds was mostly used as a rationale for stock return volatility. Lux (1995) ^[108] formalised herd behaviour or mutual mimetic contagion in financial markets. The author clarified both the excess volatility and the mean reversals with the noise trade or infection model form.

Caparrelli, D'Arcangelis, and Cassuto (2004) ^[109] stated that in the security market, herding investors base their investment decisions on the purchase or sale of stocks by the masses. On the other hand, informed and rational investors usually dismissed following the masses, making the market productive. Herd behaviour induced a state of market inefficiency, commonly identified by speculative bubbles. Avramov, Chordia, and Goyal (2006) ^[110] looked at how investors imitated each other and found that volatility was driven by herd behaviour. The results implied that the violation of the efficient market principle as a result of short-term reversals was after all not so serious.

Tan, Chiang, Mason, and Nelling (2008) ^[111] clarified that the financial market's herding effect was defined as the propensity of investors' behaviours to imitate the activities of others. Generally, practitioners carefully considered the nature of herding, because investors relied more on collective information than on personal information, resulting in the price deviation of securities from core value; thus, many good investment opportunities have been impacted at present. Herding affected stock price shifts and ultimately shaped the characteristics of risk and return models and this had an impact on asset price analysis viewpoints.

The importance of herding theory was that in financial decision-making it clarified the herd behaviour effect that resulted in market reactions that were not beneficial to the investor. An investment bubble was the result of a rapid price increase of an asset over its intrinsic value, triggered by exuberant market activity perpetrated by a positive feedback loop.

2.4 Empirical Literature Review

This section reviews most of the literature relevant to the study.

2.4.1 Previous Works on Emotional Intelligence and Other Individual & Organisational Factors

There are two main groups of studies when it comes to the subject of emotional intelligence. The first group is cross-country/intercontinental studies and the second group is country-specific/intra-continental studies. A major cross-country study is that conducted by Hapunda et al. (2019) ^[47], which explored the relationship between parent-child and emotional control in adolescents across four countries (*Argentina, Ghana, India, and Zambia*) and found the presence of cultural variations in how adolescents viewed their relationship with parents.

¹⁰⁷ Christie, W. G., & Huang, R. D. (1995). Following the pied piper: Do individual returns herd around the market? *Financial Analysts Journal*, 51(4), 31-37.

¹⁰⁸ Lux, T. (1995). Herd behaviour, bubbles and crashes. *The economic journal*, 881-896.

¹⁰⁹ Caparrelli, F., D'Arcangelis, A. M., & Cassuto, A. (2004). Herding in the Italian stock market: a case of behavioral finance. *The Journal of Behavioral Finance*, 5(4), 222-230.

¹¹⁰ Avramov, D., Chordia, T., & Goyal, A. (2006). The impact of trades on daily volatility. *The Review of Financial Studies*, 19(4), 1241-1277.

¹¹¹ Tan, L., Chiang, T. C., Mason, J. R., & Nelling, E. (2008). Herding behavior in Chinese stock markets: An examination of A and B shares. *Pacific-Basin Finance Journal*, 16(1), 61-77.



Many previous researchers have studied country-specific or intercontinental studies on emotional intelligence and its relation to success and achievement in leadership, job satisfaction, and workplace performance. For example, the Bartz et al. (2018) [16] study identified emotional intelligence as the main component for the success and job satisfaction of a leader in the *United States* (North America, USA). Much research in the US finds positive results on job performance from emotional intelligence (Lebeck & Chighizola, 2018) [60]; *social, academic, personal, and workplace success* (Brackett, Rivers & Salovey, 2011) [19]. And some research in *India* has shown the positive effect of emotional intelligence on work performance (Mishra & Shrivastava, 2018) [68] and employee engagement (Yuvaraj & Eveline, 2018) [102]; Other US research investigated the relationship between Emotional Intelligence and Investor Behaviour and reported that temperament and emotional intelligence can contribute to financial decision-making (Ameriks, Wranik & Salovey, 2009) [6].

A good number of studies were carried out in Asia. For example, some studies (Mahadi, 2011) [66] have shown the importance of emotional intelligence in maintaining leader-follower relationship quality in *Malaysia*. Others examined the effect of emotional intelligence on job satisfaction in *Iran* (Rahmati & Mohebi, 2016) [80], some explored the connection between emotional intelligence and writing skills of students (Ebrahimi, Khoshsima & Zare-Behtash, 2018) [33], while others studied the influence of emotional intelligence on the expression of personality and implicit aggression in *Korea* (Lee, 2018) [61].

2.4.2 Previous Works on Emotional Intelligence and Investor Behaviour

Other studies have been conducted among teachers in *Oman* on emotional intelligence (Suhaila, 2019) [4], and found that training in emotional intelligence could elicit positive emotions in teachers. Jain & Tripathi's (2019) [112] empirical analysis of investment behaviour in *India* described a host of factors and variables that influenced investment decisions both individually and corporately. Again, in *India*, some work has been done that explored different aspects of emotional intelligence [113]. Additional studies in *India* have been conducted which explored the link between various aspects of emotional intelligence concerning investors [114]

Other Asian studies have also been conducted in *Pakistan* on the correlation between emotional intelligence and investment decisions [115]; *Bangladesh* (Dhar et al., 2017) [31]. Studies often analyse certain behavioural factors that affect the decision-making and performance of individual investors in *Vietnam*, Asia (Luong & Ha, 2011) [65].

In Europe, there are studies conducted in the *Netherlands* on gender differences in self-reported emotional intelligence and emotion perception (Fischer, Kret & Broekens, 2018) [34].

Studies on investor behaviour and stock market reaction in *Kenya* have also been performed in Africa (Cherono, 2018) [25], factors affecting investment decisions (Mutswenje, 2009; Jagongo & Mutswenje, 2014) [69] [7], and determinants of private investment behaviour in *Uganda* (Aggrey, 2014) [2].

¹¹² Jain, P. & Tripathi L.K. (2019, March). Investment Behaviour: An Analytical Review. *Advances in Management*, 12(1), 145-151.

¹¹³ e.g. Radha, Bhavani Shree, Bharathi, 2018; Navas & Vijayakumar, 2018; Gupta & Bajaj, 2018).

¹¹⁴ (e.g. Sashikala, 2017; Sarkar & Sahu, 2017; Karthikeyan & Lalwani, 2017; Saika et al., 2015).

¹¹⁵ (e.g., Gill et al., 2018; Hadi, 2017; Tanvir, Sufyan & Ahsan, 2016)



Several studies have been carried out in *Ghana* on financial literacy and investment decisions (Oteng, 2019) [75]; investment behaviours of informal sector workers (Tettey, 2019) [99]; investor behavioural trends (Tetteh & Hayfron 2017) [98]; mutual fund investment determinants decisions (Awunyo-Vitor et al., 2015) [11]; behavioural factors and investment decisions (Donkor, Akohene & Acheampong, 2016) [32]; determinants of private investment behaviour (Asante, 2000) [8]; rural families' investment behaviours (Amu, Offei-Ansah & Gavor, 2012) [7]; and savings and investment determinants in deprived district capitals (Issahaku, 2011) [53].

Others investigated the impact of emotional intelligence on financial performance (Danquah, 2015) [29]; the impact of emotional intelligence on service quality and customer satisfaction (Opuni & Adu-Gyamfi, 2015) [74]; the emotional intelligence and the commitment of employees to change (Akudugu, 2015) [4]; the influence of emotional intelligence on job performance (Ackon, 2012) [1].

2.4.3 Previous Works on Financial Literacy and Investment Decisions of Investors

Many preceding studies indicate some Financial Literacy (FL) impact on investor investment decisions. Al-Tamimi and Kalli (2009) [116] have focused for instance on financial literacy and UAE investor investment decisions. Their paper tried to evaluate the financial literacy of individual UAE investors invested in local financial markets. The findings suggested that UAE investors' financial literacy was far from the level needed. The financial literacy level was found to be influenced by income level, education level, and workplace behaviour. High-income respondents had high educational credentials, and those who worked in the finance/banking or investment sector had, as predicted, a higher degree of financial literacy than the others. Whereas financial illiteracy occurred irrespective of the respondents' age, there was also a substantial difference in the degree of financial literacy between respondents by gender. In particular, women had a lower level of financial literacy compared with men. Finally, the findings suggested an essential relationship between financial literacy and investment decisions. Religious factors were the most important factor influencing the investment decision and rumours were the least influencing factor.

Mugo (2016) [117] also conducted a study seeking to investigate the effect of financial literacy on investment decisions among savings and credit cooperative (SACCO) members in Nairobi County. The research explicitly sought to explore the effect of financial expertise, financial behaviour, financial attitude, and financial awareness on investment decisions among SACCO members drawn from five SACCOs strategically selected in Nairobi County. The study results showed a positive and significant relationship between financial knowledge, financial attitude, and investment decision while both financial behaviour and financial awareness had a positive and non-significant relationship to investment behaviour.

In the municipality of Techiman, located in the Republic of *Ghana*, Oteng (2019) [75] researched financial literacy and investment decisions among traders. The study results showed that there is a significant positive correlation between financial literacy and investment decisions. It was found that the shifts in the trader's financial knowledge account for 38.5 percent of the fluctuations in investment decisions.

¹¹⁶ Al-Tamimi, H. A. H., & Kalli, A1. A. B. (2009). Financial literacy and investment decisions of UAE investors. *The Journal of Risk Finance*, 10(5), 500-516.

¹¹⁷ Mugo, E. (October 2016). Effect of Financial Literacy on Investment Decisions among Savings and Credit CoOperative Societies Members in Nairobi. Unpublished MASTERS OF SCIENCE (MSc) Thesis, KCA UNIVERSITY.

Kalsum, Sarita, Cahyono, and Wawo (2018)^[118] also researched the impact of Financial Literacy and Investment Experience on Small Enterprises' access to finance and investment decisions in South-East Sulawesi. Study findings showed that financial literacy has a positive and significant effect on access to finance, financial literacy has a positive and significant impact on investment decisions, investment experience has a positive and significant impact on access to finance, investment experience has a positive and significant impact on investment decisions and access to finance has a positive and significant impact on investment decisions.

Hawati et al. (2016)^[119] compare FL levels in Malaysia and the United Kingdom by using survey results from the OECD-developed questionnaire and by analysing demographic and socio-economic factors that affect FL levels. The results indicate that, overall, the level of FL in both countries was small, and the government would take the requisite steps to increase awareness of financial related issues. The findings of the literature also show that demographic, cultural, social, and psychological factors were the key determinants, that some specific themes emerged concerning the impact of FL on investment decisions, demographic factors, methodology, and program effectiveness, and that there were gaps in FL literature in Malaysia concerning investment types and risk tolerance, measurement of financial literacy, methodology and sources of knowledge.

In summary, it can be seen from the aforementioned analysis of empirical literature that several previous studies have analysed or tested emotional intelligence as a stand-alone term concerning other variables, including investor behaviour. Nonetheless, none of the previous studies directly examined the direct effects of emotional intelligence and its indirect effects on the individual components of investor behaviour, i.e. herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, and frequency of Ghanaian investors' trading. Furthermore, there is, in essence, an empirical research gap as restricted studies are focusing particularly on the connection between emotional intelligence on investor behaviour in Ghana. Therefore, the conduct of this research is empirically justified.

3. METHODOLOGY

3.1 Research Paradigm

A research paradigm is a collection of beliefs, ideas, values, and practices that, particularly in an intellectual discipline, constitute a way of seeing reality for the society that shares these. In other words, a research paradigm consists of basic assumptions about how the world is viewed, which then acts as a basis of thought that directs the researcher's actions (Jonker & Pennink, 2010) [51].

Ontology and epistemology are aspects of existing research paradigms (Laughlin 1995; Saunders, Lewis & Thornhill, 2009) [58] [89]. Ontology refers to the essence of knowledge, while epistemology

¹¹⁸ Kalsum, U., Sarita, B., Cahyono, E. & Wawo, A.B. (February 2018). Effects of Financial Literacy and Investment Experience on Access to Finance and Investment Decisions in Small Enterprises in Southeast Sulawesi. *International Journal of Scientific & Engineering Research*, 9(2), 849-857.

¹¹⁹ Hawati, J., Rubayah Y., Noor, A. H., Zanariah, C. & Aniza, C. W. (2016). Financial literacy and investment decisions in Malaysia and United Kingdom: A comparative analysis. *Malaysian Journal of Society and Space*, 12(2), 106 – 118.

refers to the knowledge's creation. Ontology is the view of how one perceives truth. The ontology may be disassembled into objectivism or subjectivism.

Objectivism's advocates declare that a person needs to look at that the presence of true and self-sustaining nature of social actors and their perceptions of it, and advocates of that factor are either realists (Neuman, 2011) [71] or objectivists (Saunders, Lewis & Thornhill, 2009) [89].

A subjectivist or nominalist, on the different hand, argues that truth relies upon social actors and the claims that humans make about social phenomena. Objectivism emphasises the significance of exploring the essence of the relationship between the actors inside their constituents. Since this study ambitions to take a look at the effects of emotional intelligence on the behaviour of investors in Ghana, the objectivist outlook is consequently assumed.

The second theory, epistemology, is the qualities that surround beliefs on the way to producing, knowing, and using information that is considered appropriate and true. It also includes the mechanism by which knowledge supposedly is gained. A positivist viewpoint assumes facts that are distinct from the beliefs of the researcher, and ignore external factors and influences that affect human behaviour. On the other hand, an interpretative viewpoint supports the researcher's need to thoroughly examine human behaviour as the concepts behind it may encourage action (Saunders, Lewis & Thornhill, 2009; Hallebone & Priest, 2009) [89] [46].

This study assumes that truth can be observed and can be employed to generalise and to some degree forecast the outcomes of such observations as emotional intelligence and investor behaviour. For this research, the objectivist and positivist paradigms are most fitting, since this study's pursuit is to analyse the effects of emotional intelligence on investor behaviour.

Two more fundamental principles influence the way truth is examined. Such are axiology and methodology. The former is concerned with ethics, encompassing the positions of values in the study and the status of the researcher regarding the topic under review. The latter alludes to a paradigm-based approach for implementing a research method (Neuman, 2011) [71].

3.2 Research Design

The research design captures the framework of the data collection and interpretation process (Bryman & Bell, 2007, p. 40; Ghauri & Gronhaug, 2010, p. 54) [20] [37]. Three specific research designs are 1) experimental or case study design; 2) longitudinal design and 3) cross-sectional design. However experimental and longitudinal designs aren't sufficient to help us understand the effects of emotional intelligence on individual investors' investment behaviour in Ghana. More precisely, the experimental design is frequently used to analyse causal relations between variables and also involves the utilisation of two distinct groups; the experimental group which receives treatment/intervention and the control group used to compare any discrepancies in treatment results between the two groups that were used (Saunders et al., 2009, p. 142) [89].

A case study (Collis & Hussey, 2009, p. 82) [27] involves the examination of a single case; and the longitudinal design is normally employed to analyse the changes over time and to include the causal factors (Collis & Hussey, 2009, p. 78) [27]. Nevertheless, the cross-sectional design is chosen since this study investigates a relatively small sample size at a specific time.

In a cross-sectional design (Setia, 2016; Saunders et al., 2009, p. 155) [91] [89], the investigator tests the result and the exposures in the research participants simultaneously and this is exactly the case in this study. The cross-sectional design is, therefore, very much suited for this study because, first, the essence of this study to identify a general pattern in investor attitudes regarding improvements in their emotional intelligence rather than a particular case. The second reason why

the cross-sectional approach is best suited for this study is that the data were not obtained in stages in this analysis, but were collected during a specific period. In essence, the cross-sectional design requires the employment of various research techniques and is applicable for this analysis as it allows the collection of mainly quantitative data, which is appropriate for the quantitative design chosen for this study. Traditional types of quantitative data collection in this type of approach are social survey research and structured observation at a single period on a sample, while the classic types of qualitative data collection are qualitative interviews or focus groups at a single point in time (Bryman & Bell, 2007, p. 71) [20]. But because this study is quantitative, the survey approach is used and collects structured data through the administration of a questionnaire as compared to unstructured data normally collected through interviews and focused groups for qualitative studies.

Besides, cross-sectional research normally requires the use of cross-sectional regression to determine, at a given point in time, the presence and magnitude of the causal consequences of one or extra independent variables on a dependent variable of interest. They differ from the evaluation of time series, in which the behaviour of one or more financial aggregates is tracked over time. Cross-sectional research has the benefit of disposing of several difficult components regarding the use of data taken from distinctive points in time, such as the serial correlation of residuals. This, additionally, has the gain that the data analysis itself does not need to presume that the nature of the relationships between variables is steady over time, but this is at the expense of requiring caution if the outcomes are to be assumed to be legitimate at any different point in time for a precise period. All of these factors make the use of the cross-sectional design in this study the most appropriate (Setia, 2016) [91].

Moreover, this research employs a quantitative method of science. Quantitative analysis uses statistical methods to quantify and evaluate the relationships between variables [120]. This is in tandem with this study's objective of examining the extent to which emotional intelligence influences Ghanaian investor behavioural outcomes.

3.3 Data Collection Method

Among the various sorts of strategies for amassing data such as unstructured interviews, semi-structured interviews, structured interviews, observation, self-completion questionnaires, group discussions, etc., the self-completion strategy is chosen to accumulate quantitative data for this analysis. One of the most widely employed varieties of data collection tools in quantitative research is the self-completion questionnaire. In administering it, the respondents reply to the questions by filling in, finishing, and completing the questionnaire themselves. For certain purposes, the self-completion questionnaire strategy is chosen. The first clarification is that the self-completion questionnaire is the first-rate alternative to provide structured data, which is easy to process and interpret due to the fact the research questions in this study are well identified. In particular, because no interviewer (the researcher) is present when the questionnaires are being completed by the respondents, the interviewer can't have an impact on the findings (Bryman & Bell, 2007, p. 241) [20] and this is good since it minimises interviewer bias. Moreover, the employment of a self-completion questionnaire is much less expensive than other procedures (Bryman & Bell, 2007, p. 241) [20]. Furthermore, given that the study is about evaluating the consequences of emotional intelligence on investors in Ghana, face-to-face interviews would be very costly and time-consuming. On the different hand, the use of self-completion questionnaires would save time

¹²⁰ (Hallebone & Priest, 2009; Hennink, Hutter & Bailey, 2011; Jonker & Pennink, 2010)

(Bryman & Bell, 2007, p. 241) [20] as heaps of questionnaires can be dispatched out in one batch to the respondents. Because the respondents are investors, they would possibly not have lots of time for interviews, so questionnaires can also make them feel more relaxed due to the fact they can fill and complete it whenever they have some free time. Additionally, Questionnaires are regularly extra convenient for respondents. In different words, respondents find self-completion questionnaires a convenient tool to use to provide their personal, non-public information, which they would normally do more truthfully when given a self-completion questionnaire than when being interviewed (Bryman & Bell, 2007, p. 242) [20].

According to Saunders et al. (2009, p. 362) [89], self-administered questionnaires are divided into two classes, the so-called postal questionnaire, and the delivery-collection questionnaire, per the way they are distributed. Bryman & Bell (2007, p. 240) [20] additionally referred to the two probabilities for the distribution of questionnaires. The first preference is to send the questionnaires directly to the chosen respondents, then ask them to send the solutions again via mail, or submit them to specific individuals in a particular area (Bryman & Bell 2007, p. 240) [20]. The other choice for researchers is to hand out the questionnaire to every respondent and acquire it at once upon completion by the respondent (Saunders et al., 2009, p. 362-363) [89]. The first choice (delivery and collection of the questionnaire) is chosen in this study since some distance limitation is envisaged between the researcher and the respondent.

Questionnaires are dispatched to friends and family who have invested in some sort of financial or real assets, working with their respective organisations, and they are allowed some time to fill and complete them and return the self-completed questionnaire to the researcher via mail.

In summary, data for the study are accumulated with the aid of all quantitative data synthesised from the questionnaires dispatched to individual investors.

3.4 Respondent Selection

As the study aims to investigate the effects of emotional intelligence on investor conduct in Ghana, it is recommended that a relatively large sample size be set. The bigger the sample size, the more it can be representative, the more accurate the findings are (Saunders et al., 2009, p. 219) [89]. Nonetheless, the sample size is based on available resources from researchers including time, money, and human resources (Saunders et al., 2009, p. 212) [89]. Hair et al. (1998, p. 111) [45] propose that a minimum of 100 respondents should be tested through quantitative analysis to achieve models that better match the distribution of the data. So, in the hope of receiving more than 100 answers, 300 questionnaires are sent to the individual investors. Questionnaires are sent first, using convenience sampling and second, using snowball sampling for respondents. The convenience sampling method is chosen because it is the best technique when sending it to friends and relatives to get the highest answer rate. Often, saving time and money will help. The snowball sampling technique is used because it is the most suitable because at the beginning of the study the researcher has no sampling frame of the real or possible respondents.

Snowball sampling is a convenience sampling method that is used when subjects with the target characteristics are difficult to reach. The current research subjects recruit future subjects from among their associates in this process. Sampling is continued until saturation of data (Burns & Grove, 1993).

As Polit-O'Hara and Beck (2006) [78] have reported, this system, also known as the chain method, is productive and cost-effective for reaching people who would otherwise be very difficult to



access. The researcher asks the first few samples in this process, who are typically chosen through convenience sampling if they know someone with similar views or circumstances to be involved in the study. Not only does the snowball approach take little time, but it also allows the researcher the ability to interact more with the samples, because they are familiar with the first sample, and the first sample is connected to the researcher (Polit-O’Hara & Beck, 2006) [78]. This form of networking is especially useful in identifying people who don’t want to disclose their identities (e.g. abusers and criminals) (Hejazi, 2006). Snowball sampling is typically a gradual process, and time affects sample selection. Generally, sampling continues until data is saturated (Hejazi, 2006; Poliit-O’Hara & Beck, 2006) [48] [78].

Convenience sampling, however, is one form of non-probability sampling that cannot provide a representative sample, so the findings of this study on the effects of emotional intelligence on investor behaviour cannot apply to the entire Ghanaian investor population (Bryman & Bell, 2007, p. 198) [20]. Therefore, this is one of the major drawbacks of this research, as the researcher may not have access to all Ghanaian investors and this is discussed later in this study’s Chapter 5. The questionnaires are sent to friends and relatives who, in effect, send them to their friends and relatives who are investors who have invested in financial products or real assets at one point in time.

3.5 Design of Measurements and Questionnaire

The questionnaire is separated into three sections: *Section A* deals with the Biographical Details of the Respondents. *Section B* measures an investor’s emotional intelligence. *Section C* measures Ghanaian investor investment behaviour and *Section D* measures Ghanaian investor financial literacy.

Section A uses both nominal and ordinal measures. Objects are classified using nominal scales whereas ordinal scales are required for both objectives: classification and ratings of objects or observations (Ghuri & Gronhaug, 2010, p. 76) [37]. The measurement forms used for this part are set out in **Table 3.1**.

Table 3.1: Types of Measurements Used for Section A of the Questionnaire

Section A: Respondents Biographical Information	Questions	Types of measurements
Classifying: Gender, Marital status, Occupation, Type of Assets Invested in	Questions 3, 5, 7, 8	Nominal scale
Classifying and ranking order of Age, Educational level, Years of Investing, Income Range	Questions 1, 2, 4, 5, 6.	Ordinal scale

Source: Authors (2020).

Section B of the questionnaire measures the emotional intelligence of Ghanaian investors based on the four dimensions of Goleman’s (1998) [42] model, namely, Self-Awareness (10 items), Self-Management (10 items), Social Awareness (10 items), Relationship Management (10 items), each measured on a 5-point Likert scale shown in **Figure 3.1** and **Table 3.2** below:

Figure 3.1: Goleman’s (1998) 5-point Likert Scale for Measuring Emotional Intelligence

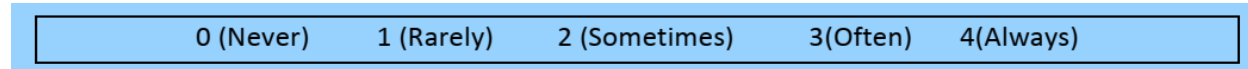


Table 3.2: The Types of Measurements Used for Section B of the Questionnaire (Emotional Intelligence)

Groups	Dimensions	Questions	Number of Measurement Items	Measurements
Emotional Intelligence	Self - Awareness:	All Questions under 9	10	5-point Likert Scale for Frequency
	Self-Management	All Questions under 10	10	5-point Likert Scale for Frequency
	Social Awareness	All Questions under 11	10	5-point Likert Scale for Frequency
	Relationship Management	All Questions under 12	10	5-point Likert Scale for Frequency

Source: Authors’ (2020).

Section C of the questionnaire measures the investing behaviour of Ghanaian investors. The investor behaviour variables chosen for the analysis are based on behavioural finance theories: prospect theory, heuristic theory, and other theories on the effects of behavioural factors on investor decision-making, listed by Waweru et al. (2008, pp. 24-38) [101] and several other authors stated in the literature review, to synthesise a collection of behavioural factors-related questions affecting investors’ investment decisions. To ensure that both the independent variable (emotional intelligence) and investor behaviour variables are all on the same level, the 5-point Likert scale for frequency, which are rating scales used by several other researchers has been used [121]. The 5 points on the frequency scale are; 0=Never; 1=Rarely; 2=Sometimes; 3=Often; 4=Always. The measurements and questions for measuring investor behaviour variables as found in Section C of the questionnaire are shown in Table 3.3.

¹²¹ (e.g., Goleman, Boyatzis & McKee, 2004; Goleman, 2001; Gupta & Bajaj, 2018; Hadi, 2017)

Table 3.3: Types of Measurements Used for Section C of the Questionnaire (Investor Behaviour)

Groups	Dimensions	Questions	Number of Measurement Items	Measurements
Investor Behaviour	Heuristic: ❖ <i>Overconfidence</i>	All Questions under 17	9	5-point Likert Scale for Frequency
	❖ Prospect: <i>Loss Aversion</i>	All Questions under 14	5	5-point Likert Scale for Frequency
	❖ <i>Mental accounting</i>	All Questions under 20		5-point Likert Scale for Frequency
	❖ Market: <i>Overreaction to price changes</i>	All Questions under 18	1	5-point Likert Scale for Frequency
	❖ <i>Under-reaction to price changes</i>	All Questions under 19	1	5-point Likert Scale for Frequency
	Others: ❖ <i>Herding</i>	All Questions under 13		5-point Likert Scale for Frequency
	❖ <i>Portfolio diversification</i>	All Questions under 15	17	5-point Likert Scale for Frequency
	❖ <i>Excessive trading</i>	All Questions under 16	16	5-point Likert Scale for Frequency
	❖ <i>Frequency of Trading</i>	All Questions under 21	3	5-point Likert Scale for Frequency
	❖ <i>Portfolio Shifts & Switches</i>	All Questions under 22	1	5-point Likert Scale for Frequency

Source: Authors (2020).

Section D of the questionnaire tests Ghanaian investors' financial literacy. Under this segment, five questions (Questions 23–27) are used to measure respondents' level of financial literacy. Any correct response to a question carries 1 mark. The criteria for assessment are provided in Table 3.4 below:

Table 3.4: Types of Measurements Used for Section D of Questionnaire (Financial Literacy)

Number of Correct Answers	5	4	3	2	1	0
Score	5	4	3	2	1	0

Source: Authors (2020).

3.6 Data Processing and Analysis

Using IBM SPSS 23 and STATA 15 applications, the data acquired is processed and analysed. Firstly, the data is cleaned by casting off the low-quality questionnaire properties such as biased rankings, too many missing values, or outlier observations. Afterward, the statistical methods, namely, Descriptive Statistics, Factor Analysis, Reliability Tests using Cronbach Alpha, and Structural Equation Modelling (SEM) are then performed.

Descriptive statistics: Some descriptive statistics (mainly bar and pie charts) are used to characterise the personal details of the respondents (biographical information).

- 1. Factor Analysis:** This is a frequent term for multivariable statistical models designed to describe the central shape of a data matrix. By defining a set of primary dimensions referred to as factors, it helps to study the correlation structure among several variables (Ghuri & Gronhaug, 2010, p. 189) [37]. When doing factor analysis, the questionnaire variables (or items) are used in homogeneous domains that symbolise comparable features of the same structure (O'Brien, 2007, p. 143) [73]. Two principal varieties of factor analysis exist. They are EFA (analysis of exploratory factor), and CFA (analysis of confirmatory factor). EFA is the most frequent technique of the factor analysis procedure that ambitions to discover a notably giant range of variables underlying the structure. But CFA comes into play when the researcher wants to verify the correlation between the number of elements derived from the analysis procedure and those developed from predetermined hypotheses (Liua & Salvend, 2009, p. 506) [64]. The EFA is utilised in this analysis, to investigate the factors to which the questionnaire's variables of emotional intelligence, financial literacy, and investor behaviour belong. The EFA is employed to minimise the wide variety of questionnaire measurement items that do not fulfil the evaluation standards (O'Brien, 2007, p. 142) [73].

The main parameters for the EFA that are utilised in this study as follows; the Factor loadings, Kaiser-Meyer Olkin measure of Sampling Adequacy (KMO), Total Variance explained, and Eigenvalues and these constitute the main EFA model evaluation parameters. Factor loadings are characterised as the correlations of each element and the factor to which it belongs. Factor loadings of the items on a variable that are larger than 0.5 (with a data set of 100) ensure that EFA has realistic relevance for the data being analysed (Hair et al., 1998, p. 111) [45]. The KMO test describes the suitability standard of the usage of EFA for the data collected. The KMO ought to be between 0.5 and 1.0



(significant level of much less than 0.05) to make sure that the data is appropriate for the factor analysis (Ali, Zairi & Mahat, 2006, p. 16) [5]. The Total variance explained is utilised to account for the quantity of retained factors below which factors can be retained until the last factor represents a small percentage of the variance explained. It is recommended that the total variance explained is greater than 50 percent (Hair et al., 1998, p. 111) [45]. Eigen-value is a function of factors, being described as the quantity of variance defined by a given factor in all items (variables). Eigen-value must exceed 1 because an Eigen-value of much less than 1 means that the information defined by the factor is decreased by a single variable (Leech, Barrett & Morga, 2005, p. 82) [62]. The EFA is carried out employing the SPSS software.

- 2. Reliability Test using Cronbach's Alpha Test:** It is used to take a look at the precision of the internal accuracy of measurements in continuous variables (e.g. 5-point Likert measurements). This gives a statistical overview explaining the accuracy of a given sample of respondents over a range of questions or variables. Also, it may assist in checking the reliability of the measured responses of the participants (Helms, Henze, Sass & Mifsud, 2006, p. 633) [49]. The Cronbach alpha is normally used as a measure of reliability in social and behavioural science (Liu, Wu & Zumbo, 2010, p. 5) [63]. As such, Cronbach's alpha is fabulous for this study due to the fact the questionnaire is made up of 5-point Likert assessments and the study is related to behavioural finance. This work makes use of Cronbach's alpha to take a look at the reliability of the measurements used in the factors developed after the factor analysis.

Nunnally (1978, p. 245) [72] proposes that Cronbach's alpha needs to be at least 0.7 to make certain the precision of the measurements. Nevertheless, many statisticians advocate it would possibly be suitable if Cronbach's alpha is higher than 0.6 (Shelby, 2011, p. 143) [92]. Additionally, statisticians agree that the corrected item-total correlations need to be regarded when using the Cronbach alpha index. Corrected item-total correlations representing the correlation of variables or objects allotted for all other items with the overall rating need to be at an appropriate score of 0.3 or higher (Shelby, 2011, p. 143) [92]. This analysis selects the acceptable Cronbach's alpha of 0.6 or more, with the corrected item-total correlation index being 0.3 or greater since measures of emotional intelligence, financial literacy, and investor behaviour may be unique to the sample of investors (respondents) used in this study. Besides, the Cronbach's alpha method in the accredited applicable degree of the F-test is no greater than 0.05. Cronbach's alpha is performed with the aid of the SPSS program.

- 3. Structural Equation Modelling (SEM):** The aggregate of CFA (confirmatory factor analysis) and multiple regressions is described here. SEM investigates the likelihood of correlations between latent variables and consists of two parts: (1) a measuring model (basically CFA) and (2) a structural model (multi-regression model) (Schreiber et al., 2006, p. 325) [90]. SEM is used in this research to validate which emotional intelligence and financial literacy elements that affect the behaviours of the investors chosen in this study. Some indexes decide the overall model fit in SEM. Asberg et al. (2008, p. 491) [9] point out that the model is adequate with a root mean squared error of approximation (RMSEA) of much less than or equal to 0.08, a comparative fit index (CFI) higher than or equal to 0.95, and Tucker-Lewis Index (TLI) larger than or equal to 0.95, and Coefficient of Determination (CD) larger than or equal to 0.95 for strong model fit. Schreiber et al. (2006, p. 330) [90] endorse a whole set of prerequisites for an accepted SEM, as outlined in **Table 3.5** below. (**Figure 3.2** describes the data analysis process).

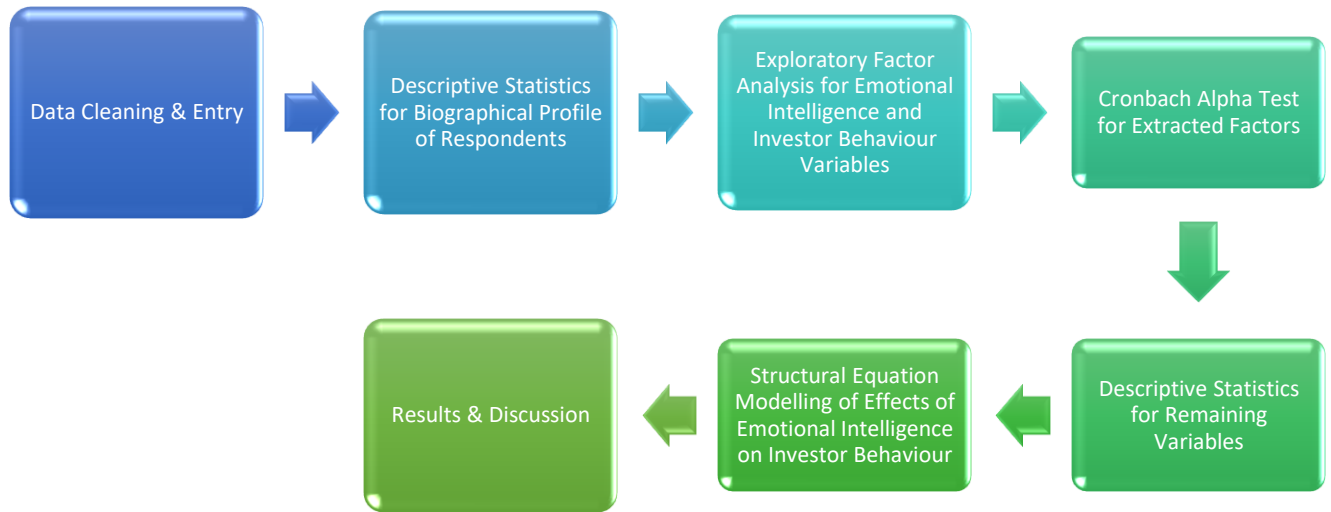


Table 3.5. Criteria for an accepted Structural Equation Model

Fit Statistic	Description	General Rule for Acceptable Model Fit
Likelihood ratio	Model vs. Saturated	
Chi – Square (Model vs Saturated) (df=45) $p > \chi^2$	Baseline vs. Saturated	Ratio of χ^2 to df ≤ 2 or 3
Chi-Square (Baseline vs Saturated) $p > \chi^2$		Ratio of χ^2 to df ≤ 2 or 3
Population error RMSEA 90% CI, lower bound Upper bound pclose	Root Mean Square Error of Approximation Probability RMSEA ≤ 0.05	<0.06 to 0.08
Information Criteria (IC) AIC	Akaike’s Information Criterion	Smaller the Better
BIC	Bayesian Information Criterion	Smaller the Better
Baseline Comparison		
Indices CFI	Comparative Fit Index	≥ 0.95 for acceptance
TLI	Tucker-Lewis Index	≥ 0.95 for acceptance
Size of Residuals SMR	Standardised Root Mean Squared Residual	≤ 0.08
CD	Coefficient of Determination	≥ 0.95 , Strong Model fit

Source: (Schreiber et al., 2006, p. 330).

Figure 3.2: The Process of Data Analysis



Source: Authors' (2020).

3.7 Ethical Considerations

Some ethical issues that were considered in this study include informed consent, violation of privacy, and danger to participants, the confidentiality of information, honest data presentation, and plagiarism [122]. Sometimes respondents may not be completely aware of the entire study process so that the results are not 'contaminated' (Fisher, 2010, p. 74) [35] but this when viewed through an ethical lens, might be tantamount to a violation of the informed consent principle. To avoid this violation this study provided all the respondents with all the relevant details and information required for them to be actively involved in the study and this is one of the features of the informed consent principle (Silverman, 2001, p. 271) [94]. More importantly, the questionnaires provide an introductory letter or note that provides the respondents with ample details about this research. Besides, questionnaires are delivered by hand to the respondents, and they decide by themselves to respond to the questionnaires or not.

Besides, the introductory section of the questionnaire not only guarantees respondents that all information they may provide is confidential but also reminds them of their right to withdraw from the study and request further information if they wish, before releasing their private information. This ethical concern is closely correlated with the idea of infringement of privacy. Hence, respondents in the study were made to understand and agree that the right to privacy has been granted for the sake of the study (Bryman & Bell, 2007, p. 139; Fisher, 2010, pp. 73-74) [20] [35]. Another ethical issue is the confidentiality of the information. Concerning this, respondents were given the assurance about the issue of anonymity and the fact that all their personal information and data would be classified as strictly confidential, meant for academic purposes only. Therefore, in this research, the identification of all survey respondents, and their private details are not revealed and these informed respondents of the survey's anonymity and confidentiality.

¹²² (Fisher, 2010, pp. 72-75; Bryman & Bell, 2007, pp. 132-142; Sarantakos, 1998, pp. 23-24; Blumberg et al., 2005, pp. 95-98; Collis & Hussey, 2009, pp. 45-47; Saunders et al., 2009, pp. 185-186; Ghauri & Gronhaug, 2010, p. 21).



Another ethical issue is whether or not the data collection process exposes the participants to any form of danger, pain, or torture. In this study, none was exposed to any form of danger or suffered from physical pain or psychological trauma due to the questionnaire administration.

Another key ethical problem to address is the quality of data collection, processing, and reporting (Sarantakos 1998, p. 22) [86]. It needs to be stated that the data is collected and analysed in this research using systematic and empirical methods that meet the criteria suggested in the field of the methodology by the famous authors. Moreover, the data is used only to achieve the intended objectives of the study and not for any private gains. Questions that are used in the survey are intended for research purposes only and the study accurately represents the data obtained without changing or generating data to achieve desirable objectives (Blumberg et al., 2005, p. 102) [18]. The last but not the least ethical concern is plagiarism. This issue was addressed by ensuring that all words, concepts, definitions, sentences, theories, images, numbers, or other forms of data and information that did not originate directly from the author's thoughts were duly acknowledged through proper referencing.

4. RESULTS, FINDINGS AND

4.1 Results

4.1.1 Respondents Response Rate

Response Rate is the number of responses divided by the number of people you invited to respond.

Mathematically,

$$\text{Response Rate} = \frac{\text{Number of Actual Responses Received}}{\text{Number of Invited Responses who Received Questionnaire}}$$

While there is no universal consensus on what the appropriate or adequate response rates for surveys should be, Richardson (2005) cited Babbie (1973, 165) and Kidder (1981, 150-151) when stating that 50% or more is regarded as an acceptable response rate in social research postal surveys. To obtain a fairly representative sample size that would make the structural equation modelling (SEM) method robust in establishing the link between emotional intelligence (EI) and investor behaviour (IB) variables, 300 questionnaires were sent to individual investors. However, out of the 300 sent, 255 were retrieved, yielding a response rate of 85.00% which is desirable (Richardson, 2005).

4.1.2 Description of Respondents' Profile

Descriptive Statistics (mainly bar and pie charts have been used to describe the biographical characteristics of the respondents). In general, the respondents comprised nearly two-thirds the majority (64.71%) of males and slightly above one-third of the minority of females (35.29%). These were investors with a first degree (49.02%) and master's degree (43.14%), whose ages mostly (92.16%) ranged between 25 and 39 years, who have been investing mostly (64.71%) 0 and 5 years, with a few, slightly less than one third had been investing between 6 and 10 years. The majority of these respondents were also single without dependents (43.14%), more than half were married with dependents (27.45%), less than half were single with dependents (23.53%) whilst only a few (5.88% were married without dependents. Besides, more than half (56.86%) of the



respondents received income of more than GHS 2,000.00 every month. The remaining (43.14%) had monthly incomes ranging between GHS 100.00 and GHS 1,000.00. The respondents were also mostly (66.67%) salaried workers, with a few being entrepreneurs (13.37%), SME owners (1.96%), and students (17.65%). When it comes to the types of assets invested in, the majority of the respondents mostly invested in cash in the form of savings (13.73%), fixed deposits and cash (savings) (7.84%), deposits, lands and buildings (3.92%) or the government of Ghana treasury bills (3.92%). Very tiny proportions (1.96%) invested in various combinations of assets, including fixed deposits, cash (savings), forex trading, treasury bills, mutual funds, stocks, fixed deposits, thrifts/cooperative unions, Exchange-Traded Funds (ETFs), options, and futures, and land, buildings, and other properties. (See **Figures 4.1-4.8, Appendix B1**).

4.1.3 Exploratory Factor Analysis (EFA)

This section describes how the EFA was performed.

4.1.4 EFA of Emotional Intelligence Items

EFA was performed on all the items/questions used to measure EI based on Goleman's (1995) model. The 10 items under the self-awareness dimension of Goleman's (1995) EI model were coded as SELFA1, SELFA2, SELFA3, SELFA4, SELFA5, SELFA6, SELFA7, SELFA8, SELFA9, and SELFA10. Similarly, the 10 questions under the self-management dimensions were coded as SELFM1, SELFM2, SELFM3, SELFM4, SELFM5, SELFM6, SELFM7, SELFM8, SELFM9, and SELFM10. The 10 items under the social awareness dimension were also coded as SOCA1, SOCA2, SOCA3, SOCA4, SOCA5, SOCA6, SOCA7, SOCA8, SOCA9, and SOCA10. The 10 questions under the relationship management dimensions were also coded similarly as, RELAMGT1, RELAMGT2, RELAMGT3, RELAMGT4, RELAMGT5, RELAMGT6, RELAMGT7, RELAMGT8, RELAMGT9, and RELAMGT10.

The exploratory factor analysis (EFA) is used for all these emotional intelligence variables to identify the factors to which these variables belong to. The analysis was done using the principal factors, factor method, ordinary correlation covariance analysis, which extracted factors using the minimum average partial criterion with prior communalities based on the squared multiple correlation method.

The requirements of factor analysis, which are mentioned in Chapter 3, are satisfied to reduce the variables. The analysis shows that the measurement items used for capturing emotional intelligence can be grouped under one main factor (emotional intelligence). This results occurs at the Eigenvalue = 1.008, KMO = 0.384 (p-value = $0.000 \leq 0.05$), % of total variance explained = 79.236%. Moreover, most of the factor loadings are more than 0.5 meaning that the items very well describe the one single construct of emotional intelligence that the study sought to measure. The observed matrix scree plot further affirms that all the measurement items describe one factor (F1), namely, emotional intelligence since the red line cuts of the vertical axis at factor point 1. (**Figure 4.9**). These indexes prove that factor analysis for these variables is suitable and accepted. The result is presented in **Table 4.1a**, and more details of the analysis done by SPSS are shown in **Appendix B2. (Table 4.1b)**.

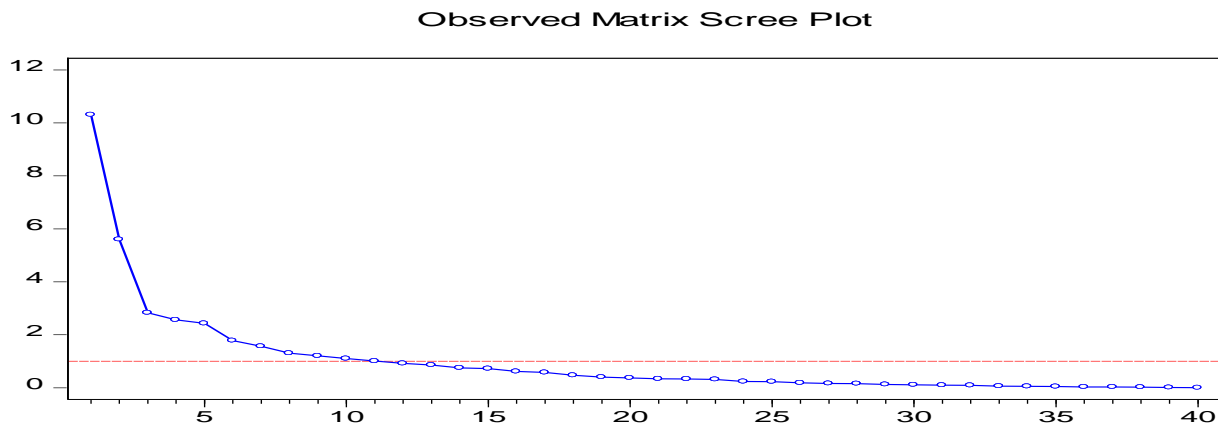


Table 4.1a: Exploratory Factor Analysis Results showing the Unrotated Factors Loadings for Emotional Intelligence Items

Items	Unrotated Factor Loadings						Unrotated Factor Loadings				
	F1	F2	F3	F4	F5		F1	F2	F3	F4	F5
SELFA1	0.272289					SOCA1	0.405473				
SELFA2	0.397688					SOCA2	0.497873				
SELFA3	0.510512					SOCA3	0.709529				
SELFA4	0.038151					SOCA4	0.709834				
SELFA5	0.489826					SOCA5	0.664954				
SELFA6	0.430093					SOCA6	0.486269				
SELFA7	0.152364					SOCA7	0.469551				
SELFA8	0.258921					SOCA8	0.644084				
SELFA9	0.634869					SOCA9	0.376769				
SELFA10	0.431172					SOCA10	0.385201				
SELFM1	0.468191					RELAMGT1	0.605081				
SELFM2	0.168125					RELAMGT2	0.571313				
SELFM3	0.192897					RELAMGT3	0.736990				
SELFM4	0.568868					RELAMGT4	0.541127				
SELFM5	0.491819					RELAMGT5	0.523714				
SELFM6	0.596851					RELAMGT6	0.492569				
SELFM7	0.030391					RELAMGT7	0.638212				
SELFM8	0.648274					RELAMGT8	0.515778				
SELFM9	0.534182					RELAMGT9	0.589691				
SELFM10	0.586420					RELAMGT10	0.542020				

Source: Authors' Analysis (2020) using IBM SPSS.

Figure 4.9: Observed Matrix Scree Plot for Emotional Intelligence Items



Source: Authors' Analysis (2020) using IBM SPSS.

4.1.5 EFA of Investor Behaviour Items

Before conducting the EFA, all the items under each of the investor behaviour dimensions were also coded. The 4 items under herding behaviour were coded as HERD1, HERD2, HERD3, and HERD4. The 5 items used to measure loss aversion were also coded as LOSSAV1, LOSSAV2, LOSSAV3, LOSSAV4, LOSSAV5. Portfolio diversification was measured using 17 items coded respectively, as, PORTDIV1, PORTDIV2, PORTDIV3, PORTDIV4, PORTDIV5, PORTDIV6, PORTDIV7, PORTDIV8, PORTDIV9, PORTDIV10, PORTDIV11, PORTDIV12, PORTDIV13, PORTDIV14, PORTDIV15, PORTDIV16, and PORTDIV17. Excessive trading, on the other hand,

was measured using two items, namely, EXCESSTRAD1 and EXCESSTRAD2. Overconfidence was measured using 9 items namely, OVERCON1, OVERCON2, OVERCON3, OVERCON4, OVERCON5, OVERCON6, OVERCON7, OVERCON8, and OVERCON9. Overreaction was measured using just 1 item, namely, OVERREAC1 and underreaction was also captured using 1 item that is, UNDERREAC1. Three items were used to measure mental accounting, namely, MENTACC1, MENTACC2, and MENTACC3 while the frequency of trading was captured using 3 items that is, FREQTRAD1, FREQTRAD2, and FREQTRAD3. Portfolio Switches was measured with only 1 item, namely, PORTSWITCH1.

The exploratory factor analysis (EFA) was used for all these investor behaviour variables to identify the factors to which these variables belong to. The analysis was done using the Principal Factor Method, Ordinary Correlation Covariance Analysis, which extracted factors using the Minimum average partial criterion with Prior communalities based on the squared multiple correlation method together with the application of the generalised inverse of the covariance matrix.

Although a relatively low value of KMO = 0.294314 is obtained, at an Eigenvalue = 1.207, the percentage of total variance explained by these measurement items is very high = 80.468. Besides, most of the factor loadings are more than 0.5 meaning that the items very well describe the one single construct of emotional Investor Behaviour that the study sought to measure. Furthermore, the observed matrix scree plot further affirms that all the measurement items describe one factor (F1), namely, investor behaviour, since the red line cuts of the vertical axis at factor point 1. These indexes prove that factor analysis for these variables is suitable and accepted (Figure 4.10). The result is presented in Table 4.2a, and more details of the analysis done by SPSS are shown in Appendix B4. (Table 4.2b).

Table 4.2a: Exploratory Factor Analysis Results showing the Unrotated Factors Loadings for Investor Behaviour Items

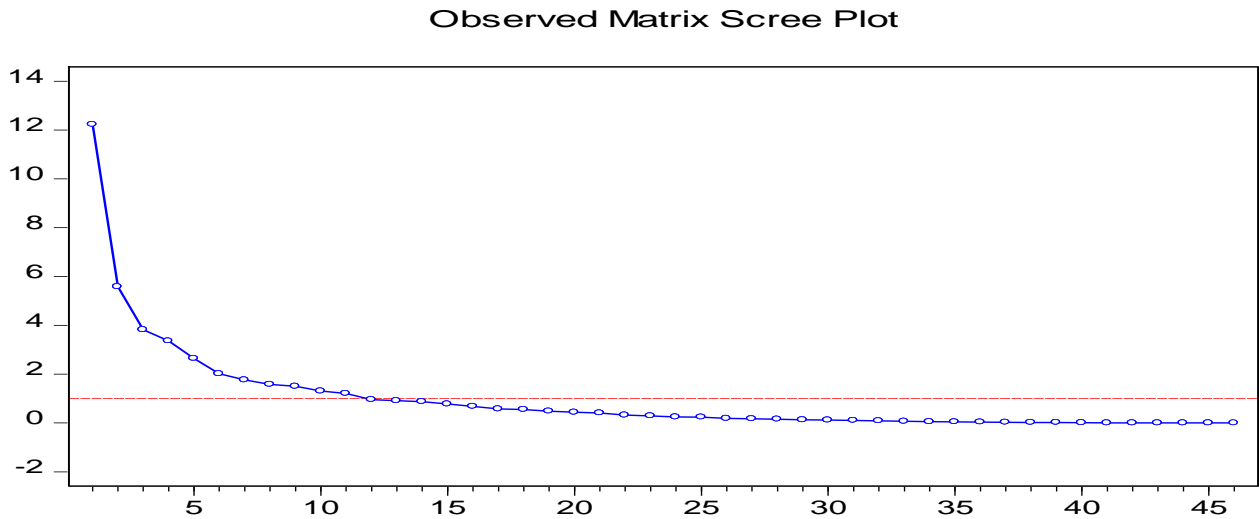
Items	Unrotated Factor Loadings					Items	Unrotated Factor Loadings				
	F1	F2	F3	F4	F5		F1	F2	F3	F4	F5
EXCESSTRAD1	0.216977					OVERREAC1	0.619755				
EXCESSTRAD2	0.346100					PORTDIV1	0.652452				
FREQTRAD1	0.632729					PORTDIV2	0.728617				
FREQTRAD2	0.510063					PORTDIV3	0.489832				
FREQTRAD3	0.497441					PORTDIV4	0.675490				
HERD1	0.382409					PORTDIV5	0.603917				
HERD2	0.493632					PORTDIV6	0.671800				
HERD3	0.527452					PORTDIV7	0.638235				
HERD4	0.500111					PORTDIV8	0.468699				
LOSSAV1	0.058597					PORTDIV9	0.473817				
LOSSAV2	0.091933					PORTDIV10	0.412409				
LOSSAV3	0.320703					PORTDIV11	0.769983				
LOSSAV4	0.490139					PORTDIV12	0.195521				
LOSSAV5	0.594365					PORTDIV13	0.357866				
MENTACC1	0.209759					PORTDIV14	0.400339				
MENTACC2	0.533402					PORTDIV15	0.436800				
MENTACC3	0.347593					PORTDIV16	0.694106				
OVERCON1	0.192531					PORTDIV17	0.756816				
OVERCON2	0.611476					PORTSWITCH1	0.336872				
OVERCON3	0.623373					UNDERREAC1	0.023281				
OVERCON4	0.495804					NA*	NA*				
OVERCON5	0.650998					NA*	NA*				
OVERCON6	0.785779					NA*	NA*				
OVERCON7	0.617326					NA*	NA*				

OVERCON8	0.421952	NA*	NA*
OVERCON9	0.500675	NA*	NA*

*NA stands for Not Applicable as all the measurement items have been exhausted leaving those rows in the table blank.

Source: Authors' Analysis (2020) using IBM SPSS.

Figure 4.10: Observed Matrix Scree Plot for Investor Behaviour Items



Source: Authors' Analysis (2020) using IBM SPSS.

4.1.6 EFA of Financial Literacy Items

Financial literacy was measured using four items that were coded as FINLIT1, FINLIT2, FINLIT3, and FINLIT4. Just like the emotional intelligence and investor behaviour variables, the EFA was conducted on the financial literacy variables.

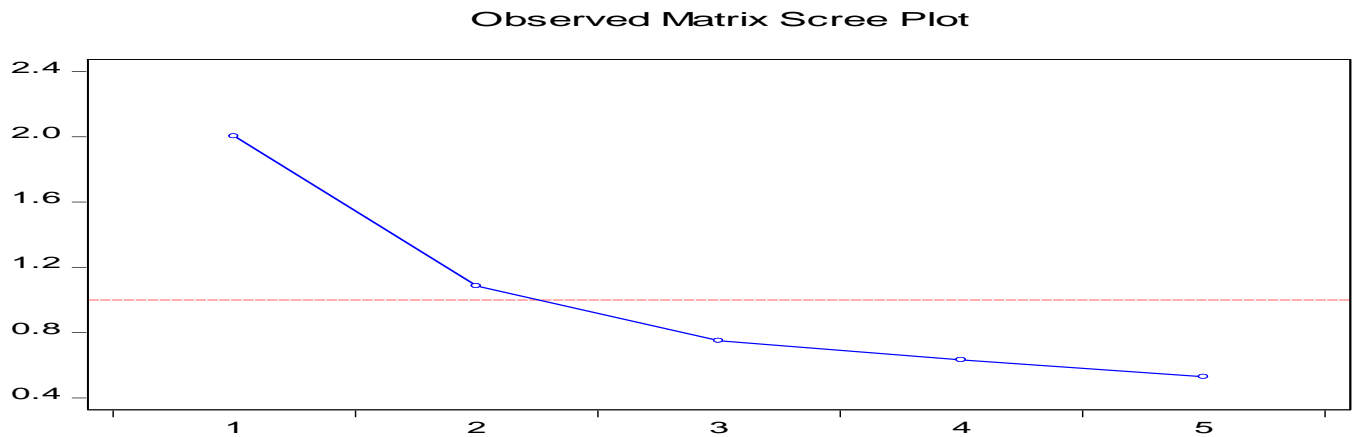
The value of the KMO is high = 0.669 (p-value=0.00≤0.05) and is obtained at an Eigenvalue of 1.085. Moreover, the percentage of total variance explained by these measurement items is high= 61.748. Besides, most of the unrotated factor loadings are more than 0.5 meaning that the items very well describe the one single construct of financial literacy that the study sought to measure. Furthermore, the observed matrix scree plot further affirms that all the measurement items describe one factor (F1), namely, financial literacy, since the red line cuts of the vertical axis at factor point 1. These results indicate that factor analysis for these variables is suitable and accepted. The result is presented in **Table 4.3a**, and more details of the analysis done by SPSS are shown in **Appendix B6. (Table 4.3b & 4.3c).**

Table 4.3a: Exploratory Factor Analysis Results showing the Unrotated Factors Loadings for Financial Literacy Items

Items	Unrotated Factor Loadings	
	F1	F2
FINLIT1	.640	
FINLIT2	.723	
FINLIT3	.244	
FINLIT4	.723	
FINLIT5	.698	

Source: Authors' Analysis (2020) using IBM SPSS.

Figure 4.11: Observed Matrix Scree Plot for Financial Literacy Items



Source: Authors' Analysis (2020) using IBM SPSS.

4.1.7 Measurement Reliability Test using Cronbach's Alpha

In this part, Cronbach's Alpha is used to test the reliability of items included in the factors, which are identified in the factor analysis. This test is done to make sure that the measurements are reliable for further use.

4.1.8 Reliability Test using Cronbach's Alpha for Emotional Intelligence Items

The results indicate that the measurement items used in measuring the emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management are very reliable. This is because the Cronbach's Alpha Based on Standardized Items is very high ($\alpha = 0.889$). Moreover, the corrected item-total correlation of most of the items is more than 0.30. Also, the Cronbach's alpha of each factor when one of its items is deleted is less than the Cronbach's Alpha Based on Standardized Items value of $\alpha = 0.889$. (Table 4.4a) Moreover, the results from the Analysis of Variance (ANOVA) with Tukey's Test for Non-additivity shows a statistically significant correlation between the measurement items and the EI constructs of self-awareness, self-management, social awareness, and relationship management. This is further confirmed by the statistically significant results obtained from the Hotelling's T-Squared Test, and the Single and Average Measures Intra-class Correlation Coefficients ($p \leq 0.05$). (See Tables 4.4b-4.4e, Appendix B3).

Table 4.4a: Cronbach's Alpha for Emotional Intelligence Items

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.883	.889	30

Source: Authors' Analysis (2020) using IBM SPSS.

4.1.9 Reliability Test using Cronbach's Alpha for Investor Behaviour Items

The results further reveal that the measurement items used in measuring the investor behaviour dimensions of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switches are very reliable. This is because the Cronbach's Alpha Based on Standardized Items is very high ($\alpha = 0.930$). (Table 4.5a). Besides, the corrected item-total correlation for all the items is more than 0.30. Further, the Cronbach's alpha of each factor when one of its items is deleted is less than the Cronbach's Alpha Based on Standardized Items value of $\alpha = 0.889$. Additionally, the results from the Analysis of Variance (ANOVA) with Tukey's Test for Non-additivity shows a statistically significant correlation between the measurement items and the investor behaviour constructs of herding, loss aversion, portfolio diversification, excessive trading, overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switches. Confirmation of the above findings is further revealed by the statistically significant results obtained from the Hotelling's T-Squared Test, and the Single and Average Measures Intra-class Correlation Coefficients ($p \leq 0.05$). (See Tables 4.5b-4.5f, Appendix B5).

Table 4.5a: Cronbach's Alpha for Investor Behaviour Items

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.929	.930	46

Source: Authors' Analysis (2020) using IBM SPSS.

4.1.10 Reliability Test using Cronbach's Alpha for Financial Literacy Variables

The reliability analysis again shows that the measurement items used in measuring financial literacy are reliable. This is because the Cronbach's Alpha Based on Standardized Items is very high ($\alpha = 0.596$). Besides, the corrected item-total correlation for most of the items is more than 0.30. Further, the Cronbach's alpha of each factor when any of its items is deleted is less than the Cronbach's Alpha Based on Standardized Items value of $\alpha = 0.596$ for most of the items. (Table 4.6a). Besides, the results from the Analysis of Variance (ANOVA) with Tukey's Test for Non-additivity shows a statistically significant correlation between the measurement items the financial literacy construct. Confirmation of the above findings is further emphasised by the statistically significant results obtained from the Hotelling's T-Squared Test, and the Single and Average Measures Intra-class Correlation Coefficients ($p \leq 0.05$). (See Tables 4.6b-4.6e, Appendix B7).

Table 4.6a: Cronbach’s Alpha for Financial Literacy Items

Reliability Statistics		
Cronbach’s Alpha	Cronbach’s Alpha Based on Standardized Items	N of Items
.556	.596	5

Source: Authors’ Analysis (2020) using IBM SPSS.

4.1.11 Structural Equation Modelling (SEM)

In this part, Structural Equation Modelling (SEM) is used to portray relationships among variables. SEM combines multiple regression and factor analysis into one model. The confirmatory factor analysis (CFA) is one component of SEM which helps to confirm which factors and their variables (formed by EFA as mentioned above) are suitable for the structural model; whereas, the other component, multiple regression, estimates the regression weights between behavioural factors (consisting of independent variables) and the factor of investment performance (including dependent variables).

Since all the measurement items for emotional intelligence, investor behaviour, and financial literacy have been found to be reliable based on the EFA results and reliability analysis discussed above, we can now proceed to perform structural equation modelling (SEM). The SEM technique is used to answer research questions 1, 2, and 3.

4.1.12 Answer to Research Question 1

The first research question was: *What is the total direct effect of emotional intelligence on the behaviour of investors in Ghana?*

The answer to this question is found in the results of the generalised structural equation model shown in **Table 4.7** below.

According to **Table 4.7**, Emotional Intelligence has a statistically significant direct positive effect on investor behaviour ($B=.3465122$; $p=0.000\leq 0.05$). The R-squared shows that 6% of variations in investor behaviour could be accounted for by changes in the emotional intelligence of investors and this finding is overall, statistically significant ($F\text{-statistic}=16.30187$; $\text{Prob}(F\text{ statistics}) = 0.000072\leq 0.05$). (**Table 4.7 & Figure 4.12**).

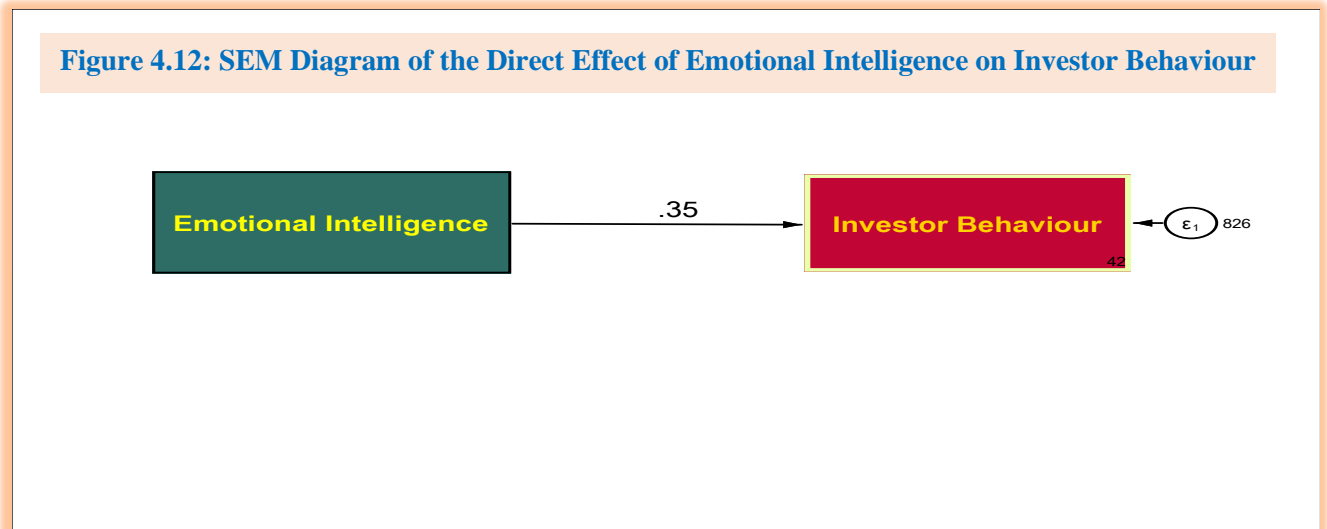
Table 4.7: Generalised Structural Equation Model of the Total Direct Effect of Emotional Intelligence on Investor Behaviour

Response: IB	Family: Gaussian	Link: identity	Log likelihood = -1218.1377		
	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
EI	.3465122	.085485	4.05	0.000*	.1789647 .5140597
Cons	42.3719	8.79652	4.82	0.000	25.13104 59.61277
var(e.IB)	825.6279	73.11883			694.0658 982.1278

R-squared	0.060534	Mean dependent var	77.27451
Adjusted R-squared	0.056821	S.D. dependent var	29.70331
S.E. of regression	28.84709	Akaike info criterion	9.569707
Sum squared resid	210535.1	Schwarz criterion	9.597482
Log-likelihood	-1218.138	Hannan-Quinn criter.	9.580880
F-statistic	16.30187	Durbin-Watson stat	2.032205
Prob(F-statistic)	0.000072	Number of obs	255

IB=Investor Behaviour; EI=Emotional Intelligence. *Significant at 0.05 levels

Source: Authors' Analysis (2020) using STATA 15.0 Software.



Source: Authors' Analysis (2020) using STATA 15.0 Software.

4.1.3 Answers to Research Question 2

The second research question was

To what extent do the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching?

The answer to this rather loaded question is found in the SEM result shown in **Table 4.8** and **Figure 4.13** below.

It can be seen from the table that both the self-awareness (B=.3501798; p≤0.05) and relationship management (B=.2339519; p≤0.05) dimensions of EI exert a significant positive effect on herding behaviour. Investors' social awareness negatively and significantly affects their herding behaviour (B=-.3286633; p≤0.05) but self-management negatively influences herding behaviour non-significantly (B=-.0362475; p>0.05).

Again, both self-awareness and relationship management positively influence loss aversion significantly (p≤0.05) but the effect of social awareness is rather negative and statistically

significant on loss aversion ($p \leq 0.05$). Self-management's influence on loss aversion is positively but statistically insignificant ($p > 0.05$).

Self-management and relationship management positively and significantly affect portfolio diversification ($p \leq 0.05$). Social awareness, on the other hand, negatively influences portfolio diversification significantly ($p \leq 0.05$). But the effect of self-awareness is positively nonsignificant on portfolio diversification ($p > 0.05$).

Self-awareness and relationship management positively influence excessive trading significantly ($p \leq 0.05$) but social awareness's effect is negatively significant on excessive trading ($p \leq 0.05$). However, the effect of self-management is negatively nonsignificant on excessive trading ($p > 0.05$).

Overconfidence is positively and significantly affected by both self-awareness and relationship management ($p \leq 0.05$), negatively and significantly by social awareness ($p \leq 0.05$), and positively nonsignificantly by self-management ($p > 0.05$).

Overreaction is positively and significantly affected by both self-awareness and relationship management ($p \leq 0.05$). But the effects of self-management and social awareness on overreaction are both negatively significant ($p \leq 0.05$).

Both self-awareness and relationship management exert statistically non-significant positive effects on underreaction ($p > 0.05$). But self-management negatively influences under reaction significantly whilst social awareness positively and significantly affects underreaction ($p \leq 0.05$).

Mental accounting is positively and significantly influenced by self-awareness, self-management, and relationship management and negatively, significantly by social awareness ($p \leq 0.05$).

The frequency of trading is negatively affected by relationship management significantly ($p \leq 0.05$). However, the frequency of trading is influenced negatively and non-significantly by self-management, positively by self-awareness, and negatively by social awareness ($p > 0.05$).

Portfolio Switching is, however, positively affected by both self-awareness and relationship management and negatively significantly by social awareness ($p \leq 0.05$). But the effect of self-management is positively significant on portfolio switching ($p > 0.05$). **(Table 4.8 & Figure 4.13).**

Table 4.8: SEM Results showing the Effects of Emotional Intelligence Dimensions on Investor Behaviour Variables

Structural equation model		Number of obs = 255				
Estimation Method = ml						
Log likelihood = -9266.9281						
	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
Structural						
HERD						
SelfAware	.3501798	.0402484	8.70	0.000*	.2712943	.4290653
SelfMgt	-.0362475	.0431862	-0.84	0.401	-.1208908	.0483958
SocialAware	-.3286633	.0425745	-7.72	0.000*	-.4121078	-.2452187
RelationshipMgt	.2339519	.034716	6.74	0.000*	.1659097	.3019941
_cons	3.280854	1.003281	3.27	0.001	1.314459	5.247248
LossAver						

SelfAware	.2693248	.0456515	5.90	0.000*	.1798495	.3588
SelfMgt	.0605053	.0489835	1.24	0.217	-.0355006	.1565113
SocialAware	-.2521889	.0482898	-5.22	0.000*	-.3468352	-.1575427
RelationshipMgt	.1995679	.0393764	5.07	0.000*	.1223917	.2767442
_cons	3.958272	1.137963	3.48	0.001*	1.727906	6.188639
PortDivers						
SelfAware	.2398663	.1683038	1.43	0.154	-.0900031	.5697356
SelfMgt	.413176	.1805882	2.29	0.022*	.0592297	.7671224
SocialAware	-.6196822	.1780306	-3.48	0.000*	-.9686158	-.2707487
RelationshipMgt	.4375316	.1451693	3.01	0.003*	.153005	.7220582
_cons	14.06349	4.195342	3.35	0.001*	5.840774	22.28621
ExcessTrad						
SelfAware	.189789	.0252094	7.53	0.000*	.1403795	.2391985
SelfMgt	-.008008	.0270494	-0.30	0.767	-.0610239	.0450078
SocialAware	-.1259773	.0266663	-4.72	0.000*	-.1782422	-.0737123
RelationshipMgt	.1023694	.0217442	4.71	0.000*	.0597516	.1449872
_cons	.462552	.628399	0.74	0.462	-.7690875	1.694191
OverConf						
SelfAware	.2430451	.0775539	3.13	0.002*	.0910422	.395048
SelfMgt	.0992951	.0832145	1.19	0.233	-.0638024	.2623926
SocialAware	-.4721039	.082036	-5.75	0.000*	-.6328916	-.3113163
RelationshipMgt	.3527859	.0668936	5.27	0.000*	.2216769	.483895
_cons	10.09432	1.933202	5.22	0.000*	6.305312	13.88333
OverReact						
SelfAware	.0361288	.0143753	2.51	0.012*	.0079536	.0643039
SelfMgt	-.0407341	.0154246	-2.64	0.008*	-.0709657	-.0105024
SocialAware	-.0489768	.0152061	-3.22	0.001*	-.0787802	-.0191733
RelationshipMgt	.0387564	.0123993	3.13	0.002*	.0144541	.0630586
_cons	1.628675	.3583368	4.55	0.000*	.9263476	2.331002
UnderReact						
SelfAware	.0224063	.0151326	1.48	0.139	-.0072532	.0520657
SelfMgt	-.0270413	.0162372	-1.67	0.096**	-.0588655	.004783
SocialAware	.0608564	.0160072	3.80	0.000*	.0294828	.0922299
RelationshipMgt	.0110333	.0130526	0.85	0.398	-.0145492	.0366158
_cons	.3285172	.3772144	0.87	0.384	-.4108095	1.067844
MentalAcc						
SelfAware	.0979021	.029139	3.36	0.001*	.0407908	.1550135
SelfMgt	.1736359	.0312658	5.55	0.000*	.112356	.2349158
SocialAware	-.1850703	.030823	-6.00	0.000*	-.2454823	-.1246583
RelationshipMgt	.053692	.0251336	2.14	0.033*	.004431	.102953
_cons	1.693457	.7263532	2.33	0.020*	.2698312	3.117083
FreqTrad						
SelfAware	.0340743	.0354402	0.96	0.336	-.0353872	.1035358
SelfMgt	-.0502474	.038027	-1.32	0.186	-.1247789	.0242841
SocialAware	-.0268474	.0374884	-0.72	0.474	-.1003233	.0466286
RelationshipMgt	.0919503	.0305687	3.01	0.003*	.0320368	.1518639
_cons	1.495181	.8834252	1.69	0.091**	-.2363008	3.226662



PortSwitch						
SelfAware	.0374256	.0149854	2.50	0.013*	.0080548	.0667965
SelfMgt	.0109248	.0160792	0.68	0.497	-.0205898	.0424394
SocialAware	-.0450811	.0158514	-2.84	0.004*	-.0761494	-.0140129
RelationshipMgt	.0503604	.0129256	3.90	0.000*	.0250268	.075694
_cons	.2615321	.3735439	0.70	0.484	-.4706005	.9936646
var(e.HERD)	9.677131	.8570211			8.135101	11.51146
var(e.LossAver)	12.44967	1.102561			10.46584	14.80953
var(e.PortDivers)	169.214	14.98584			142.2501	201.2889
var(e.ExcessTrad)	3.796404	.3362152			3.191456	4.516023
var(e.OverConf)	35.9299	3.182005			30.20455	42.74051
var(e.OverReact)	1.234481	.1093274			1.037769	1.46848
var(e.UnderReact)	1.367975	.1211499			1.149991	1.627278
var(e.MentalAcc)	5.072209	.4492024			4.263964	6.03366
var(e.FreqTrad)	7.503104	.6644861			6.307501	8.925338
var(e.PortSwitch)	1.341482	.1188036			1.127719	1.595763

*Significant at 0.05 levels **Significant at 0.10 levels

Source: Authors' Analysis (2020) using STATA 15.0 Software.

4.1.4 Goodness of Fit Statistics for SEM Model

Most of the goodness of fit statistics generally suggests a poor model fit to the data distribution ($p > \chi^2 = 0.000$; RMSEA, $pclose = 0.000$; CFI = 0.281; TLI = -0.359). This may be due to the use of too many dependent variables. Since most of the goodness of fit indices are underpinned by the principle of parsimony of models, it is no surprise at all that they might find this model is having a poor fit with the data distribution. The coefficient of determination (CD), however, suggests a moderate fit of the model to the data distribution and generally indicates that about 76.4% of variations in the investor behaviour variables of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching could be accounted for, to a moderate extent, by changes in the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management (CD=0.764). (Table 4.9).

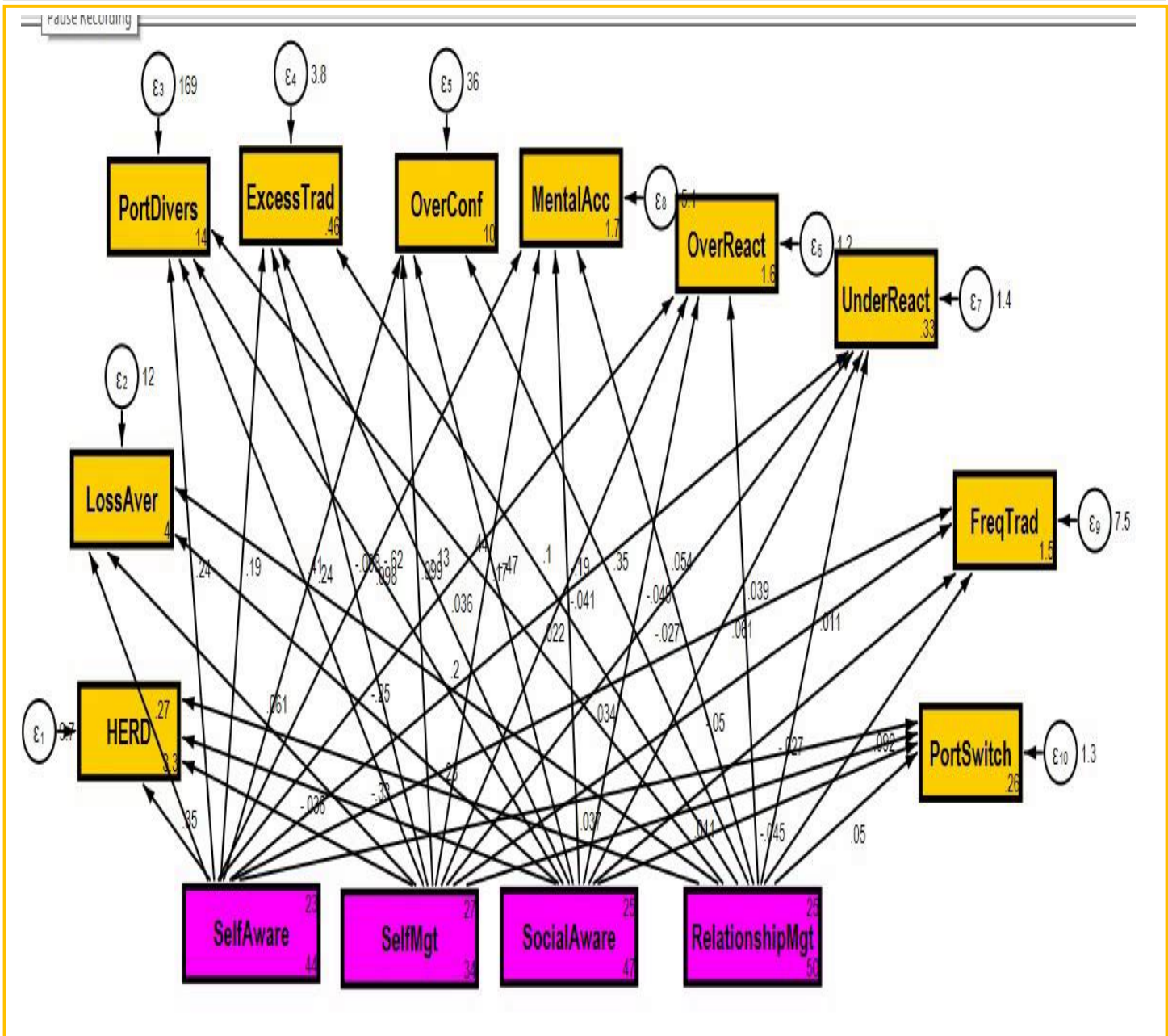
Table 4.9: Goodness of Fit Statistics for SEM

Fit Statistic	Value	Description	Inference
Likelihood ratio		Model vs. Saturated	
Chi – Square (Model vs Saturated) (df=45) $p > \chi^2$	1209.719 0.000	Baseline vs. Saturated	Poor Model Fit
Chi-Square (Baseline vs Saturated) $p > \chi^2$	1703.795 0.000		
Population error RMSEA 90% CI, lower bound Upper bound pclose	0.319 0.303 0.334 0.000	Root Mean Square Error of Approximation	Poor Model Fit
55		Probability RMSEA ≤ 0.05	
Information Criteria (IC) AIC	18638.831	Akaike's Information Criterion	

BIC	18851.307	Bayesian Information Criterion	
Baseline Comparison			
Indices			
CFI	0.281	Comparative Fit Index	Poor Model Fit
TLI	-0.359	Tucker-Lewis Index	Poor Model Fit
Size of Residuals			
SMR	Not reported because of missing values.	Standardised Root Mean Squared Residual	
CD	0.764	Coefficient of Determination	Moderate Model Fit

Source: Authors' Analysis (2020) using STATA 15.0 Software.

Figure 4.13: Path Diagram showing the Effects of Emotional Intelligence Dimensions on Investor Behaviour Variables



Source: Authors' Analysis (2020) using STATA 15.0 Software.

4.1.5 Answer to Research Question 3

The third research question was: *How does emotional intelligence indirectly affect investor behaviour through the mediating role of financial literacy?*

To understand the results, it must be noted that total effects are related to direct and indirect effects through the following formula:

$$\text{Total Effect} = \text{Direct Effect} + \text{Indirect Effect}$$

From this, the indirect effect could be found using the formula:

$$\text{Indirect Effect} = \text{Total Effect} - \text{Direct Effect}$$

The answer to the third research question is found by interpreting carefully the results shown in **Tables 4.10, 4.11, and 4.12 below**. Firstly, from **Table 4.10** below, emotional intelligence was found to exert a positive statistically significant total effect on investor behaviour under structural path 1 (B=.3465122; p≤0.05). This total effect coefficient of B=.3465122 is split into direct positive effects (B=.2235829; p≤0.05) and indirect positive effects (B=.1229293; p≤0.05). (**Table 4.10, Table 4.11 & Table 4.12**).

Therefore, the answer to the third research question is that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy. More specifically, emotional intelligence exerts a statistically significant indirect positive effect on investor behaviour through financial literacy (B=.1229293; p≤0.05). (**Table 4.12 & Figure 4.14**).

Table 4.10: Total effects of Emotional Intelligence and Financial Literacy on Investor Behaviour

	OIM				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Structural path 1					
IB=Dependent Variable					
FINLITERACY	10.74011	1.308079	8.21	0.000*	8.176319 13.3039
EI	.3465122	.085485	4.05	0.000*	.1789647 .5140597
Structural path 2					
FINLITERACY=Dependent Variable					
EI	.0114458	.0036396	3.14	0.002*	0043124 .0185792

IB=Investor Behaviour; EI=Emotional Intelligence; FINLITERACY =Financial Literacy *Significant at 0.05 level

Source: Authors' Analysis (2020) using STATA 15.0 Software.

Table 4.11: Direct Effects of Financial Literacy on Investor Behaviour and Emotional Intelligence on Financial Literacy

Direct effects					
	OIM				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Structural Path 3					
IB=Dependent Variable					
FINLITERACY	10.74011	1.308079	8.21	0.000*	8.176319 13.3039
EI	.2235829	.0774847	2.89	0.004*	.0717157 .3754501
Structural Path 4					

FINLITERACY <i>=Dependent Variable</i>						
EI	.0114458	.0036396	3.14	0.002*	.0043124	.0185792

IB=Investor Behaviour; EI=Emotional Intelligence; FINLITERACY =Financial Literacy *Significant at 0.05 levels.

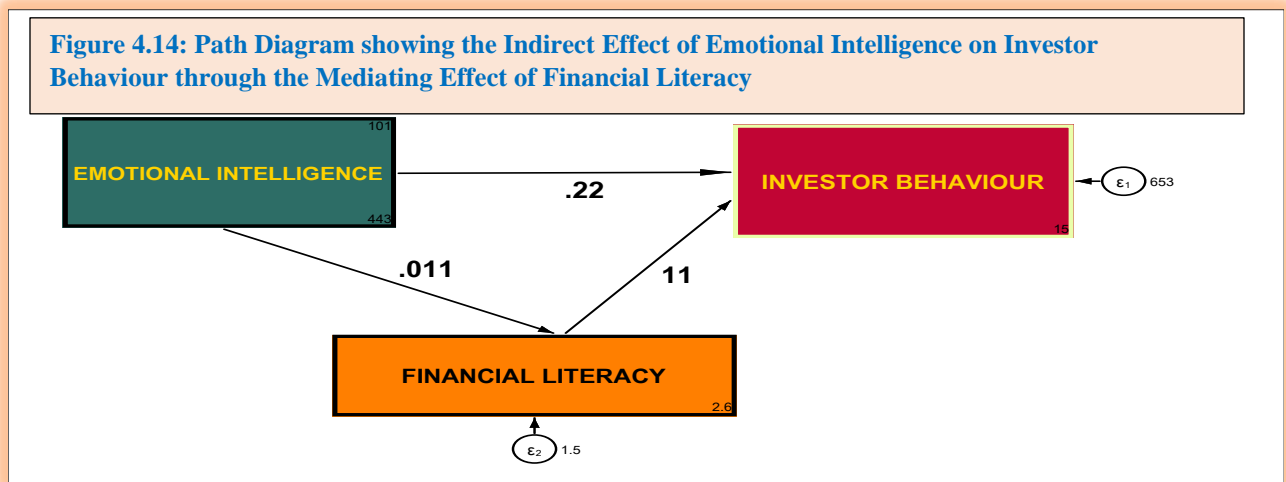
Source: Authors' Analysis (2020) using STATA 15.0 Software.

Table 4.12: Indirect Effect of Emotional Intelligence on Investor Behaviour through the Mediating Effect of Financial Literacy

Indirect effects					
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Structural Path 5					
IB=Dependent Variable					
FINLITERACY	0 (no path)				
EI	.1229293	.0418585	2.94	0.003*	.0408881 .2049704
FINLITERACY					
EI	0 (no path)				

IB=Investor Behaviour; EI=Emotional Intelligence; FINLITERACY =Financial Literacy *Significant at 0.05 levels.

Source: Authors' Analysis (2020) using STATA 15.0 Software.



Source: Authors' Analysis (2020) using STATA 15.0 Software.

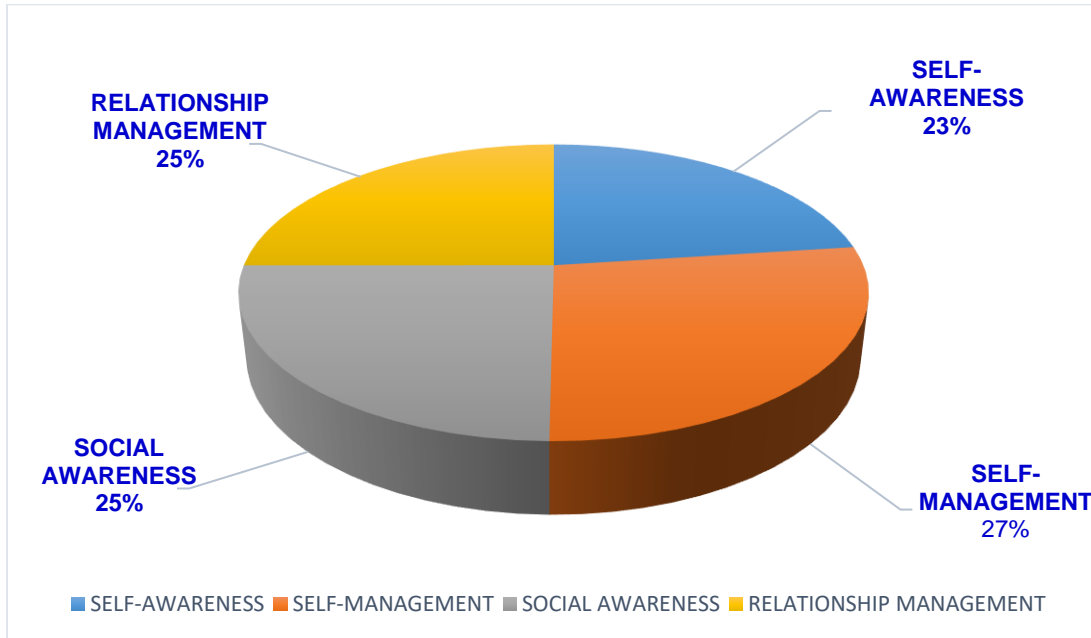
4.1.6 Answer to Research Question 4

The fourth research question was: Which of the Emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors?

The results show that 27% of the respondents expressed the self-management aspect of emotional intelligence more than the other aspects. This implies that Ghanaian investors predominantly

express the *self-management* component of their emotional intelligence more than the other aspects. On average Ghanaian investors express their social awareness and relationship management dimensions of their EI to nearly equally (25%) but more predominantly than their self-awareness dimensions (23%).

Figure 4.15: Distribution of Emotional Intelligence Dimensions Among Ghanaian Investors



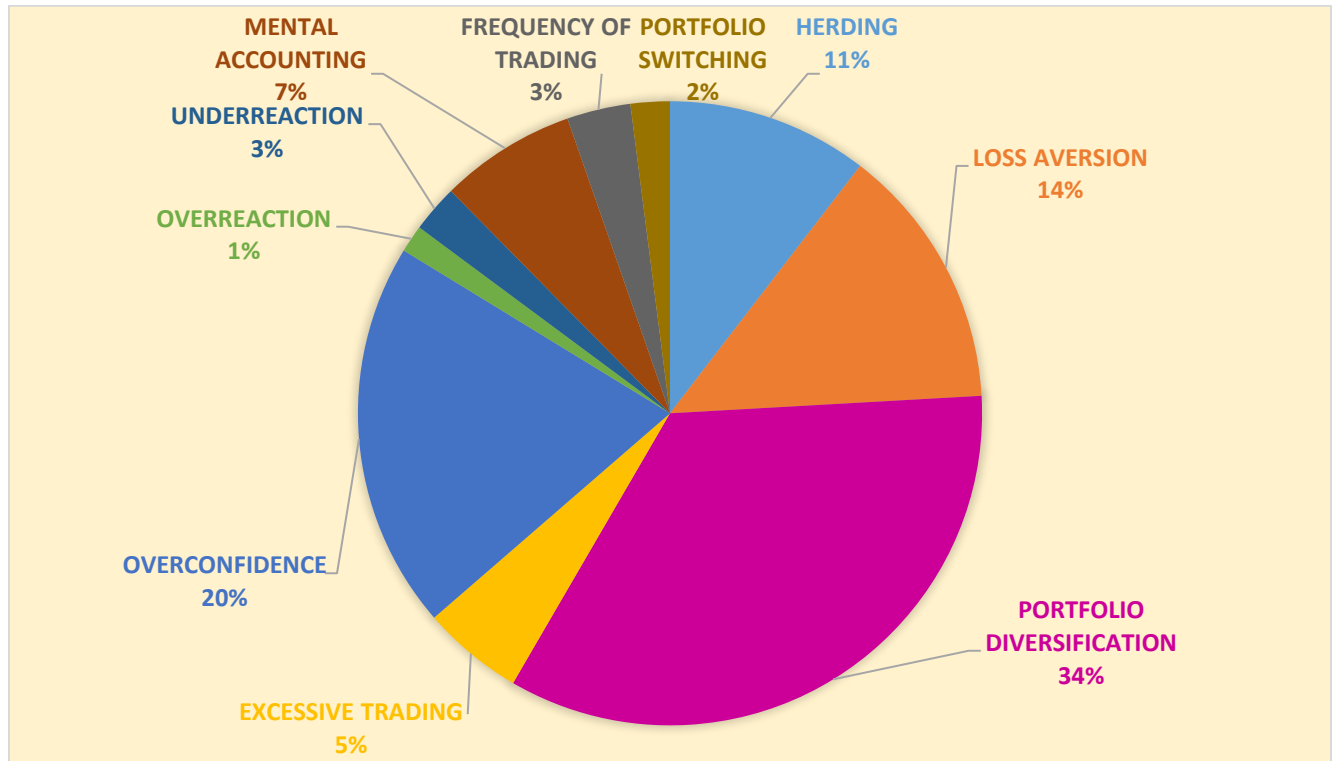
Source: Authors' Analysis (2020) using IBM SPSS 23 Statistics Software.

4.1.7 Answers to Research Question 5

The fifth research question was: *Which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switching do Ghanaian investors frequently exhibit?*

The analysis shows that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors (34%). This is followed by overconfidence (20%), loss aversion (14%), herding (11%), mental accounting (7%), excessive trading (5%), underreaction (3%), frequency of trading (3%), portfolio switching (2%), and overreaction (1%).

Figure 4.16: Distribution of Investor Behaviours Among Ghanaian Investors



Source: Authors' Analysis (2020) using IBM SPSS 23 Statistics Software.

4.2 Discussion

Emotional Intelligence has been known to influence investor behaviour in general. But the dearth of empirical literature regarding the Ghanaian context warranted an investigation into the link between emotional intelligence and investor behaviour in addition to studying the mediating role of financial literacy. Five main research questions were pursued in the study.

4.2.1 Total Direct Effect of Emotional Intelligence on the Behaviour of Investors in Ghana

The first research question was: *What is the total direct effect of emotional intelligence on the behaviour of investors in Ghana?*

According to the results, emotional intelligence has a statistically significant direct positive effect on investor behaviour. This finding means that emotional intelligence stimulates investor behaviour. In other words, changes in investor behaviour could be attributable to emotional

intelligence volatilities. This finding is consistent with several previous studies that found a positive correlation between emotional intelligence and investment decisions [123].

4.2.2 Effects of Emotional Intelligence Variables on Investor Behaviour

The second research question was

To what extent do the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching?

4.2.3 Effects of Emotional Intelligence Variables on Herding Behaviour

The SEM equation concerning the second research question was first used to analyse the effects of emotional intelligence variables on the herding behaviour of investors. The results are as follows. Firstly, both the self-awareness and relationship management dimensions of EI exert significant positive effects on herding behaviour. This means that investors who have high-herding behavioural tendencies, who do what everyone else does, even when their private information suggests they should take a different decision (Banerjee, 1992) [13], are more likely to score high on their self-awareness and relationship management EI dimensions. *Self-awareness* is the ability to read and understand one's feelings and identify their effect while using innate emotions to guide decisions (Goleman, 1998) [42]. *Relationship management* is the ability to motivate, guide, and control people's emotions (Goleman, 1998) [42]. In essence, high-herding behaviour among investors is related to deeply rooted and ingrained self-awareness which controls them from within together with relationship management emotional characteristics that control them from within, based on their social interactions. Investors who are strongly in control of their innate feelings and that of others are more emotional than rational and can be influenced by their biased convictions and the emotional views of others, to make certain investment decisions contrary to the rational and empirical data/information they may have.

Additionally, the finding on self-awareness and relationship management exerting significant positive effects on herding behaviour is consistent with herding theory. In herding theory, herding is said to be prevalent in a market when investors choose to imitate the trading activities of those they consider better educated, rather than acting on their values and private knowledge. Grossman and Stiglitz (1976) [102] were very early supporters of herding theory who demonstrated that uninformed traders could be manipulated in a market sense by mimicking price information from better-informed investors in such a way that private information was aggregated correctly and efficiently.

According to Froot et al. (1992) [106] investor behaviour (e.g. regarding stock prices) could be influenced by what was known as herd instinct, which was a tendency for people to imitate a larger group's behaviour.

When it comes to social awareness, the results also revealed that investors' social awareness negatively and significantly affects their herding behaviour. However, self-management negatively influenced herding behaviour non-significantly. Social awareness is the ability to feel, understand, and respond to others' emotions while comprehending social networks (Goleman, 1998) [42]

¹²³ (See, Gill et al., 2018; Hadi, 2017; Tanvir, Sufyan & Ahsan, 2016) and in Bangladesh, Dhar et al. (2017).



without being wrongly influenced by other people's emotions to produce wrong or irrational investment decisions. Therefore, it seems from the findings of the study that social awareness, that is, understanding and being able to appropriately respond to emotional/irrational factors within one's social network could reduce an investor's chances of just investing in something because everyone else is doing it, even when their private information and convictions suggests taking a different decision. In essence, high social awareness offers some sort of protection or immunity against negative or irrational herding behaviour of investors.

Self-management, on the other hand, negatively influences herding behaviour non-significantly. Meaning that *Self-management* - the ability to control one's emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], can reduce, although, not to a very significant extent, investors' likelihood of just investing in something because everyone else is doing it, contrary to their convictions.

4.2.2.2 Effects of Emotional Intelligence Variables on Loss Aversion Behaviour

Secondly, the SEM model of the second research question was to analyse the effects of emotional intelligence variables on the loss aversion behaviour of investors. The findings revealed that both self-awareness and relationship management positively influenced loss aversion significantly. This means that investors with a high self-awareness, the ability to read and understand one's feelings and guide decisions using innate emotions (Goleman, 1998) [42], and those with high *Relationship management* - the ability to motivate, guide, and control people's emotions (Goleman, 1998) - are highly loss averse, having much higher tendencies to avoid losses rather than accruing gains when it comes to their investing behaviours (Kahneman & Tversky, 1979; Benartzi & Thaler, 1993) [56] [17]. This reasoning is also partly congruent with loss aversion theory, the notion that people are more vulnerable to losses than gain [124].

But the effect of social awareness, based on the results of the study was rather negative and statistically significant on loss aversion. This means that investors with a high social awareness, that is the ability to feel, understand, and respond to others' emotions within a social network (Goleman, 1998) [42] are lowly loss averse, possessing much lower propensities to avoid losses when it comes to their investing behaviours. This finding rather seems to contradict the loss aversion theory.

However, self-management's influence on loss aversion is positively but statistically insignificant. This implies that *self-management* - the ability to control one's emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], doesn't significantly increase investors' chances of engaging in high loss averse investing behaviours.

4.2.2.3 Effects of Emotional Intelligence Variables on Portfolio Diversification Behaviour

Thirdly, the SEM model developed for the second research question was used to analyse the effects of emotional intelligence variables on the portfolio diversification behaviour of investors. The results also revealed that Self-management and relationship management positively and significantly affect portfolio diversification. This means that investors with high *Self-management* - a high ability to control one's emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], and high *Relationship management* - a high ability to motivate, guide, and control people's emotions (Goleman, 1998)-are more likely engage in portfolio diversification,

¹²⁴ (Kahneman & Tversky, 1979; Schoemaker, 1982; Shefrin & Statman, 1985; Kahneman et al., 1990; Tversky & Kahneman, 1991).



which involves adopting an investment strategy of combining a variety of assets to reduce the overall risk of their investment portfolio (Cumova & Nawrocki, 2014)^[9]. So it seems high on self-management and relationship management emotional characteristics tend to make the investor more risk-conscious (risk-averse) such that they prefer to diversify their portfolios of assets.

Social awareness, on the other hand, negatively influences portfolio diversification significantly. This means that investors with high social awareness – the ability to feel, understand, and respond to others’ emotions in a social environment (Goleman, 1998) [42] would less likely engage in Portfolio Diversification. In essence, it seems that higher social awareness, which largely stems from emotional influences people have on each other within a social network makes investors less risk-averse or more risk-taking (greedy) such that they tend to avoid aggressive portfolio diversification and rather invest in higher-risk assets with the hope of gaining abnormal returns.

As for self-awareness, its effect is positively nonsignificant on portfolio diversification. Meaning that investors with high self-awareness, the ability to read and understand one’s feelings and guide decisions using innate emotions (Goleman, 1998) [42], don’t normally engage in aggressive portfolio diversification behaviours.

4.2.2.4 Effects of Emotional Intelligence Variables on Excessive Trading Behaviour

Fourthly, the SEM model developed for the second research question was employed to analyse the effects of the emotional intelligence variable on the trading behaviour of investors. The results reveal that self-awareness and relationship management positively and significantly influence excessive trading. This means that investors with a high self-awareness, the ability to read and understand one’s feelings and guide decisions using innate emotions (Goleman, 1998) [42], and those with high *Relationship management* – the ability to motivate, guide, and control their emotions (Goleman, 1998) [42] – trade more excessively and aggressively, often using powerful computer programs to transact a large number of orders within fractions of a second (Chen, 2019) [24].

But social awareness’s effect is negatively significant on excessive trading, meaning that those investors with high social awareness – the ability to feel, understand, and respond to others’ emotions in a social environment (Goleman, 1998) [42] trade less excessively.

Additionally, the effect of self-management is negatively nonsignificant on excessive trading. This also means that investors with high *self-management* ability, who can control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], would not normally engage in excessive and aggressive trading.

4.2.2.5 Effects of Emotional Intelligence Variables on Overconfidence Behaviour

Fifthly, the SEM model developed for the second research question was used to analyse the effects of emotional intelligence variables on the overconfidence behaviours of investors. The results revealed that overconfidence is positively and significantly affected by both self-awareness and relationship management. This implies that investors who are overconfident and tend to overestimate the probability of accuracy of their information, their successes and capabilities (De Bondt & Thaler, 1995) [30] are those who believe too much in themselves (self-awareness) and the emotional influences coming from their relationships (relationship management). In other words, overconfident investors tend to be more influenced by their self-awareness, their actual or perceived ability to read and understand their feelings and guide decisions using innate emotions (Goleman, 1998) [42], and *relationship management* forces which are based on the ability to motivate, guide, and control other people’s emotions (Goleman, 1998) [42].



But overconfidence was negatively and significantly influenced by social awareness, meaning that overconfident investors are those with low social awareness, having a naïve ability to feel, understand, and respond to others' emotions in a social environment (Goleman, 1998) [42].

The effect of self-management was, however, positively nonsignificant on overconfidence. Meaning that investors with high *self-management* ability who can control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], would not normally act with overconfidence when it comes to investment decisions.

4.2.2.6 Effects of Emotional Intelligence Variables on Overreaction Behaviour

Sixthly, the SEM model developed for the second research question was used to analyse the influences of emotional intelligence variables on the overreaction behaviours of investors. The analysis revealed that overreaction is positively and significantly affected by both self-awareness and relationship management. *Overreaction* is a kind of investor behaviour that causes investors and traders to react disproportionately to new information about given security, causing the security price to change dramatically so that the price will not fully reflect the security's true value immediately following the event (Soares & Serra, 2005) [96]. In effect, investors who overreact disproportionately to new investment information are those who believe so much in their self-perceptions and emotional convictions (self-awareness) and the (emotional) influences coming from their relationships (relationship management). On the other hand, the effects of self-management and social awareness on overreaction are both negatively significant. This means that investors with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], and those with high social awareness, who can feel, understand, and respond to others' emotions in a social environment (Goleman, 1998) [42], react less disproportionately to new information about security prices.

4.2.2.7 Effects of Emotional Intelligence Variables on Underreaction Behaviour

Seventhly, the SEM model developed for the second research question was employed to analyse the effects of emotional intelligence variables on the underreaction behaviours of investors. The analysis revealed that both self-awareness and relationship management exert statistically non-significant positive effects on underreaction. *Under-reaction* is a type of investor behaviour that occurs when investors predict the future and tend to get anchored by salient past events, consequently, causing the investor to underreact and under respond to current news (Barberis, Shleifer & Vishny, 1998) [15]. The meaning of statistically non-significant positive effects of self-awareness and relationship management on underreaction is that investors who trust so much in their self-perceptions and emotional convictions (self-awareness) and the (emotional) influences coming from their relationships (relationship management) do not normally underreact and under respond to current news. However, self-management was found from the results to negatively influence under reaction significantly. This means that investors with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42], tend to manifest low underreaction behaviours, meaning that they underreact and under respond, to a very low extent to current news. But social awareness positively and significantly affects underreaction. Meaning that investors with high social awareness, who can feel, understand, and respond to others' emotions in a social environment (Goleman, 1998) [42], tend to underreact more to current news about assets or security prices.

4.2.2.8 Effects of Emotional Intelligence Variables on Mental Accounting Behaviour

Eighthly, the SEM model developed for the second research question was employed to assess the influences of emotional intelligence variables on mental accounting behaviours of investors. The results indicate that mental accounting is positively and significantly influenced by self-awareness, self-management, and relationship management and negatively, significantly by social awareness. *Mental Accounting* refers to a set of cognitive operations used by individuals and households to organise, assess, and keep track of their financial activities and investments (Thaler, 1999) [100].

Therefore, a positive significant effect of self-awareness, self-management, and relationship management on mental accounting implies that investors with high levels of self-awareness, self-management, and relationship management those who normally engage in higher-level cognitive processes, psychological heuristics, and mental calculations about the risk, returns and characteristics of an investment asset or portfolio before they invest.

However, investors high on social awareness, the results suggest, tend to manifest low mental accounting behaviours.

4.2.2.9 Effects of Emotional Intelligence Variables on Frequency of Trading Behaviour

Ninthly, the SEM model developed for the second research question was employed to examine the effects of emotional intelligence variables on the frequency of trading of investors. The results revealed that the frequency of trading is negatively and significantly affected by relationship management, meaning that investors who are more influenced by emotional factors operating within their relationships and networks tend to trade less frequently. However, the frequency of trading is influenced negatively and non-significantly by self-management, positively by self-awareness, and negatively by social awareness. This means that investors with high self-management trade less frequently and less aggressively, whilst those with high self-awareness would trade more frequently though not very aggressively, with those possessing high social awareness trading less frequently though not to very significant levels.

4.2.2.10 Effects of Emotional Intelligence Variables on Portfolio Switching Behaviour

Lastly, the SEM model developed to form the second research question was used to understand the effects of emotional intelligence variables on the portfolio switching behaviour of investors. The results revealed that portfolio switching was positively affected by both self-awareness and relationship management and negatively significantly by social awareness. But the effect of self-management was positively significant on portfolio switching. Portfolio Switching is a type of investor behaviour in which the investor switches or changes from one investment fund to another, or chooses to transfer their brokerage assets or liquidate their investments in exchange for other higher-earning securities/investment portfolios (Chen, 2017) [23]. A positive significant effect of both self-awareness and relationship management on portfolio switching implies that investors who rely more on their inherent feelings and intuitions (self-awareness) and emotional influences from their relationships (relationship management) are more likely to engage in portfolio switching behaviours. A negatively significant effect of social awareness on portfolio switching, however, means that investors with high social awareness, who can feel, understand, and respond to others' emotions in a social environment (Goleman, 1998) [42], less likely engage in portfolio switching behaviours such as changing from one investment fund to another, transferring their brokerage assets, or liquidating their investments in exchange for other higher-earning securities/investment portfolios (Chen, 2017) [23]. But a positively significant effect of self-



management on portfolio switching implies that investors who normally and often engage in portfolio switching behaviours are those with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42].

4.3 The Indirect Effect of Emotional Intelligence on Investor Behaviour Through the Mediating Role of Financial Literacy

The third research question was: *How does emotional intelligence indirectly affect investor behaviour through the mediating role of financial literacy?*

The analysis revealed that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy. More specifically, emotional intelligence exerts a statistically significant indirect positive effect on investor behaviour through financial literacy. This means that highly emotionally intelligent investors with higher financial literacy levels are more likely to make better and successful investment decisions. In essence, the financial literacy levels of investors supervise and moderate the extent to which their emotions can influence their investment decisions. Hence, it seems that a high level of financial literacy makes investors more rational than emotional when it comes to making investment decisions.

4.4 Emotional Intelligence Dimensions Predominantly Expressed by Ghanaian Investors

The fourth research question was: *Which of the emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors?*

The results revealed that 27% of the respondents expressed the self-management aspect of their emotional intelligence more than the other aspects. This implies that Ghanaian investors predominantly express the *self-management* component of their emotional intelligence more than the other aspects. On average, Ghanaian investors express their social awareness and relationship management dimensions of their EI nearly equally (25%). The self-awareness dimensions of EI is the least but more predominantly expressed by Ghanaian investors (23%). In essence, it seems that Ghanaian investors tend to have a high self-management ability, which gives them the capacity to control their emotions and impulses and adapt to changing circumstances (Goleman, 1998) [42]. However, it must be stated that these percentage differences in EI dimensions, namely, self-management (27%), social awareness (25%), relationship management (25%), and self-awareness (23%), may not be significant statistically. It is likely that if the sample size were increased even much further, the distribution would be balanced in which case one could say that Ghanaian investors are generally, emotionally balanced.

4.5 Frequently Exhibited Investing Behaviours of Ghanaian Investors

The fifth and final research question was: *Which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switching do Ghanaian investors frequently exhibit?*

The analysis shows that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors (34%). This is followed by overconfidence (20%), loss aversion (14%), herding (11%), mental accounting (7%), excessive trading (5%), underreaction (3%), frequency of trading (3%), portfolio switching (2%), and overreaction (1%).

The results imply that, firstly, Ghanaian investors often diversify their portfolios which is an investing strategy of combining a variety of assets to reduce the overall risk of their investment portfolio (Cumova & Nawrocki, 2014) [9]. It also suggests that Ghanaian investors are risk-averse.

Risk aversion is the behaviour of investors), who, when exposed to uncertainty, attempt to lower that uncertainty. It is the hesitation of a person to agree to a situation with an unknown payoff rather than another situation with a more predictable payoff but possibly lower expected payoff.

The risk-averse nature of the investors, manifested as portfolio diversification might be confirming several theories. Firstly, it might be confirming regret theory with accounts for the emotional response that people undergo when they know they made a mistake in judgement. These Ghanaian investors used in the study may likely have made some investment mistakes in their past and learned from them the hard way. Secondly, the portfolio diversification behaviour of Ghanaian investors might also be related to mental accounting theory states that humans tend to place specific events in mental compartments, and the difference between these compartments sometimes affects our behaviour more than the events per se. In theory, individual investors may randomly divide or combine gains and losses to maximise their happiness. Thaler and Johnson (1990) [125] clarified that risk aversion could be observed after prior losses based on their quasi-hedonic editing hypothesis since subsequent losses were not combined with the previous outcome. In essence, Ghanaian investors in this study were likely found to predominantly manifest portfolio diversification behaviour, another way to demonstrate their risk averseness, due to certain painful mental accounts they have recorded concerning investment losses made in their past.

In this regard, loss aversion theory becomes very crucial. As demonstrated by Kahneman and Tversky (1979) [56], people were more vulnerable to losses than gain. Schoemaker (1982) noticed quite early that people's decisions were sensitive to how the issue or decision was presented. Such findings, translated into the realm of loss aversion, suggested that the degree of loss aversion depended on whether people concentrated on the negative or the positive. Shefrin and Statman (1985) [68] outlined the idea of utility representation embedded in the effect of a disposition. The disposition effect was the tendency to hold losing investments as a risk-seeking behaviour too long and to sell winning investments as a risk-avoidance behaviour too quickly.

In economics and decision theory, Tversky and Kahneman (1992) [81] clarified that loss aversion refers to the investor's propensity to strongly prefer loss avoidance to gain acquisition. Thaler, Tversky, Kahneman, and Schwartz (1997) [82] found that if people used one year to assess stock market investments then myopic risk aversion explained the high equity premium.

Additionally, loss aversion is also related to the expected utility theory, a philosophy of how to make optimal decisions under risk. The expected utility theory states that the person optimises his expected return based on the weighted sum of the various possible outcomes, with each weight equal to the likelihood that the resulting outcome will be realised. Besides, the principle states that the utility of a final state depends only on the final state; it is meaningless how the final state was reached. Kahneman and Tversky (1979) [56] clarified that the theory typically presumed that an individual was risk-averse and that a prospect was appropriate to an individual as an expected benefit if the benefit resulting from the combination of the prospect with the assets of the individual surpassed the use of those assets. In essence, the preponderance of portfolio

¹²⁵ Thaler, R. H., & Johnson, E. J. (1990). Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. *Management science*, 36(6), 643-660.

diversification behaviour among Ghanaian investors may be explained by the expected utility theory, which accounts for how investor trading actions or how investors judge risky gambles.

5. SUMMARY, CONCLUSIONS AND

5.1 Summary

Emotional intelligence (EI) also known as Emotional Quotient (EQ) was proposed by Salovey and Mayer (Salovey & Mayer, 1990) [85]. Emotional Intelligence (EI) is defined as the capacity/ability for identifying our feelings and those of others, motivating ourselves, and handling our emotions and relationships appropriately (Goleman, 1998) [42].

Better management of one's emotions leads to a path towards successful decision-making. Therefore, EI or EQ has been found to influence investor behaviour and decision-making [126].

This study sought to investigate and broaden the understanding of how emotional intelligence/quotient impacts and affects investment behaviour and decisions of investors. In particular, the study analysed the effects of emotional intelligence variables/factors on investor behaviour in Ghana and also investigated the indirect effect of emotional intelligence on investor behaviour through the mediating role of financial literacy. This study adopts Goleman's (1995) [40] four clusters model, which are self-knowledge, self-control, social awareness, and relationship management, to describe emotional intelligence. Measurement items for investor behaviour and financial literacy were constructed by the author based on an extensive literature review of existing theories. The study adopted an objectivist ontological paradigm, a positivist epistemological viewpoint, and sound axiological (ethical) principles in dealing with study respondents. A non-experimental, quantitative, survey-based, and cross-sectional research design was employed to collect primary data from respondents using the *self-completion questionnaire method*. Three hundred initial questionnaires were sent to 300 respondents who were selected using convenience and snowball sampling techniques. Two hundred and fifty-five (255) of the questionnaires were retrieved, yielding a response rate of 85.00%. By applying Descriptive Statistics, Exploratory Factor Analysis, Reliability Analyses on the Measurement Instruments on the face of the questionnaire, conducting the Structural Equation Modelling (SEM) analyses, the study found answers to the five main research questions that were pursued.

The first research question was: *What is the total direct effect of emotional intelligence on the behaviour of investors in Ghana?*

According to the results, emotional intelligence has a statistically significant direct positive effect on investor behaviour. This finding means that emotional intelligence stimulates investor behaviour. In other words, changes in investor behaviour could be attributable to emotional intelligence volatilities.

The second research question was

To what extent do the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence the investor

¹²⁶ (See the works of Leary, Reilly & Brown, 2009; Hess & Bacigalupo, 2011; Ahangar & Rooshan, 2010).



behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading, and portfolio switching?

The emotional intelligence dimensions exerted differential effects on the investor behaviour variables.

Concerning the effects of emotional intelligence variables on herding behaviour, the results revealed that both self-awareness and relationship management exert significant positive effects on herding behaviour. However, investor's social awareness negatively and significantly affects their herding behaviour whilst their self-management negatively affected their herding behaviour non-significantly.

Concerning the effects of emotional intelligence variables on loss aversion behaviour, the findings revealed that both self-awareness and relationship management positively influenced loss aversion significantly. But the effect of social awareness was rather negative and statistically significant on loss aversion. However, self-management's influence on loss aversion was positive but statistically insignificant.

In relation to the effects of emotional intelligence variables on portfolio diversification behaviour, the results showed that self-management and relationship management positively and significantly affected portfolio diversification, whilst social awareness, on the other hand, negatively influenced portfolio diversification significantly. As for self-awareness, its effect was positively nonsignificant on portfolio diversification.

As regards the effects of emotional intelligence variables on excessive trading behaviour, the results demonstrate that self-awareness and relationship management positively and significantly influence excessive trading, whereas social awareness's effect is negatively significant on excessive trading. Additionally, the effect of self-management is negatively nonsignificant on excessive trading.

When it comes to the effects of emotional intelligence variables on overconfidence behaviour, the results reveal that overconfidence is positively and significantly affected by both self-awareness and relationship management. But overconfidence is negatively and significantly influenced by social awareness, whilst the effect of self-management was, however, positively nonsignificant on overconfidence.

Concerning the effects of emotional intelligence variables on overreaction behaviour, the analysis revealed that overreaction is positively and significantly affected by both self-awareness and relationship management. On the other hand, the effects of self-management and social awareness on overreaction are both negatively significant.

Regarding the effects of emotional intelligence variables on underreaction behaviour, the analysis revealed that both self-awareness and relationship management exert statistically non-significant positive effects on underreaction. However, self-management was found to negatively influence under reaction significantly, whereas social awareness positively and significantly affects underreaction.

In relation to the effects of emotional intelligence variables on mental accounting behaviour, the results indicate that mental accounting is positively and significantly influenced by self-awareness, self-management, and relationship management and negatively, significantly by social awareness.



As regards the effects of emotional intelligence variables on the frequency of trading behaviour, the analysis revealed that the frequency of trading is negatively and significantly affected by relationship management, negatively, non-significantly by self-management, positively by self-awareness, and negatively by social awareness.

When it comes to the effects of emotional intelligence variables on portfolio switching behaviour, the results revealed that portfolio switching was positively and significantly affected by both self-awareness and relationship management and negatively significantly by social awareness. But the effect of self-management was positively significant on portfolio switching.

The third research question was: *How does emotional intelligence indirectly affect investor behaviour through the mediating role of financial literacy?*

The analysis revealed that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy. More specifically, emotional intelligence exerts a statistically significant indirect positive effect on investor behaviour through financial literacy. This means that highly emotionally intelligent investors with higher financial literacy levels are more likely to make better and successful investment decisions. In essence, the financial literacy levels of investors supervise and moderate the extent to which their emotions can influence their investment decisions. Hence, it seems that a high level of financial literacy makes investors more rational than emotional when it comes to making investment decisions.

The fourth research question was: *Which of the emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management is predominantly expressed by Ghanaian investors?*

The results revealed that 27% of the respondents expressed the self-management aspect of their emotional intelligence more than the other aspects. This implies that Ghanaian investors predominantly express the *self-management* component of their emotional intelligence more than the other aspects. On average, Ghanaian investors express their social awareness and relationship management dimensions of their EI nearly equally, that (25%) in each case. But the self-awareness dimensions of EI is the least predominantly expressed by Ghanaian investors (23%). In essence, it seems that Ghanaian investors tend to have a high self-management ability, which gives them the capacity to control their emotions and impulses and adapt to changing circumstances.

The fifth and final research question was: *Which of the investment behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, and frequency of trading and portfolio switching do Ghanaian investors frequently exhibit?*

The analysis shows that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors (34%). This is followed by overconfidence (20%), loss aversion (14%), herding (11%), mental accounting (7%), excessive trading (5%), underreaction (3%), frequency of trading (3%), portfolio switching (2%), and overreaction (1%).

The results imply that, firstly, Ghanaian investors often diversify their portfolios which is an investing strategy of combining a variety of assets to reduce the overall risk of their investment portfolio (Cumova & Nawrocki, 2014) ^[9]. It also suggests that Ghanaian investors are risk-averse.



5.2 Conclusions

Several conclusions can be drawn based on this study's findings.

In relation to the first research question, it has been established that emotional intelligence has a statistically significant direct positive effect on investor behaviour. This finding means that emotional intelligence stimulates investor behaviour. In other words, changes in investor behaviour could be attributable to emotional intelligence volatilities.

Pertaining to the second research question, the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management affect and influence, in different ways, the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching.

Concerning the effects of emotional intelligence variables on herding behaviour, the results had led to this conclusion that investors who have high-herding behavioural tendencies, who do what everyone else does, even when their private information suggests they should take a different decision, are more likely to score high on their self-awareness and relationship management EI dimensions. In essence, investors who are strongly in control of their innate feelings and that of others are more emotional than rational and can be influenced by their biased convictions and the emotional views of others, to make certain investment decisions contrary to the rational and empirical data/information they may have.

Because investors' social awareness negatively and significantly affects their herding behaviour, it is concluded that high social awareness offers some sort of protection or immunity against negative or irrational herding behaviour of investors. As for self-management, it negatively influences herding behaviour non-significantly. The conclusion to draw based on this finding is that *self-management*, the ability to control one's emotions and impulses and adapt to changing circumstances, can reduce, although, not to a very significant extent, investors likelihood of just investing in something because everyone else is doing it, contrary to their convictions.

In relation, the effects of emotional intelligence variables on loss aversion behaviour the findings revealed that both self-awareness and relationship management positively influenced loss aversion significantly. This conclusion to draw based on this finding is that investors with a high self-awareness-*those* who can read and understand their feelings and guide their decisions using innate emotions (Goleman, 1998), and those with high *relationship management*-having the ability to motivate guide, and control other people's emotions - are highly loss averse, having much higher tendencies to avoid losses rather than accruing gains when it comes to their investing behaviours. In essence, and in sync with the loss aversion theory, such investors are more vulnerable to investment losses than gains. On the contrary, the effect of social awareness was rather negative and statistically significant on loss aversion. Hence, we can conclude that investors with high social awareness, that is, the ability to feel, understand, and respond to others' emotions within a social network are lowly loss averse, possessing much lower propensities to avoid losses when it comes to their investing behaviours. Seemingly contradictory to the loss aversion theory, such investors are less prone to investment losses than they are to investment gains.

However, self-management's influence on loss aversion was positively but statistically insignificant. Therefore, we conclude that investors with high *self-management* abilities, who can



control their emotions and impulses and adapt to changing circumstances, don't normally engage in high loss aversive investing behaviours.

With reference to the effects of emotional intelligence variables on portfolio diversification behaviour, the results also revealed that self-management and relationship management positively and significantly affect portfolio diversification. The inference we can make from this is that investors with high *self-management*, and can control their emotions and impulses and adapt to changing circumstances, and high *relationship management*, which gives them the ability to motivate, guide, and control other people's emotions, more likely engage in portfolio diversification, which involves adopting an investment strategy of combining a variety of assets to reduce the overall risk of their investment portfolio. Therefore, it appears that investors who are high on their self-management and relationship management emotional characteristics tend to be more risk-conscious (risk-averse) such that they prefer to diversify their portfolios of assets.

Social awareness, on the other hand, negatively influences portfolio diversification significantly. Hence, we conclude that investors with high social awareness which enables them to feel, understand, and respond to others' emotions in a social environment would less likely engage in portfolio diversification. In essence, it seems that higher social awareness, which largely stems from emotional influences people have on each other within a social network makes investors less risk-averse or more risk-taking (greedy) such that they tend to avoid aggressive portfolio diversification and rather invest in higher-risk assets with the hope of gaining abnormal returns.

As for self-awareness, its effect is positively nonsignificant on portfolio diversification. Hence, we conclude that investors with a high self-awareness, who can read and understand their feelings and guide their decisions using innate emotions, don't normally engage in aggressive portfolio diversification behaviours.

As regards the effects of emotional intelligence variables on excessive trading behaviour, the results reveal that self-awareness and relationship management positively and significantly influence excessive trading. Therefore, we can conclude that investors with a high self-awareness, and able to read and understand their feelings and guide their decisions using innate emotions, and those with high *relationship management*, the ability to motivate, guide, and control their emotions, trade more excessively and aggressively, often using powerful computer programs to transact a large number of orders within fractions of a second.

But social awareness's effect is negatively significant on excessive trading. Therefore, we conclude that those investors with high social awareness, who can feel, understand, and respond to others' emotions in a social environment trade less excessively.

Additionally, the effect of self-management is negatively nonsignificant on excessive trading. Hence, it could be concluded that investors with high *self-management* ability, who can control their emotions and impulses and adapt to changing circumstances, would not normally engage in excessive and aggressive trading.

Concerning the effects of emotional intelligence variables on overconfidence behaviour, the results revealed that overconfidence is positively and significantly affected by both self-awareness and relationship management. Therefore, we conclude that investors who are overconfident and tend to overestimate the probability of accuracy of their information, their successes, and capabilities are those who believe too much in themselves (self-awareness) and the emotional influences coming from their relationships (relationship management). In order words, overconfident investors tend to be more influenced by their self-awareness, that is, their actual or



perceived ability to read and understand their feelings and guide decisions using innate emotions, together with their *relationship management* forces which are based on their ability to motivate, guide, and control other people's emotions.

But overconfidence was negatively and significantly influenced by social awareness; therefore, we conclude that those overconfident investors with low social awareness, would normally have a naïve ability to feel, understand, and respond to others' emotions in a social environment.

The effect of self-management was, however, positively nonsignificant on overconfidence. Hence, we conclude that investors with high *self-management* ability who can control their emotions and impulses and adapt to changing circumstances, would not normally act with overconfidence when it comes to investment decisions.

With reference to the effects of emotional intelligence variables on overreaction behaviour, the analysis revealed that overreaction is positively and significantly affected by both self-awareness and relationship management. Hence, we can conclude that investors who overreact disproportionately to new investment information are those who believe so much in their self-perceptions and emotional convictions (self-awareness) and the (emotional) influences coming from their relationships (relationship management). On the other hand, the effects of self-management and social awareness on overreaction are both negatively significant. Therefore, we conclude that investors with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances, and those with high social awareness, who can feel, understand, and respond to others' emotions in a social environment, react less disproportionately to new information about security prices.

When it comes to the effects of emotional intelligence variables on underreaction behaviour, the analysis revealed that both self-awareness and relationship management exert statistically non-significant positive effects on underreaction. In accounting for the meaning of statistically non-significant positive effect of self-awareness and relationship management on underreaction we conclude that investors who trust so much in their self-perceptions and emotional convictions (self-awareness) and the (emotional) influences coming from their relationships (relationship management) do not normally underreact and under respond to current news. However, self-management was found from the results to negatively influence under reaction significantly. Hence, we conclude that investors with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances, tend to manifest low underreaction behaviours, meaning that they underreact and under respond, to a very low extent to current news. But social awareness positively and significantly affects underreaction. Therefore, we conclude that investors with high social awareness, who can feel, understand, and respond to others' emotions in a social environment, tend to underreact more to current news about assets or security prices.

Concerning the effects of emotional intelligence variables on mental accounting behaviour, the results indicate that mental accounting is positively and significantly influenced by self-awareness, self-management, and relationship management and negatively, significantly by social awareness. *Mental Accounting* refers to a set of cognitive operations used by individuals and households to organise, assess, and keep track of their financial activities and investments (Thaler, 1999) [100].

Therefore, in interpreting the positive significant effect of self-awareness, self-management, and relationship management on mental accounting we conclude that investors with high levels of self-awareness, self-management, and relationship management also normally engage in higher levels



of cognitive processes, psychological heuristics, and mental calculations about the risk, returns and characteristics of an investment asset or portfolio before they invest.

However, investors high on social awareness, the results suggest, tend to manifest low mental accounting behaviours, meaning that investors who respond too much to other people's emotional influences in a social environment often engage in lower levels of cognitive processes, psychological heuristics, and mental calculations about the risk, returns and characteristics of an investment asset or portfolio before they invest. In essence, the investment decisions of such investors are often influenced more by what others think and feel not the personal convictions of those investors.

Concerning the effects of emotional intelligence variables on the frequency of trading behaviour, the results revealed that the frequency of trading is negatively and significantly affected by relationship management. Therefore, we conclude that investors who are more influenced by emotional factors operating within their relationships and networks tend to trade less frequently. However, the frequency of trading was influenced negatively and non-significantly by self-management, positively by self-awareness, and negatively by social awareness. This means that investors with high self-management trade less frequently and less aggressively, whilst those with high self-awareness would trade more frequently though not very aggressively, whereas those possessing high social awareness would trade less frequently though not to very significant levels.

Finally, when it comes to the effects of emotional intelligence variables on portfolio switching behaviour, the results revealed that portfolio switching was positively affected by both self-awareness and relationship management and negatively significantly by social awareness. But the effect of self-management was positively significant on portfolio switching. Portfolio Switching is a type of investor behaviour in which the investor switches or changes from one investment fund to another, or chooses to transfer their brokerage assets or liquidate their investments in exchange for other higher-earning securities/investment portfolios. In accounting for the positive significant effect of both self-awareness and relationship management on portfolio switching, we conclude that investors who rely more on their inherent feelings and intuitions (self-awareness) and emotional influences from their relationships (relationship management) are more likely to engage in portfolio switching behaviours. A negatively significant effect of social awareness on portfolio switching, however, leads us to conclude that investors with high social awareness, who can feel, understand, and respond to others' emotions in a social environment, less likely engage in portfolio switching behaviours such as changing from one investment fund to another, transferring their brokerage assets, or liquidating their investments in exchange for other higher-earning securities/investment portfolios. But a positively significant effect of self-management on portfolio switching implies that investors who normally and often engage in portfolio switching behaviours are those with high self-management ability, who can control their emotions and impulses and adapt to changing circumstances.

Regarding the third research question, the analysis revealed that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy. More specifically, emotional intelligence exerts a statistically significant indirect positive effect on investor behaviour through financial literacy. Hence, we conclude that highly emotionally intelligent investors with higher financial literacy levels are more likely to make better and successful investment decisions. In essence, the financial literacy levels of investors supervise and moderate the extent to which their emotions can influence their investment decisions. Therefore, it seems that a high level of financial literacy makes investors more rational than emotional when it comes to making investment decisions.

Concerning the fourth research question, the results revealed that the majority of the respondents expressed the self-management aspect of their emotional intelligence more than the other aspects. Hence, we conclude that Ghanaian investors predominantly express the *self-management* component of their emotional intelligence more than the other aspects. On average, however, Ghanaian investors express their social awareness and relationship management dimensions of their EI nearly equally. But the self-awareness dimensions of EI is the least expressed by Ghanaian investors. In essence, it seems that Ghanaian investors tend to have a high self-management ability, which gives them the capacity to control their emotions and impulses and adapt to changing circumstances.

In relation to the fifth and final research question, the analysis shows that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors. This is followed by overconfidence, loss aversion, herding, mental accounting, excessive trading, underreaction, frequency of trading, portfolio switching, and overreaction.

The results imply that, firstly, Ghanaian investors often diversify their portfolios which is an investing strategy of combining a variety of assets to reduce the overall risk of their investment portfolio. It also suggests that Ghanaian investors are risk-averse.

Risk aversion is the behaviour of investors, who, when exposed to uncertainty, attempt to lower that uncertainty. It is the hesitation of a person to agree to a situation with an unknown payoff rather than another situation with a more predictable payoff but possibly lower expected payoff.

Moreover, the risk-averse nature of the investors, manifested as portfolio diversification might be confirming several theories namely, 1) regret theory, which accounts for the emotional response that people undergo when they know they made a mistake in judgment; 2) loss aversion theory, the hypothesis that people were more vulnerable to losses than gain, and; 3) expected utility theory, a philosophy of how to make optimal decisions under risk.

5.3 Recommendations

Since emotional intelligence has a statistically significant direct positive effect on investor behaviour, it means that emotional intelligence stimulates investor behaviour. In other words, changes in investor behaviour could be attributable to emotional intelligence volatilities. Moreover, the emotional intelligence variables of self-awareness, self-management, social awareness, and relationship management exerted differential effects and influences on the investor behaviours of herding, loss aversion, portfolio diversification, excessive trading, and overconfidence, overreaction, underreaction, mental accounting, frequency of trading and portfolio switching. This means that the influence of emotional intelligence dimensions on investor behaviour variables is a generally complicated phenomenon. However, the finding that emotional intelligence indirectly affects investor behaviour through the mediating role of financial literacy means that highly emotionally intelligent investors with higher financial literacy levels are more likely to make better and successful investment decisions. In essence, the financial literacy levels of investors supervise and moderate the extent to which their emotions can influence their investment decisions. Hence, it seems that a high level of financial literacy makes investors more rational than emotional when it comes to making investment decisions.

Additionally, since the majority of Ghanaian investors express the self-management aspect of their emotional intelligence more than the other aspects, it implies that Ghanaian investors tend to have the capacity to control their emotions and impulses and adapt to changing circumstances.

But the finding that portfolio diversification is the first most frequently exhibited behaviour among Ghanaian investors implies that Ghanaian investors prefer the investing strategy of combining a variety of assets to reduce the overall risk of their investment portfolio. In essence, Ghanaian investors are risk-averse.

The following recommendations are therefore made based on the study's findings.

- 1. Individual Investors**-Individual investors need to understand that their investment decisions and behaviour, on the whole, are affected by the emotional intelligence dimensions of self-awareness, self-management, social awareness, and relationship management. This means that the investment decisions of investors come from two sources; 1) investors' emotional elements (self-awareness and self-management) and; 2) other People's Emotional Influences (Social Awareness and Relationship management). Each of these sources has enough potency to influence individual investment decisions. Emotions are very powerful and could control the investment decisions of investors. Hence, it is very critical for individual investors not to rely on their self-beliefs, convictions, information, and emotional perceptions alone. They need to also consult expert financial and investment advisors, especially those who can properly analyse every investment without emotional bias. Since financial literacy appears to make investors more rational than emotional when it comes to making investment decisions, it is also recommended that investors enroll in professional or university courses in personal, corporate, behavioural finance, and investment decision-making. This could have far-reaching consequences on their financial literacy levels.
- 2. Financial Advisors**-Personal Financial and Investment advisors need to recognise the strong influence that investors' emotions have on their investment decisions so that they can always give them proper advice that would safeguard their investment funds, assets, or securities.
- 3. Tertiary Educational Institutions**-In addition to the traditional finance and investment courses being offered by universities, it is recommended that new training courses be developed deeply rooted in behavioural finance theories and empirical research that are geared towards increasing the financial literacy levels of individual investors. This could hopefully enable them to make better investment decisions and avoid investment disasters such as the recent financial scandals in Ghana and the enormous financial losses investors have experienced due to the MenZGold and GN Bank (Gold Coast Securities) debacles.
- 4. Professional Bodies**-Professional Bodies such as the Corporate Finance Institute, Institute of Chartered Accountant of Ghana (ICAG), Association of Certified Chartered Accountants (ACCA) should also design and run more professional courses on practical investment decision-making and financial literacy that are deeply rooted in behavioural finance theory and research to educate the investor in Ghana.
- 5. Government**-Government working through the bank of Ghana needs to also note that individual investors are strongly affected by their emotional elements and other people's emotional influences together with their financial literacy levels when it comes to their investment decisions. Hence, the bank of Ghana should tighten up the prudential regulations in the financial and investment landscape in the country so that investment companies such as the MenZGold and GN Bank (Gold Coast Securities) wouldn't take undue advantage of investors and just go unpunished. Investment companies need to be



very seriously monitored and made to demonstrate a high level of transparency by explaining to investors both the risks and returns associated with particular investment portfolios before investors are allowed to decide whether to invest or not.

5.4 Further Studies

Firstly, future studies can also explore the neurological foundations of emotional intelligence and investor behaviour in Ghana, the findings from such a study would be very revealing. This study is limited only to individual investors and a sample size of 255. Secondly, it is necessary to conduct further research to confirm the findings of this research with larger sample sizes and more diversity of respondents. Thirdly, future research can focus on applying behavioural finance theories to explore the factors influencing the decisions of institutional investors in Ghana at the Stock Exchanges. Finally, it is recommended that future research focus on testing all the empirical foundations of all the models of emotional intelligence as well as the theories of investor behaviour in Ghana.

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APPENDIX A

SURVEY QUESTIONNAIRE

Dear Respondent

We are a Group of Researchers investigating the topic: ***EFFECTS OF EMOTIONAL INTELLIGENCE VARIABLES ON INVESTOR BEHAVIOUR IN GHANA.***

Your responses would be needed to help achieve the objectives of the study. Please note that;

1. *All information you shall provide would be strictly held confidential and used for academic purposes only.*
2. *You have the right to refuse to participate in the study.*
3. *You are free to ask the researcher any question bordering your mind, before, during, or after the questionnaire administration.*
4. *The researcher regrets if she asks you certain questions that may appear to make you remember some painful experiences you have had in the past.*

This questionnaire will take approximately 15-25 minutes to complete. As much as possible, please respond to each question with all truthfulness, honesty, and frankness. At any point in time,

you feel you don't want to continue participating in the research or feel like not answering a particular question(s), please feel free to tell me.

Your participation in this study and the responses you provide shall enable the researcher to complete the study. The findings of the study shall be used only for academic and policy purposes.

Thank you.

Yours sincerely,

.....

Researchers

SECTION A: RESPONDENTS BIOGRAPHICAL INFORMATION

1. Age	15-19 []	20-24 []	25-29 []	30-39 []	40-49 []	50-60 []	60+ []
2. Educational Level	JHS []	SHS []	HND/Diploma []	1 st degree []	Master's degree []	PhD []	Other []
3. GENDER	MALE []	FEMALE []					
4. Years of Investing	0-5 YRS []	6-10 YRS []	11-15 YRS []	15+ YRS []			
5. Marital Status	Single without dependents []	Single with dependents []	Married with dependents []	Married without dependents []	Divorced with dependents []	Divorced without dependents []	Other []
6. Income Range	GHS 100-500 per month []	GHS 600-1000 per month []	GHS 1000-2000 per month []	GHS 2000+ per month []			
7. Occupation	Student []	Salaried Worker []	Entrepreneur []	Investor []	SME Owner []	choose any that applies	

8. Type of Assets Invested in

Indicate by ticking, which of the following financial and/or real assets below you have invested in or normally like to invest in.

<u>Financial Assets</u>	<u>Real Assets</u>
Stocks [] Bonds [] Mutual Funds and ETFs []	Land buildings []
International Funds Peer-to-Peer Lending	Properties []
Options Futures [] Forex trading []	Value-generating equipment & machinery []
Treasury bills [] Fixed deposits []	Commodities Such as Gold []
Thrift/cooperative unions [] Savings (Cash)	

SECTION B: MEASURING THE EMOTIONAL INTELLIGENCE OF GHANAIAIN INVESTORS

Rank each statement as follows:

0 (Never)	1 (Rarely)	2 (Sometimes)	3(Often)	4(Always)
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9. Self-Awareness

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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0 1 2 3 4	My feelings are clear to me at any given moment <i>that I want to make an investment decision.</i>
0 1 2 3 4	Emotions play an important part in my life <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	My moods impact the people around me <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	I find it easy to explain my feelings <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	My moods are easily affected by external events <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	I can easily sense when I'm going to be angry <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	I readily tell others my true feelings <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	I find it easy to describe my feelings <i>especially when I want to take an investment decision.</i>
0 1 2 3 4	Even when I'm upset <i>about an investment decision/outcome</i> , I'm aware of what's happening to me.
0 1 2 3 4	I can stand apart from my thoughts and feelings and examine them <i>concerning my investment decisions/outcomes.</i>
0-----40	TOTAL RESPONSES RANGE

10. Self-Management

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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0 1 2 3 4	I accept responsibility for my reactions <i>concerning my investment decisions/outcomes.</i>
0 1 2 3 4	I find it easy to make goals and stick with them <i>when it comes to my investment decisions/outcomes.</i>
0 1 2 3 4	I am an emotionally balanced person <i>when it comes to my investment decisions/outcomes.</i>
0 1 2 3 4	I am a very patient person <i>when it comes to my investment decisions/outcomes.</i>
0 1 2 3 4	I can accept critical comments from others <i>concerning my investment decisions/outcomes</i> without becoming angry.
0 1 2 3 4	I maintain my composure, even during stressful times <i>when there is pressure on me to make certain investment decisions/outcomes.</i>
0 1 2 3 4	If an issue does not affect me directly, I don't let it bother me <i>and this is how I like to behave when it comes to my investment decisions/outcomes.</i>
0 1 2 3 4	I can restrain myself when I feel anger towards someone <i>who is wrongly influenced by investment decisions/outcomes, causing me great loss.</i>
0 1 2 3 4	I control urges to overindulge in things <i>like extremely risky and highly volatile investments that could damage my emotional well-being if I lost them.</i>
0 1 2 3 4	I direct my energy into creative work or hobbies <i>that will equip me to make better investment decisions and achieve my expected outcomes.</i>
0-----40	TOTAL RESPONSES RANGE

11. Social Awareness

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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0 1 2 3 4	I consider the impact of my decisions on other people <i>when it comes to my investment decisions/outcomes.</i>
0 1 2 3 4	I can easily tell if the people around me are becoming annoyed <i>because of my investment decisions/outcomes.</i>
0 1 2 3 4	I sense it when a person's mood changes <i>towards me as a result of my investment decisions/outcomes.</i>
0 1 2 3 4	I can be supportive when giving bad news about <i>my investment decisions/outcomes</i> to others.

0 1 2 3 4	I am generally able to understand the way other people feel <i>towards me as a result of my investment decisions/outcomes.</i>
0 1 2 3 4	My friends can tell me intimate things about themselves <i>including how they feel about my investment decisions and outcomes.</i>
0 1 2 3 4	It genuinely bothers me to see other people suffer pain <i>due to my poor investment decisions, behaviour, and actions.</i>
0 1 2 3 4	I usually know when to speak and when to be silent when <i>I realise people are worried or concerned about my poor investment decisions.</i>
0 1 2 3 4	I care what happens to other people <i>because of my poor investment decisions/outcomes.</i>
0 1 2 3 4	I understand when people's plans <i>in life change because of my poor investment decisions/outcomes.</i>
0-----40	TOTAL RESPONSES RANGE

12. Relationship Management

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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0 1 2 3 4	I can show affection <i>to people in need and that is one of my motivations for investing.</i>
0 1 2 3 4	I can manage relationships well <i>with people especially those who help me with my investing activities and processes.</i>
0 1 2 3 4	I find it easy to share my deep feelings with others <i>especially those related to my poor investment decisions and negative outcomes.</i>
0 1 2 3 4	I am good at motivating others <i>to succeed financially so I learn while investing so I could share my investing knowledge and experiences to help others who also want to invest.</i>
0 1 2 3 4	I am a fairly cheerful person <i>and I get very excited whenever I have an opportunity to invest in any financial or real assets.</i>
0 1 2 3 4	It is easy for me to make friends <i>with people and normally end up influencing them to think about investing.</i>
0 1 2 3 4	People tell me I am sociable and fun <i>when they talk to me concerning their stressful and painful investment experiences and outcomes.</i>
0 1 2 3 4	I like helping people to recover from <i>their stressful and painful investment experiences and outcomes.</i>
0 1 2 3 4	Others can depend on me <i>when they need someone to talk to concerning their stressful and painful investment experiences and outcomes.</i>
0 1 2 3 4	I can make someone else feel better if they are very upset <i>because of their stressful and painful investment experiences and outcomes.</i>
0-----40	TOTAL RESPONSES RANGE

SECTION C: MEASURING THE INVESTING BEHAVIOUR OF GHANAIA INVESTORS

13. Herding

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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0 1 2 3 4	Other investors' decisions about choosing investment types have an impact on my investment decisions.
0 1 2 3 4	Other investors' decisions on the investment volume have an impact on my investment decisions.
0 1 2 3 4	Other investors' decisions about buying and selling investments have an impact on my investment decisions.

0 1 2 3 4	I usually react quickly to the changes in other investors' decisions and follow their reactions to the investment market.
0-----16	TOTAL RESPONSES RANGE

14. Loss aversion

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
-----------	------------	---------------	-----------	------------

0 1 2 3 4	I am more concerned about a large loss in my investments than missing a substantial gain.
0 1 2 3 4	I will not increase my investment when the market performance is poor.
0 1 2 3 4	When it comes to investment, no loss of capital (invested money) is more important than returns (profits)
0 1 2 3 4	I sell stocks that increased in value very quickly.
0 1 2 3 4	I keep stocks that decreased in value for a long time.
0-----20	TOTAL RESPONSES RANGE

15. Portfolio diversification

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
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	<u>Financial Assets¹²⁷</u>
0 1 2 3 4	I like to invest in the Stocks ¹²⁸ of companies as an investor.
0 1 2 3 4	I like to invest in Bonds ¹²⁹ as an investor.
0 1 2 3 4	I like to invest in Mutual Funds as an investor.
0 1 2 3 4	I like to invest in International Funds ¹³⁰ as an investor.
0 1 2 3 4	I engage in Peer-to-Peer Lending ¹³¹ as an Investor.
0 1 2 3 4	6. I invest in Options ¹³² as an investor
0 1 2 3 4	7. I invest in Futures ¹³³ as an investor

¹²⁷ **Financial assets** are highly liquid assets that are either cash or can quickly be converted into cash. These include the traditional investments such as stocks (i.e. equity) and bonds (i.e. fixed income). The defining characteristic of a financial asset is that it has some type of known monetary value that can readily be realised. However, it is in and of itself lacks any intrinsic value.

¹²⁸ An individual stock represents part ownership in a company.

¹²⁹ A bond is similar to a loan issued by government or corporate entities in which the issuer agrees to pay you regular interest or coupon payments.

¹³⁰ It refers to international stocks and bonds.

¹³¹ The represents lending to others via online social lending portals.

¹³² An option is a contract, not a financial instrument. The contract gives you the right — not the obligation — to buy or sell a specific number of shares of a financial security at a previously determined price, within a specific time period. The underlying security might be a stock, currency, fund or another type of investment. You buy and sell options on securities marketplaces.

¹³³ A futures contract is an agreement to buy or sell a commodity, financial instrument or security at a predetermined future date for a specific price.

0 1 2 3 4	8. I engage in Forex trading as an investor
0 1 2 3 4	I invest in Treasury bills as an investor.
0 1 2 3 4	I invest in Fixed deposits as an investor.
0 1 2 3 4	I invest in Thrift/cooperative unions as an Investor.
0 1 2 3 4	I retain some of my money in the form of Savings (Cash)
	Real Assets¹³⁴
0 1 2 3 4	I like to invest in real assets like land as an investor.
0 1 2 3 4	I like to invest in buildings as an investor.
0 1 2 3 4	I like to invest in properties as an investor.
0 1 2 3 4	I like to invest in value-generating equipment & machinery as an investor.
0 1 2 3 4	I like to invest in commodities such as gold as an investor.
0-----68	TOTAL RESPONSES RANGE

16. Excessive trading

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
-----------	------------	---------------	-----------	------------

0 1 2 3 4	I don't like to engage in numerous trades in my trading account that is generally not in line with my goals or investment objectives.
0 1 2 3 4	I will not buy and sell stocks/investments that are in line with my overall investment goals and objectives.
0-----8	TOTAL RESPONSES RANGE

17. Overconfidence

0 (Never)	1 (Rarely)	2 (Sometimes)	3 (Often)	4 (Always)
-----------	------------	---------------	-----------	------------

0 1 2 3 4	I believe that your skills and knowledge of the stock market can help you to outperform the market.
0 1 2 3 4	I am normally able to anticipate the end of good or poor market returns on the Ghana Stock Exchange.
0 1 2 3 4	I make riskier investments for maximum gain.
0 1 2 3 4	I feel qualified to make investment decisions.

¹³⁴ Real Assets are value-generating physical assets that a business and/or investor owns. These include land, buildings, properties, value-generating equipment & machinery, other infrastructure or commodities. The defining characteristic of a real asset is that it has intrinsic value in and of itself does not rely on monetisation and/or exchange in order to provide value for its owner.

0 1 2 3 4	I feel I can predict future share prices better than others.
0 1 2 3 4	I think that I have complete knowledge of the stock market.
0 1 2 3 4	I am confident in my ability to do better than others in picking stocks.
0 1 2 3 4	I believe that my investment will pay higher dividends as compared to others' investments.
0 1 2 3 4	I think the stocks (shares) of the company I like the most are good enough for long-term investment.
0-----36	TOTAL RESPONSES RANGE

18. Overreaction

0 (Never) 1 (Rarely) 2 (Sometimes) 3(Often) 4(Always)

0 1 2 3 4	When I get new information about new investment security that seems to offer higher returns, I tend to respond to this information too much and so rapidly without taking the time to evaluate the information.
0-----4	TOTAL RESPONSES RANGE

19. Underreaction

0 (Never) 1 (Rarely) 2 (Sometimes) 3(Often) 4(Always)

0 1 2 3 4	When I get new information about a new investment security that seems to offer higher returns, I tend to respond to pay very little attention to this information and often react too slowly.
0-----4	TOTAL RESPONSES RANGE

20. Mental Accounting

0 (Never) 1 (Rarely) 2 (Sometimes) 3(Often) 4(Always)

0 1 2 3 4	I tend to treat each element of my investment portfolio separately.
0 1 2 3 4	I hesitate to sell stocks that had high returns in the past even though their prices decrease nowadays.
0 1 2 3 4	I don't care about the performance of my investment portfolio as a whole but I care about the return of each account separately.
0-----12	TOTAL RESPONSES RANGE

1. Frequency of Trading

0 (Never) 1 (Rarely) 2 (Sometimes) 3(Often) 4(Always)

0 1 2 3 4	I trade on several stock exchanges very frequently between 0.001 seconds to 5 minutes.
0 1 2 3 4	I normally use powerful computer programs to transact a large number of orders in fractions of a second,
0 1 2 3 4	I use usually utilising complex algorithms to analyse multiple markets and execute orders based on market conditions.
0-----12	TOTAL RESPONSES RANGE

SECTION D: MEASURING THE FINANCIAL LITERACY OF GHANAIAN INVESTORS

Choose one answer for each of the questions below.

23	<p>Who is an Investor? 1. A salaried worker who invests a portion of his/her income in investment portfolios 2. An individual who invests part of his/her income from the primary occupation in diverse investment portfolios 3. An investor is any person or other entity (such as a firm or mutual fund) who commits capital with the expectation of receiving financial returns. 4. Not Sure</p>					
24	<p>Suppose you lend GHS 5,000 to a friend today to be paid back in a year. Would the value of the GHS 5,000 now be the same in a year's time? 1. Yes 2. No 3. Not sure</p>					
25	<p>Which of the following is appropriate as an action to take when investing (making deposits, etc.) or borrowing funds at a time of interest rate rise? 1. Investing and borrowing at fixed interest rates 2. Investing at a fixed interest rate and borrowing at a floating interest rate 3. Investing at a floating interest rate and borrowing at a fixed interest rate 4. Investing and borrowing at floating interest rates 5. Not Sure</p>					
26	<p>Suppose you had GHS100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? 1. More than GHS102 2. Exactly GHS102 3. Less than GHS102 4. Not Sure</p>					
27	<p>It is less risky to invest in government Treasury Bills than privately owned stocks/shares? 1. True 2. False 3. Not Sure</p>					
Number of Correct Answers	5	4	3	2	1	0
Score	5	4	3	2	1	0
0-----5		TOTAL RESPONSES RANGE				

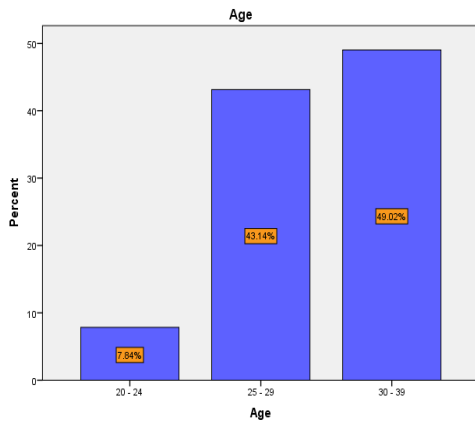
THANK YOU VERY MUCH FOR YOUR TIME

APPENDIX B

TABLES AND FIGURES

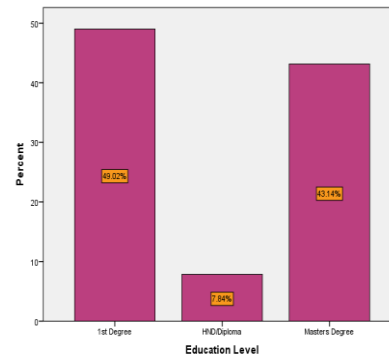
Appendix B1: Description of Respondents' Profile

Figure 4.1: Distribution of Respondents' Age



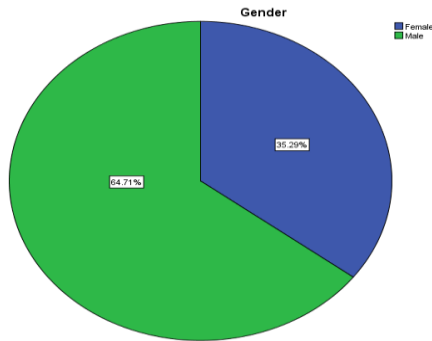
Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.2: Distribution of Respondents' Educational Level



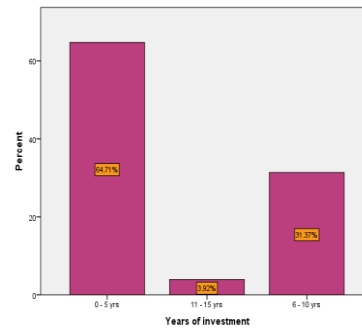
Source: Authors' Analysis (2020) using IBM SPSS Software.

4.3: Gender Distribution of Respondents



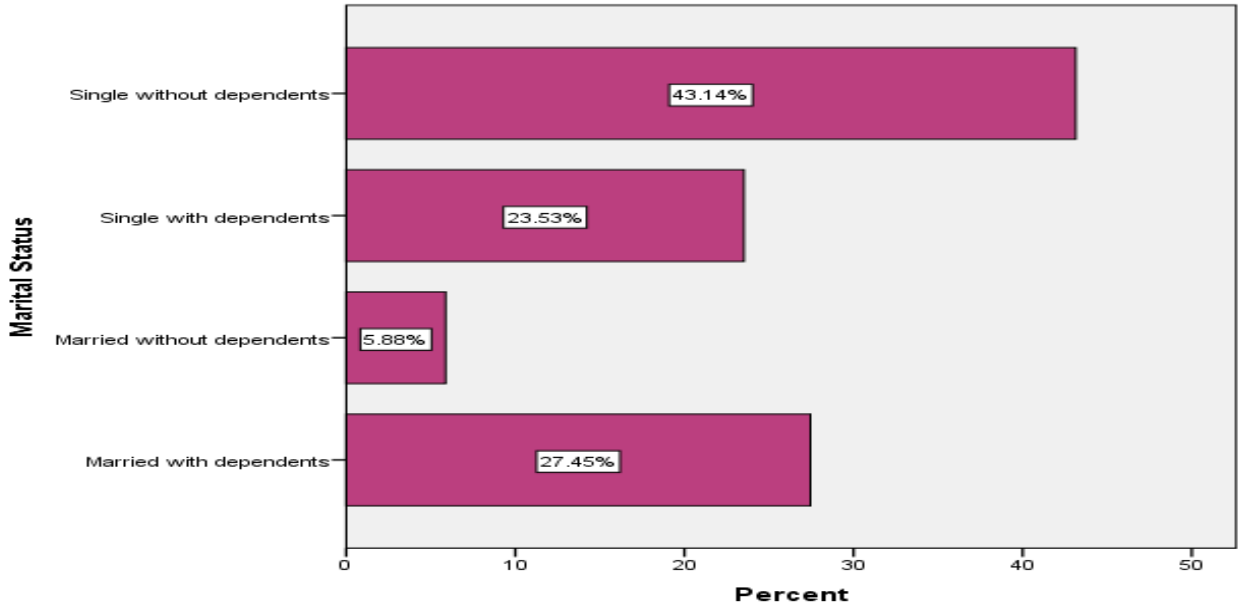
Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.4: Years of Investment by Respondents



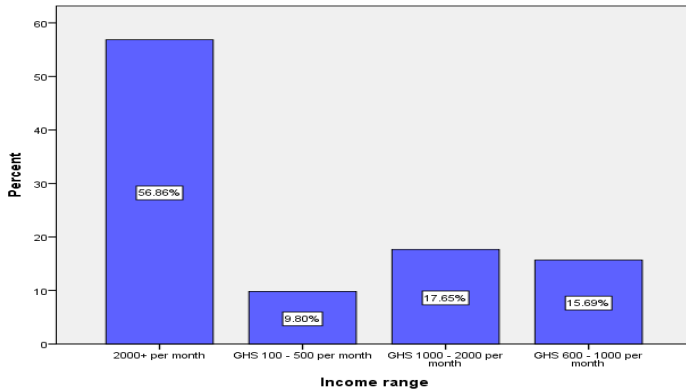
Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.5: Marital Status of Respondents



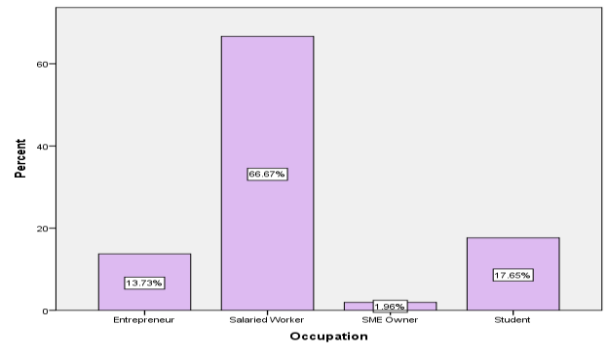
Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.6: Income Range of Respondents



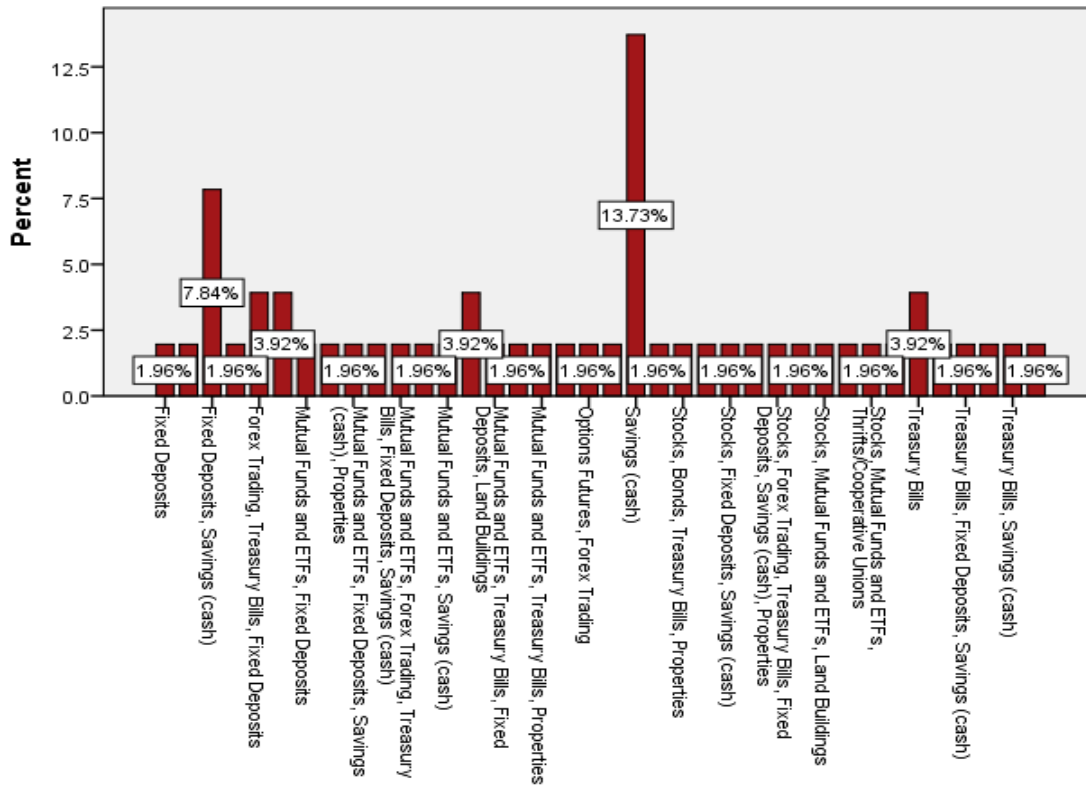
Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.7: Occupation of Respondents



Source: Authors' Analysis (2020) using IBM SPSS Software.

Figure 4.6: Income Range of Respondents



Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B2: Exploratory Factor Analysis for Emotional Intelligence Variables

Table 4.1b: Total Variance Explained for EI Variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.308	25.770	25.770	10.308	25.770	25.770
2	5.598	13.995	39.765	5.598	13.995	39.765
3	2.828	7.070	46.835	2.828	7.070	46.835
4	2.565	6.412	53.247	2.565	6.412	53.247
5	2.430	6.074	59.321	2.430	6.074	59.321
6	1.781	4.452	63.773	1.781	4.452	63.773
7	1.564	3.909	67.682	1.564	3.909	67.682
8	1.306	3.265	70.947	1.306	3.265	70.947

9	1.202	3.004	73.951	1.202	3.004	73.951
10	1.105	2.763	76.715	1.105	2.763	76.715
11	1.008	2.521	79.236	1.008	2.521	79.236
12	.921	2.302	81.538			
13	.854	2.135	83.673			
14	.748	1.871	85.543			
15	.723	1.807	87.351			
16	.615	1.537	88.887			
17	.580	1.449	90.336			
18	.468	1.170	91.506			
19	.400	1.000	92.506			
20	.370	.926	93.432			
21	.340	.851	94.283			
22	.333	.832	95.115			
23	.311	.777	95.892			
24	.238	.595	96.487			
25	.231	.578	97.065			
26	.187	.467	97.532			
27	.159	.397	97.929			
28	.152	.380	98.309			
29	.123	.307	98.615			
30	.110	.275	98.891			
31	.100	.251	99.142			
32	.089	.222	99.364			
33	.061	.153	99.517			
34	.052	.130	99.647			
35	.048	.121	99.768			
36	.030	.075	99.843			
37	.028	.070	99.913			
38	.022	.054	99.967			
39	.010	.024	99.992			
40	.003	.008	100.000			

Extraction Method: Principal Component Analysis.

Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B3: Reliability Analysis for Emotional Intelligence Variables

Table 4.4b: Item-Total Statistics for EI Variables

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SELFA1	72.101	215.198	.336	.745	.881
SELFA2	73.352	214.796	.240	.842	.883
SELFA3	73.604	210.541	.336	.891	.881
SELFA4	72.819	216.582	.178	.776	.885
SELFA5	73.581	209.864	.347	.860	.881
SELFA6	73.634	210.976	.313	.808	.882
SELFA7	73.233	215.082	.179	.719	.886
SELFA8	73.097	212.132	.305	.728	.882
SELFA9	72.626	202.819	.573	.801	.875
SELFA10	72.498	209.941	.488	.705	.878
SELFM1	72.145	211.452	.427	.671	.879
SELFM2	72.441	216.186	.230	.806	.883
SELFM3	72.308	216.037	.326	.805	.881
SELFM4	72.401	209.613	.533	.839	.877
SELFM5	72.599	210.684	.451	.837	.879
SELFM6	72.709	208.393	.634	.835	.876
SELFM7	72.630	220.172	.089	.604	.886
SELFM8	72.780	206.633	.550	.875	.876
SELFM9	72.656	206.519	.443	.725	.879
SELFM10	72.938	203.448	.568	.757	.876
RELAMGT1	72.753	207.939	.513	.788	.877
RELAMGT2	72.233	210.100	.531	.771	.877
RELAMGT3	73.172	203.948	.636	.781	.874
RELAMGT4	72.687	205.543	.565	.771	.876
RELAMGT5	72.599	205.321	.571	.832	.876
RELAMGT6	72.863	207.446	.554	.727	.876
RELAMGT7	73.097	204.672	.559	.850	.876
RELAMGT8	73.053	210.820	.444	.775	.879
RELAMGT9	72.868	207.744	.532	.879	.877
RELAMGT10	72.846	210.219	.489	.856	.878

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.4c: ANOVA with Tukey's Test for Nonadditivity for EI Variables

			Sum of Squares	df	Mean Square	F	Sig
Between People			1686.384	226	7.462		
Within People	Between Items		1110.986 ^a	29	38.310	1068.098	.000*
	Residual	Nonadditivity	3.935 ^b	1	3.935	4.498	.034*
		Balance	5732.412	6553	.875		
		Total	5736.347	6554	.875		
	Total	6847.333	6583	1.040			
Total			8533.717	6809	1.253		

Grand Mean = 2.511

a. Kendall's coefficient of concordance $W = .130$.

b. Tukey's estimate of power to which observations must be raised to achieve additivity = 1.300.

**Significant at 0.05 level.*

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.4d: Hotelling's T-Squared Test for EI Variables

Hotelling's T-Squared	F	df1	df2	Sig
945.046	28.550	29	198	.000*

**Significant at 0.05 level.*

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.4e: Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.201 ^a	.170	.238	8.525	226	6554	.000*
Average Measures	.883 ^c	.860	.904	8.525	226	6554	.000*

Two-way mixed-effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent because it is not estimable otherwise.

**Significant at 0.05 level.*

Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B4: Exploratory Factor Analysis for Investor Behaviour Items

Table 4.2b: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.221	26.568	26.568	12.221	26.568	26.568
2	5.586	12.143	38.711	5.586	12.143	38.711
3	3.825	8.314	47.025	3.825	8.314	47.025
4	3.356	7.297	54.322	3.356	7.297	54.322
5	2.643	5.746	60.068	2.643	5.746	60.068
6	2.021	4.393	64.461	2.021	4.393	64.461
7	1.767	3.842	68.303	1.767	3.842	68.303
8	1.576	3.427	71.730	1.576	3.427	71.730
9	1.505	3.272	75.003	1.505	3.272	75.003
10	1.307	2.842	77.844	1.307	2.842	77.844
11	1.207	2.624	80.468	1.207	2.624	80.468
12	.951	2.068	82.536			
13	.912	1.983	84.518			
14	.868	1.887	86.406			
15	.781	1.697	88.103			
16	.674	1.465	89.568			
17	.579	1.258	90.826			
18	.547	1.189	92.015			
19	.479	1.042	93.056			
20	.439	.954	94.011			
21	.408	.888	94.898			
22	.326	.708	95.606			
23	.292	.634	96.241			
24	.251	.545	96.785			
25	.240	.521	97.307			
26	.185	.402	97.708			
27	.174	.378	98.086			
28	.157	.340	98.427			
29	.133	.289	98.715			
30	.123	.268	98.983			
31	.100	.217	99.200			

32	.082	.179	99.379		
33	.073	.158	99.537		
34	.051	.110	99.648		
35	.041	.088	99.736		
36	.034	.074	99.811		
37	.030	.066	99.876		
38	.021	.046	99.922		
39	.015	.033	99.955		
40	.011	.023	99.978		
41	.005	.011	99.990		
42	.003	.006	99.995		
43	.002	.004	99.999		
44	.001	.001	100.000		
45	7.884E-16	1.714E-15	100.000		
46	-4.659E-16	-1.013E-15	100.000		

Extraction Method: Principal Component Analysis.

Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B5: Reliability Analysis for Investor Behaviour Variables

Table 4.5b: Kaiser's Measure of Sampling Adequacy for IB Items

Note: Calculations employ generalized inverse of covariance matrix

	MSA
EXCESSTRAD1	0.171384
EXCESSTRAD2	0.234210
FREQTRAD1	0.261355
FREQTRAD2	0.218236
FREQTRAD3	0.292268
HERD1	0.197375
HERD2	0.426575
HERD3	0.280079
HERD4	0.505726
LOSSAV1	0.130176
LOSSAV2	0.155560
LOSSAV3	0.117074
LOSSAV4	0.504607
LOSSAV5	0.349586
MENTACC1	0.294950
MENTACC2	0.226888
MENTACC3	0.184989
OVERCON1	0.263360
OVERCON2	0.480504

OVERCON3	0.275385
OVERCON4	0.371858
OVERCON5	0.440051
OVERCON6	0.353605
OVERCON7	0.250913
OVERCON8	0.347973
OVERCON9	0.373983
OVERREAC1	0.269521
PORTDIV1	0.386233
PORTDIV2	0.370804
PORTDIV3	0.346833
PORTDIV4	0.443508
PORTDIV5	0.288991
PORTDIV6	0.440364
PORTDIV7	0.360474
PORTDIV8	0.272844
PORTDIV9	0.191384
PORTDIV10	0.172918
PORTDIV11	0.425928
PORTDIV12	0.276329
PORTDIV13	0.219743
PORTDIV14	0.375685
PORTDIV15	0.451000
PORTDIV16	0.349049
PORTDIV17	0.419709
PORTSWITCH1	0.131188
UNDERREAC1	0.153975
Kaiser's MSA	0.294314

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.5c: Item-Total Statistics for IB Variables

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
HERD1	78.467	664.062	.363	.	.928
HERD2	78.383	653.064	.473	.	.927
HERD3	78.453	655.395	.479	.	.927
HERD4	78.682	654.960	.495	.	.927
LOSSAV1	77.813	673.993	.151	.	.930
LOSSAV2	78.047	673.134	.145	.	.930
LOSSAV3	78.028	664.656	.342	.	.928
LOSSAV4	79.005	651.019	.452	.	.927
LOSSAV5	78.893	647.035	.557	.	.926
PORTDIV1	79.000	646.648	.585	.	.926
PORTDIV2	79.234	641.804	.644	.	.926
PORTDIV3	78.724	654.360	.425	.	.928

PORTDIV4	79.393	645.498	.602	.	.926
PORTDIV5	79.542	650.691	.515	.	.927
PORTDIV6	79.280	644.268	.589	.	.926
PORTDIV7	78.972	642.365	.534	.	.927
PORTDIV8	79.327	654.193	.435	.	.927
PORTDIV9	78.514	655.209	.438	.	.927
PORTDIV10	78.341	658.949	.370	.	.928
PORTDIV11	79.771	638.891	.717	.	.925
PORTDIV12	77.486	667.190	.283	.	.929
PORTDIV13	78.444	655.732	.401	.	.928
PORTDIV14	78.537	652.400	.425	.	.928
PORTDIV15	78.444	652.586	.465	.	.927
PORTDIV16	79.168	643.314	.640	.	.926
PORTDIV17	79.379	640.969	.708	.	.925
EXCESSTRAD1	78.140	661.990	.317	.	.929
EXCESSTRAD2	78.537	653.762	.389	.	.928
OVERCON1	78.023	664.004	.279	.	.929
OVERCON2	78.888	650.983	.529	.	.927
OVERCON3	78.864	654.662	.519	.	.927
OVERCON4	78.257	656.614	.533	.	.927
OVERCON5	79.009	652.986	.544	.	.927
OVERCON6	79.164	647.602	.716	.	.925
OVERCON7	78.860	655.192	.545	.	.927
OVERCON8	78.439	660.013	.470	.	.927
OVERCON9	78.724	656.435	.501	.	.927
OVERREAC1	79.449	651.732	.521	.	.927
UNDERREAC1	78.407	675.782	.106	.	.930
MENTACC1	78.079	664.862	.314	.	.928
MENTACC2	78.939	657.325	.444	.	.927
MENTACC3	78.687	658.667	.381	.	.928
FREQTRAD1	79.785	657.231	.530	.	.927
FREQTRAD2	79.575	657.307	.428	.	.927
FREQTRAD3	79.500	659.941	.394	.	.928
PORTSWITCH1	78.897	661.135	.320	.	.929

Source: Authors' Analysis (2020) using IBM SPSS Software.



Table 4.5d: ANOVA with Tukey's Test for Nonadditivity for IB Variables

			Sum of Squares	df	Mean Square	F	Sig
Between People			3165.334	213	14.861		
Within People	Between Items		2766.453 ^a	45	61.477	2062.964	.000
	Residual	Nonadditivity	117.322 ^b	1	117.322	112.103	.000
		Balance	10030.138	9584	1.047		
		Total	10147.460	9585	1.059		
Total		12913.913	9630	1.341			
Total			16079.247	9843	1.634		

Grand Mean = 1.751

a. Kendall's coefficient of concordance $W = .172$.

b. Tukey's estimate of power to which observations must be raised to achieve additivity = 1.636.

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.5e: Hotelling's T-Squared Test for IB Variables

Hotelling's T-Squared	F	df1	df2	Sig
14984.406	264.201	45	169	.000

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.5f: Intraclass Correlation Coefficient for IB Variables

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.221 ^a	.188	.260	14.037	213	9585	.000
Average Measures	.929 ^c	.914	.942	14.037	213	9585	.000

Two-way mixed-effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent because it is not estimable otherwise.

Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B6: Exploratory Factor Analysis for Financial Literacy Variables

Table 4.3b: Total Variance Explained for Financial Literacy Variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.003	40.055	40.055	2.003	40.055	40.055
2	1.085	21.692	61.748	1.085	21.692	61.748
3	.750	14.999	76.747			
4	.633	12.659	89.406			
5	.530	10.594	100.000			

Extraction Method: Principal Component Analysis.

Table 4.3c: KMO and Bartlett's Test for Financial Literacy Variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.669
Bartlett's Test of Sphericity	Approx. Chi-Square
	151.497
	df
	10
	Sig.
	.000

Source: Authors' Analysis (2020) using IBM SPSS Software.

Appendix B7: Reliability Analysis for Financial Literacy Items

Table 4.6b: Item-Total Statistics for Financial literacy Variables

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
FINLIT1	3.024	1.043	.303	.188	.510
FINLIT2	2.854	1.161	.419	.236	.468
FINLIT3	3.264	1.136	.117	.066	.643
FINLIT4	2.933	1.003	.479	.258	.409
FINLIT5	2.965	1.030	.387	.209	.459

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.6c: ANOVA with Tukey's Test for Nonadditivity for Financial Literacy Variables

			Sum of Squares	df	Mean Square	F	Sig
Between People			76.470	253	.302		
Within People	Between Items		24.583 ^a	4	6.146	155.711	.000
	Residual	Nonadditivity	.317 ^b	1	.317	2.368	.124
		Balance	135.500	1011	.134		
	Total		135.817	1012	.134		
Total			160.400	1016	.158		
Total			236.870	1269	.187		

Grand Mean = .752

a. Kendall's coefficient of concordance $W = .104$.

b. Tukey's estimate of power to which observations must be raised to achieve additivity = 1.348.

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.6d: Hotelling's T-Squared Test for Financial Literacy

Variables

Hotelling's T-Squared	F	df1	df2	Sig
165.738	40.943	4	250	.000

Source: Authors' Analysis (2020) using IBM SPSS Software.

Table 4.6e: Intraclass Correlation Coefficient for Financial Literacy Variables

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.200 ^a	.147	.260	2.252	253	1012	.000
Average Measures	.556 ^c	.463	.637	2.252	253	1012	.000

Two-way mixed-effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent because it is not estimable otherwise.

Source: Authors' Analysis (2020) using IBM SPSS Software.

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