IMPACT OF SELECTED FACTORS ON THE FINANCIAL RISK-TAKING PROPENSITY AND HYPOTHETICAL PORTFOLIO CREATION OF INDIVIDUALS

Thesis

Submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

by

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DECLARATION

I hereby *declare* that the Research Thesis entitled "**Impact of Selected Factors on the Financial Risk-Taking Propensity and Hypothetical Portfolio Creation of Individuals",** which is being submitted to the **National Institute of Technology Karnataka, Surathkal,** in partial fulfilment of the requirements for the award of the Degree of **Doctor of Philosophy** in **Management** is a *bonafide report of the research work carried out by me*. The material contained in this Research Thesis has not been submitted to any University or Institution for the award of any degree.

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CERTIFICATE

This is to *certify* that the Research Thesis entitled, "**Impact of Selected Factors on the Financial Risk-Taking Propensity and Hypothetical Portfolio Creation of Individuals**", submitted by **Crystal Glenda Rodrigues (Register Number: 177SM002)**, as the record of the research work carried out by her, is ***accepted as the Research Thesis submission*** in partial fulfilment of the requirements for the award of the degree of **Doctor of Philosophy**.

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I dedicate this thesis to

my parents Lancy and Gracy

my husband Preetham

my son Caden

and

my guide Dr. Gopalakrishna B. V.

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ABSTRACT

Investment decision-making and portfolio construction have long been studied by various financial theorists in the realm of traditional finance. The traditional finance theories were built around the idea that investors are rational beings holding optimal portfolios. The research carried out in recent decades has seen a paradigm shift in this idea that was once considered true. The fact that rationality in construction of an optimal portfolio cannot be generalised due to various psychological factors of investors has given rise to a new field of research called Behavioural Finance. Individual differences in financial decision-making are the core of the work done in Behavioural Finance. The present study analyses the influence of select cognitive factors, namely optimism, self-control, mood and personality traits and non-cognitive factors consisting of demographic characteristics and financial literacy level, on the financial risk-taking propensity of individuals. The researcher has also analysed financial risk-taking and financial literacy as predictors of the type of portfolio composition and the role played by financial literacy as a moderator between financial risk-taking propensity and hypothetical portfolio construction in the research model. A total of 976 individuals from six administrative zones of India constituted the sample. The study's hypotheses were tested using statistical techniques such as structural equation modelling, ordinal logistic regression, t-test and ANOVA through SPSS and AMOS SEM software. The results supported most of the proposed relationships of the conceptualised model that were based on relevant theoretical background. Among the cognitive factors, two of the big five personality traits, namely conscientiousness and agreeableness, were insignificant in predicting the financial risk-taking propensity of individuals. All the other cognitive and non-cognitive study variables significantly predicted financial risk-taking propensity and aligned with the literature and theory. In contrast to prior research findings, the personality trait neuroticism was found to influence risk-taking positively. Financial literacy played a significant moderating role between financial risk-taking and constructing a hypothetical portfolio. Behavioural finance studies in India are still at a nascent stage. The present study has attempted to empirically add to the flourishing body of knowledge and expand the existing literature from an emerging country standpoint. The study results also provide practical implications to the formal education bodies, financial service providers, individual investors and financial regulatory bodies to look into the various subjective cognitive and objective non-cognitive factors that deeply influence individual portfolio construction decisions.

Keywords: Optimism; Self-control; Mood; Personality; Risk-Taking Propensity; Financial literacy; Hypothetical Portfolio Construction; Behavioural Finance

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LIST OF ABBREVIATIONS

AIM	Affect Infusion Model
AMOS	Analysis of Moment Structures
ANOVA	Analysis of Variance
AVE	Average Variance Extracted
BFMA	Behavioural Finance Macro
BFMI	Behavioural Finance Micro
CFA	Confirmatory Factor Analyses
CFI	Comparative Fit Index
CR	Critical Ratio
EFA	Exploratory Factor Analysis
FLL	Financial Literacy Level
GFI	Goodness-of-Fit Index
INFI	International Network on Financial Education
KMO	Kaiser-Meyer-Olkin
MMH	Mood Maintenace Hypothesis
MSV	Maximum Shared Variance
OCEAN	Openness to experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism
OECD	Organization for Economic Cooperation and Development
OLM	Ordinal Logit Model
PCA	Principal Component Analysis
PANAS	Positive Affect Negative Affect Schedule
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SE	Standard Error
SEBI	Securities and Exchange Board of India
SEM	Structural Equation Modelling
SIS	SEBI Investor Survey
SPSS	Statistical Package for Social Science

TLI	Tucker Lewis Index
VIF	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Individual investment decisions have been a prime area of importance for policy-makers and financial organisations. Even in the field of research, the financial decision-making process of an individual investor is studied extensively. The task of selecting appropriate investments and investment strategies is an important part of financial planning; at the same time, it is a challenging task for customers (Yao et al. 2011). The challenge is that with each investment avenue comes its own level of risk. Moreover, the risk-taking propensity of individuals varies, and this affects the type of investments chosen. The reason for variation in risk-taking could be attributed to the psychological characteristics of a person. There are a multitude of psychological factors that influence every decision made by an individual. There is quite a good number of evidence provided by behavioral finance researchers on the influence of various psychological biases on the financial decision-making of individuals (Kahneman and Tversky 1979; Thaler 1999; Garling et al. 2009; Aren and Zengin 2016). People often employ heuristics while making judgments under uncertainty which may lead to cognitive biases (Tversky and Kahneman 1974; Tversky and Kahneman 1992; Sahi et al. 2013). The research in cognitive psychology shows that human judgments reflect systematic bias when judgments are concerned with the probability of future events (Shiller 2003). The heuristics and biases correspond to uniformities in how people process information and then act upon this processed information (Garling et al. 2009). Each person is exposed to a different set of information, and every person's perception and interpretation of information also widely differ. This is the foundation of work on behavioural biases in investing (Hammond 2015). People solve financial decision problems by evaluating risky options based on psychological biases. The potential value of gains and losses involved in the decision is considered rather than the utility of the decision (Kahneman and Tversky 1979). This is due to the natural psychological tendency to increase returns and avoid losses.

The risk-taking ability and investment decisions of individuals are not only influenced by psychological biases but also by their personality traits, demographic profile, and level of financial Literacy (Barber and Odean 2001; Jamshidinavid et al. 2012;

Mihalcova et al. 2014; Bollen and Posavac 2018). These factors influence each investor's risk appetite differently. The level at which each investor can embrace risk determines the choice of financial products (Morse 1998; Aren and Aydemir 2015). To match one's risk tolerance with the investment avenues, it is essential to have the required financial knowledge or financial literacy. Even though no individual is free from psychological biases, the level of financial knowledge may significantly alter decision-making.

This study follows in the footsteps of behavioral finance theorists and provides further empirical evidence on the role of behavioral traits in financial decision-making. On the one hand, the study looks at the influence of psychological factors on the level of financial risk an individual is ready to embrace. On the other hand, it assesses the impact of financial risk-taking propensity on creating a hypothetical portfolio at various levels of financial literacy. The following sections of the chapter deal with the background of the research study, the specification of the research problem, and the research questions addressed. Further, the chapter also discusses the purpose, scope and significance of the study.

1.2 BACKGROUND OF THE STUDY

In the era of artificial intelligence and machine learning being used for solving complex problems and apprehending situations, the human mind is still the most complex of all creations. Human beings belong to a social environment which is changing over time, and to be able to think and act accordingly makes human beings the most creative beings. Completely deciphering the human mind is still an impossible task, even with several brain-mapping techniques available to understand the decision-making process taking place in the brain. When two individuals with the same level of information are presented with a decision problem, each one processes the problem and decides on a course of solution that varies. The whole process of decision-making can be brought down to one conclusive idea; individuals perceive their environment differently, and this is translated into every step taken.

The role of perception encompasses the area of economic choices. The standard economic theorists believed in the concept of homo economicus, which means individuals make choices on economic aspects to the best of their rational self-interest. The greatest works incorporating the idea of homo economicus include the Efficient Market Hypothesis (EMH), the Capital Asset Pricing Model (CAPM) and the Fama-French model (Sharpe 1964; Fama 1965; Fama 1991). The efficient market hypothesis proposes that all market information is reflected in the prices of stocks, and an individual can't beat the market. The central assumption of these models was that individuals have a perfect rationale and always make the best portfolio choices after weighing the risk-return criteria. Any market anomalies were considered deviations in the models and not attributed to irrational decision-making. A few economists observed that the market fluctuated more than the standard theories anticipated, and these fluctuations gave rise to logical arguments. Several pieces of evidence on the presence of heuristics, biases and bounded rationality emerged (Tversky and Kahneman 1974; Tversky and Kahneman 1992; Thaler and Sunstein 2008). As a result, there was a split among the economists into standard and behavioural economists. Further, the field of behavioral economics gave rise to a sub-field of interest; behavioral finance.

Behavioral finance is a multidisciplinary subject that combines conventional economic and financial theories to explain the influence of emotions and cognitive factors on an investor's behavior. This field of study has grown over three and a half decades since the inception of the 'Prospect Theory' developed by Daniel Kahneman and Amos Tversky in the year 1979. This theory proved that psychological biases influence the financial decisions of individuals. The theory also presented the aspect of investor irrationality against the long-standing principle that investors make only rational decisions. This school of thought received considerable attention from behavioral psychologists and finance theorists, which paved the way for further research. Many studies that followed, such as De Bondt and Thaler 1985; 1987; Daniel et al. 1998; Thaler 1999; Hirshliefer 2008; Garling et al. 2009; Barber and Odean 2013; De Bondt et al. 2013; Gerhard 2018, provided further evidence in support of investor irrationality and psychological biases in decision making. The 'Cumulative Prospect Theory', which is the advancement of prospect theory by Tversky and Kahneman in 1992, clearly

indicates the presence of heuristics in decision-making under uncertainty. The main difference between traditional and behavioral finances is that traditional finance fails to explain the reasons as to why investors make certain decisions (Bikas et al. 2013; Hens and Meier 2015). Therefore, behavioral finance addresses and answers the questions relating to the psychological aspects of financial decision-making that traditional finance fails to answer. This study attempts to add to the growing area of behavioural finance by empirically contributing from a developing country's point of view.

The investment decision scenario in India can be understood from the SEBI (Securities and Exchange Board of India) Investor Survey (SIS) report 2015. The report provides detailed insights into the investment decision-making of 50,453 households (rural and urban) in India. Among the rural respondents of the survey, only 0.234 per cent of households had investments in the securities market. Moreover, these investors resided close to urban centres or local district headquarters with better facilities. Urban households preferred investments in mutual funds compared to equities. The households belonging to middle-income groups saved more than households with the highest income. Capital gains and improving lifestyle were the top two motivations driving savings and investment decisions.

Further, as per the survey report, there was a correlation between higher educational levels and superior portfolio diversification. While making investments, more than 75 per cent of investors confided that they were depending on the services of financial intermediaries. Most of these investors chose their financial service providers based on their service quality. But when it came to trusting someone to make investment decisions, most investors trusted themselves and their decision-making skills (see Figure 1.1). This shows that individuals are subject to the bias of self-confidence even before the actual investment process. Many other behavioral phenomena explained in the behavioral finance literature point out the mistakes investors commonly make, leading to the loss of wealth.

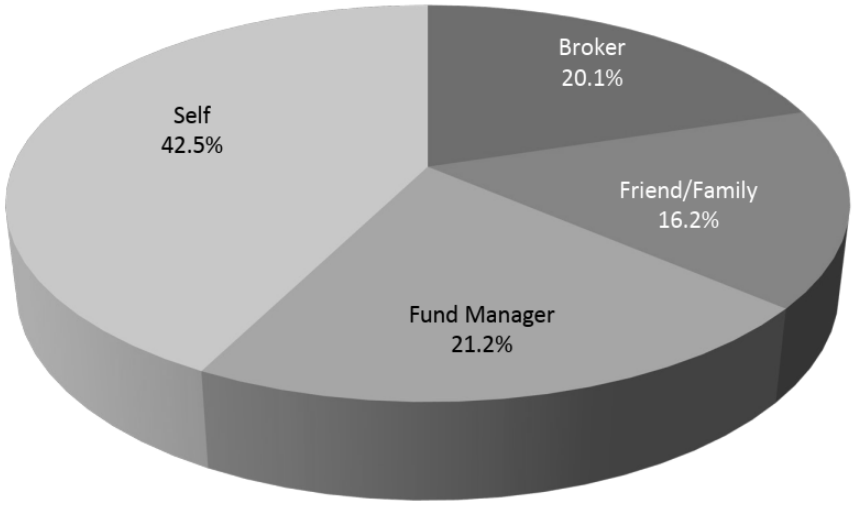

Figure 1.1: Trust Concerning Investment Decision-Making

Source: SEBI Investor Survey Report, 2015

The perceptions of households concerning risk are not always in line with the actual risk associated with the investment. Most investors associate risk with danger rather than a thrilling aspect or opportunity and hence display high levels of risk aversion. This perception of risk gives rise to various biases, and it has been proven that individual psychology has a direct impact on the growth of the securities market. Thus it is clear that the investment decisions of retail investors are, to a considerable extent, linked to economic growth. Therefore, studying the risk appetite of individual investors based on psychological factors and the impact financial education has on the diversification of a portfolio is still an important task to be looked into by academicians and policy-makers.

1.3 PROBLEM STATEMENT AND RESEARCH GAPS

The Indian economy is one of the fastest-growing and emerging economies in the world. The UN (United Nations) report in April 2023 declared India the most populous country and is projected to grow for several decades (UN DESA Report, 2023). More than half of the population of India is under the age of 35, as documented in the Census India report of 2011. This presents a great opportunity for the growth of the Indian

financial sector since they can tap the savings of the younger generation, who are constantly looking for wealth accumulation and financial security. The risk appetite of a person influences the composition of portfolios, and this composition has a direct influence on wealth accumulated (West and Worthington 2014). The research in the area of investment decision-making and the factors affecting these decisions can deepen the understanding of financial service providers and help them in devising effective ways and means of channelling the savings of individuals.

The prior research has revealed that demographic factors, personality traits and behavioral biases influence the financial risk-taking propensity, which in turn influences the investment decisions of an individual. Though earlier research has investigated these relationships, most of these studies have been conducted by analysing the investment made in a particular investment avenue or very few numbers of avenues. Moreover, the studies are mostly conducted in advanced countries, and the factors are studied separately by different researchers. The majority of the studies look into household portfolio composition, and only a few have considered individual hypothetical portfolio construction with a wide range of avenues available in the Indian financial market. This study is focused on understanding the collective influence of demographic factors, personality traits, behavioral biases, risk-taking propensity and financial literacy on the choice of a wide range of investment avenues. The present study also aims to provide a more realistic view of the intended investment behaviour of individuals as making portfolio construction with a growing number of investment avenues is a complex decision process.

The role of financial literacy as a regulator of improved investment behaviour has been established in research works in the past (Abreu and Mendes, 2010; Agarwalla et al., 2015; Grohmann, 2018; Lahiri and Biswas, 2022; Chen et al., 2023). There is a growing body of research focusing on the relationship between financial education and improved financial behaviour in actual and hypothetical situations (Hilgert et al., 2003; Cole et al., 2009; Carlin and Robinson, 2012; Hibbert et al., 2013; Adil et al., 2022). However, there are only a limited number of researchers have explored how financial literacy moderates investment behaviour, particularly from the lens of lower-middle-income countries such as India.

1.4 RESEARCH QUESTIONS

The present study seeks to answer six research questions in light of the research background and research gaps. The following are the research questions formulated:

1. What are the various psychological factors that influence the financial risk-taking propensity of individuals?

2. What is the influence of select psychological factors on the financial risk-taking propensity of individuals?

3. What is the impact of personality traits on the financial risk-taking propensity of individuals?

4. What is the impact of demographic factors on the financial risk-taking propensity of individuals?

5. What is the effect of the financial risk-taking propensity of individuals on the creation of hypothetical portfolios?

6. Does financial literacy moderate the relationship between risk-taking propensity and hypothetical portfolio creation?

1.5 OBJECTIVES OF THE STUDY

The research in behavioural finance is in its infant stages in the Indian economy. This study aimed to provide empirical evidence on the role of cognitive and non-cognitive factors in an economic context and individual investment behavior. The study aims to achieve the following objectives based on the research gaps identified in past works:

1. To identify the psychological factors influencing the general financial risk-taking propensity of individuals.

2. To examine the influence of select psychological factors on the financial risk-taking propensity of individuals.

3. To analyse the impact of personality traits of individuals on their financial risk-taking propensity.

4. To evaluate the impact of demographic factors on financial risk-taking propensity and hypothetical portfolio creation.

5. To analyse the relationship between financial risk-taking propensity and hypothetical portfolio creation.

6. To assess the role of financial literacy as a moderator between risk-taking propensity and the creation of hypothetical portfolios by individuals.

1.6 SIGNIFICANCE OF THE STUDY

The study helps provide insights into the behaviour of individuals concerning the choice of investment avenues and also puts forth the levels of risk-taking propensity and financial literacy of Indian customers. These results would benefit financial product designing, improvement of existing financial products (redesigning) and product customisation. In a fast-growing and technology-oriented world, financial service providers must thoroughly know the customers. Understanding individual differences not only helps in tapping the market potential but also in gaining trust and confidence from the customers. The knowledge of risk associated with various investment products helps formulate investment plans. The achievement of long-term financial goals is dependent on well-constructed plans. When an investment is made without planning, it is equal to constructing a building without a blueprint, and both of these situations result in disastrous outcomes (Pompian 2011). Therefore, financial service providers must take note of the factors affecting the process of financial decision-making to assist individuals in making profitable personal financial plans which will maximise the benefits at both ends. Financial advisors must make it their ultimate goal to suggest the best investment plans which fit the investment needs and risk appetite of their clients (Hari et al. 2018). The study results are significant not only for financial service providers but also for government financial institutions and individual investors themselves. Individual investors can come to an understanding based on the findings of the study about normal investment behaviour and the impact that cognitive and non-

cognitive factors can have on judgement and decision-making related to financial investment. Government financial institutions are the bodies in charge of the mass dissemination of investment-related information. Given the level of financial literacy of individuals through the study results, these government bodies can work on the necessary provisions of building the literacy levels by incorporating better awareness programs for the general public, especially the younger generation.

1.7 METHODOLOGY

The research questions and objectives of the present study were addressed by employing a suitable research methodology. The proposed relationships between the constructs were tested based on quantitative data collected through a survey-based approach. The target population of current and potential Indian individual investors was considered based on the purpose and scope of the research study. A pilot survey was conducted to check the reliability and validity of the research instrument. The final questionnaire was prepared by incorporating necessary changes based on the pilot survey results. For the final study, multi-stage non-probability sampling techniques were used to identify the respondents. The sample included 976 individuals who participated voluntarily in the survey by answering a self-administered questionnaire. The researcher adopted both online and offline modes of questionnaire distribution. The data was analysed using IBM SPSS (version 20) and IBM AMOS (version 21) software. The study used statistical techniques such as structural equation modelling (SEM), t-tests, ANOVA and ordinal logistic regression to test the hypotheses.

1.8 SCOPE OF THE STUDY

Decision-making is an integral part of human life. Human beings are constantly placed in decision-making situations every single day, and one of the most important decisions is financial decision-making. The environment around us is getting increasingly sophisticated as the days pass by. Managing one's finances was a comparatively easier task a few years earlier. However, the speeding pace of technological advancements has led to the introduction of a variety of financial products, and the task of personal financial planning is turning out to be complicated (Agarwalla 2015). While the choices

made by individuals may be orderly, they may not always be rational (Tversky and Kahneman 1992). The individual financial decision-making process has been an area of great interest to academicians and researchers worldwide. Though the decision-making process seems easy, it involves complex activities to be undertaken by the individual before arriving at a decision. Therefore, there is a need to study the factors that impact the financial decision-making process. The study on the impact of psychological biases, personality traits and demographic factors on individual choice of investment avenues is confined to the Indian context. The study focuses on individuals aged 18 years and above who have at least three investments.

1.9 OPERATIONAL DEFINITION OF KEY VARIABLES

The operational definitions of variables of the study provide how each construct is looked at from the specific lens of the current study. The operational definitions of variables used in the study are given below:

Optimism: It is the general tendency to feel hopeful about life events and be positive about the favorable outcome of any decision made. Optimism is not only concerned with a positive outlook on the present but also future events and decisions.

Self-control: It is the ability to control one's impulses and make decisions in favour of long-term benefits that will be enjoyed in the future, compared to deciding to enjoy short-term benefits in the present.

Mood: It is the degree of positive and negative emotions of an individual that affect decision-making in all areas of life. It is the general state of feeling of an individual that is not necessarily bipolar but heavily lies on either overall positive or negative emotions.

Openness to experience: It is the extent to which an individual is willing to accommodate new experiences in life. It also includes the imaginative and creative aspects of an individual.

Conscientiousness: It is the trait associated with the ability of an individual to be self-disciplined and organised. It is also the degree to which an individual is reliable.

Extraversion: It is the trait that describes the extent of the outgoing nature of an individual. It is the level of comfort an individual exhibits when interacting with others.

Agreeableness: It is the trait associated with the pleasing nature and likeability of an individual. It is the extent to which one is perceived as kind and selfless.

Neuroticism: It describes the level of emotional instability of an individual in handling one's own emotions, more specifically, negative emotions.

Financial risk-taking propensity: It is the degree of risk an individual is ready to accept concerning the financial decision of investing between safe and risky investment avenues.

Financial literacy: it is the level of financial knowledge an individual possesses that contributes to sound financial decisions.

1.10 ORGANISATION OF THE THESIS

The contents of the thesis will be presented in six chapters**.** A brief description of each of the chapters is as follows:

Chapter 1: Introduction

The first chapter introduces the current study, highlights the research background and states the research problem. It also discusses the research questions to be answered and the objectives that the study aims to fulfil. Further, the scope of the study and its significance is also presented.

Chapter 2: Literature Review

The second chapter puts forth a review of the literature on the study variables considered for the study, namely psychological biases, personality traits, demographic factors, risk-taking propensity, financial literacy and choice of investment avenues. It also sheds light on the importance of behavioural finance in explaining the economic choices of individuals.

Chapter 3: Theoretical Framework

The third chapter presents the theoretical underpinnings for the study. Based on the prior works and theoretical relationships of variables, the conceptual framework of the study and the research hypotheses are framed.

Chapter 4: Research Methodology

The fourth chapter discusses the methodology employed in the study. The research paradigm provides the approach used for the study. Further, the research design covers aspects of the population and sampling, the research instrument used, the tools employed to analyse the responses collected and the ethical considerations concerning the study.

Chapter 5: Data Analysis and Results

The fifth chapter reports the data analysis results for the pilot survey and the final study. The demographic profile of the final study, validity and reliability of the constructs, hypotheses testing using two-step structural equation modelling and ordinal regression, and the summary of hypotheses testing are laid down in this chapter.

Chapter 6: Discussions, Conclusions and Limitations.

The sixth chapter provides the discussions and the theoretical and managerial implications of the study. The study's limitations and directions for future research are also presented. The chapter lastly puts forth the important conclusions drawn from the study results.

1.11 CHAPTER SUMMARY

The magnitude of the influence of heuristics and biases on individual decisions was presented to the world by two Nobel laureates, Daniel Kahneman and Amos Tversky. These pioneers in behavioural economics changed the way of looking at standard economics and financial models. The concept of rationality received a re-definition that was more in line with actual human behaviour accounting for flaws and errors. The present chapter has pointed out the evolution of standard finance models, which led to

a flourishing field of research called behavioural finance. The chapter emphasises the need to address the impact of psychological, personality and demographic factors on the financial risk-taking of individuals in the Indian context. The research questions have been laid down to shape the study's outcome and retain focus on what the researcher needs to report. The scope of the study has set the boundaries within which the researcher intends to conduct the research. Further the chapter provided the operational definitions of the constructs within the purview of the hypothesised relationships for the study. The second chapter provides a detailed discussion of these constructs, and the third chapter explains their application in the current research.

CHAPTER 2

THEORETICAL AND EMPIRICAL LITERATURE

2.1 CHAPTER OVERVIEW

This chapter discusses the various constructs of the study in detail. The concept of behavioural finance and psychological biases and their importance in the present research context has been presented in the first part of the chapter. The psychological factors, optimism, self-control, and mood chosen as constructs for the study are reviewed based on their transition from purely psychological constructs to finding relevance in the financial domain. The influence of five personality traits, openness to experience, conscientiousness, extraversion, agreeableness and neuroticism, on risk-taking propensity and investment choice has been presented in the subsequent sections of the chapter. The demographic factors play a vital role in financial decisions; therefore, these factors have been reviewed in the context of the present study. Further, the role of financial literacy has also been discussed. The last section of the chapter provides the research gaps found after reviewing the literature that establishes the base for conducting the study.

2.2 THEORETICAL LITERATURE

Behavioural economics is an emerging branch of economics that uses models with psychological and social factors to study the impact on economic decision-making. The father of economics, Prof. Adam Smith, highlighted the importance of human judgement in his publication 'The Theory of Moral Sentiments' by providing psychological explanations for the economic behaviour of individuals (Smith 1759). In the neo-classical era, economists tried to separate human behaviour and economic decision-making by developing utility models. According to the rational choice approach, individuals act on market information and make the best possible decision after evaluating the risk-return pay-off associated with the decision (Fama 1970; 1991). Fama (1998) laid down arguments supporting market efficiency by reviewing the literature on long-term anomalies. His work concluded that long-term market anomalies are the result of chance events and the use of a particular methodology, and these anomalies would cease to exist when reasonable changes were made to the techniques of models applied. Even after accounting for anomalies in the model or change of

methodology, the models could not predict certain unexpected events, such as bubbles and the great recession that led to a global financial crisis.

"Behavioural economics increases the explanatory power of economics by providing it with more realistic psychological foundations" (Camerer and Loewenstein 2004, p. 3). Behavioural economics decodes the decision-making of individuals based on concepts of microeconomics, psychology as well as neuroscience. Therefore, behavioural economics, as a field, results from an overlap between the literature of disciplines such as psychology, neuroscience and economics (Earl 2005; Camerer 2007; Fetchenhauer et al. 2012) (Figure 2.1). The methodology of these disciplines is intertwined to arrive at a valid answer to complex behavioural questions.

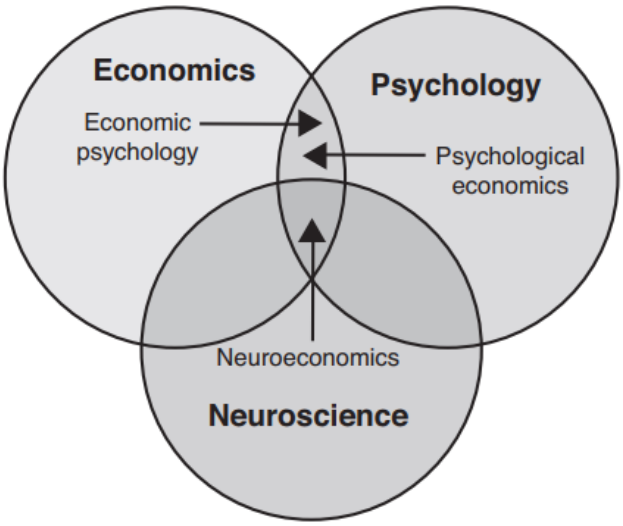

Figure 2.1: Nature of Behavioral Economics

***Source:** Mallard (2015)*

Economic psychology applies the methodologies of economics to psychological concepts, and psychological economics uses methodologies from psychology to understand economic behaviour. With the advancement in technology in understanding the human brain, neuroeconomics is gaining importance by providing real-time explanations of how a brain performs an economic decision.

Herbert Simon explained the role of cognitive biases in information processing, leading to the popular term bounded rationality two decades before behavioural finance took shape as a discipline. According to bounded rationality proposed by Simon, "the cognitive abilities of human decision-makers are not always sufficient to find optimal solutions to complex real-life problems, leading decision-makers to find satisfactory, suboptimal outcomes" (Mallard 2015, p.2). As compared to behavioural economics, bounded rationality is a narrow concept that analyses the decision-making of an individual with limited cognitive capabilities due to the complex nature of the decision problem (Simon 1955). The utility maximisation approach of standard economics is not applicable in all cases in real-world decisions.

Bounded rationality gives a more realistic understanding of decision-making by explaining two important aspects of how an individual chooses a course of action from a set of alternatives. The first aspect points out that individuals are suboptimal decision-makers. Given a complex decision problem, an individual may not have complete knowledge of the decision alternatives and choose an alternative within the limited alternatives perceived by the decision maker. Peters (2003) proposed that rationality depends on the complexity of the decision problem. When problems are simple and objective, one can apply statistical methods to solve them. But when complex problems have to be solved, employing pattern recognition techniques can help to arrive at optimal outcomes. Therefore, irrationality results from choosing the wrong methods to solve a problem. Exhibiting bounded rationality does not mean an individual is irrational. What it does mean is that the individual is rational, but rationality is limited to the extent of information processed by the individual.

The second aspect of bounded rationality emphasises that an individual has limited rationality and not perfect rationality due to various behavioural aspects. An individual's behaviour is the most important ingredient influencing any action undertaken. The world of finance has seen a huge change wave in terms of how people make financial decisions. Right from the perception of an investment to the decision to actually invest in an avenue, people exhibit different behavioural biases. With the rising empirical evidence to support this claim, finance is spreading its branches to many other disciplines of human behaviour.

2.3 PSYCHOLOGICAL FACTORS / BIASES IN BEHAVIOURAL FINANCE

The standard finance assumes all investors to be rational in their planning and decision-making. The anomalies in the market were considered as results of the chance factor. There was a paradigm shift in looking at investors' investment decisions individually and collectively as repeated irregularities in the stock market began showing up. The relevance of investor rationality was widely debated among researchers (Shleifer 2000; Frankfurter and McGoun 2000; Rubinstein 2001; Shiller 2003). In the stock market, anomalies were pointed out by several researchers, who showed that stock prices fluctuate more than that suggested by standard finance theories (Kemp and Reid 1971; Beja 1977; Shiller 1979; LeRoy and Porter 1981; Shiller 1981; De Bondt and Thaler 1985; Lo and MacKinlay 1988; Jegadeesh 1990; Chopra et al. 1992; Lee et al. 2010; Haugen 2010). The anomalies pointed out were picked up by several researchers, and substantial evidence of these anomalies was building up. The entire idea upon which standard finance rested was questionable. Even with broadening evidence, the researchers could only come up with works that pointed out the anomalies but lacked an explanation of why these anomalies were happening. In other words, those researchers who disagreed with the efficient market theory presented evidence through anomalies but did not provide the reason for the occurrence of such anomalies. These researchers came to be known as behavioural finance researchers, and the field was named behavioural finance.

Behavioural finance is a subfield of behavioural economics wherein the behavioural economics theories are extended to financial decision-making. The field of behavioural finance is narrower than behavioural economics, as the focus is restricted to understanding the impact of psychological factors on investor decision-making. The term behavioural indicates the need to study and prove the influence of psychological factors on financial decisions.

Further research focused on irregularity in information processing for decision-making. Traditional finance considers there is no chance of information trading, and all investors know all public information related to the stock market. In reality, all investors do not process the available information similarly and may therefore have bounded rationality

(Simon 1986; Barberis and Thaler 2003; Stracca 2004). Such information friction causes the investors to be influenced by various heuristics and biases (Kahneman and Tversky 1974). The researchers could now explain the observed market anomalies caused by herd behaviour, overconfidence, overreaction, underreaction and so on in the light of psychological phenomena (DeBondt and Thaler 1985).

Table 2.1: Traditional Finance V/S Behavioural Finance

Criteria of Difference	**Traditional finance**	**Behavioural finance**
Investor characteristics	An investor is a rational person who can process all information unbiasedly.	Heuristics, biases and emotions influence investors, and these factors play an important role in the type of investments undertaken
Rationality	Investors have complete rationality as they receive unlimited knowledge, data and information that are complete.	Investors have bounded rationality and do not process all information. Thereby, they are bound to make errors in judgement.
Market condition	The market is efficient and represents the financial market's true value. This is because investors are believed to have self-control.	The market is volatile and subject to anomalies. Investors don't have perfect self-control, and therefore, limitations exist.
Theory	Traditional finance follows utility theory.	Behavioural finance relies on prospect theory.

Source: Author compiled from literature review

Experimental finance formed a further part of behavioural finance to understand investor behaviours in general (Starmer and Sugden 1989). Financial data was analysed by establishing different market settings and observing investor behaviour to answer specific research questions about why investors behave in a certain way. From general investors or the study of investors as a group, the focus shifted to individual investor

behaviour with the rise of financial institutions. Empirical studies on testing hypotheses based on psychological literature rather than non-rational decision-making models sought to analyse how an individual investor behaves (Barber and Odean 1999). The studies thereon have helped in creating various investing strategies by understanding psychological biases both through experimental and empirical analysis (Starmer and Sugden 1989; Odean 1998a, 1998b, 1999; Daniel et al. 1998; Barber and Odean 1999, 2000). Behavioural finance at present seeks to uplift the idea that investors are influenced by one or other psychological factors making an investor normal. This idea of a normal investor compared to a rational investor is more realistic in its approach.

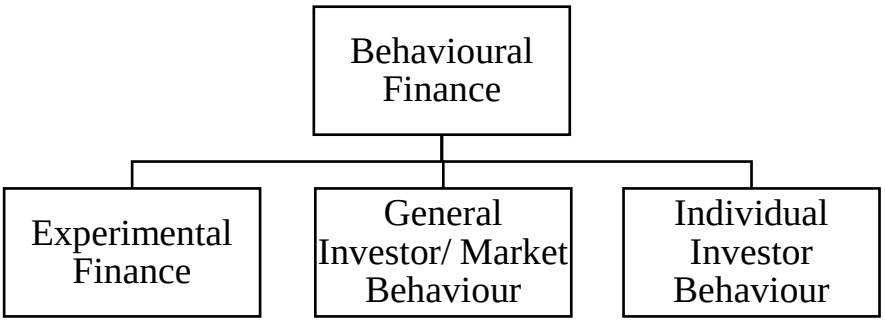

Figure 2.2: Categories of Behavioral Finance Studies

Source: Author compiled based on literature review

Pompian (2006), in his book behavioural finance and wealth management, has divided behavioural finance into two subtopics: a) Behavioral Finance Micro (BFMI) and b) Behavioral Finance Macro (BFMA). BMFI refers to studies on the biases or psychological factors exhibited by individual investors and highlights the concept of irrationality in decision-making in contrast to classical economic theories. These studies mainly focus on helping financial service providers gain insight into identifying the biases of their clients and minimising asset allocation problems. BFMA studies include the observation and evidence of market anomalies against the findings of the efficient market hypothesis.

The present study focuses on the works related to general and individual investor behaviour in real-time and experimental set-ups, which are reviewed to arrive at a

general understanding of the behavioural biases that have shaped the field of behavioural finance.

People experience the effect of illusions, emotions, false perceptions and other irrational factors while making decisions under uncertainty (Guzavicius et al. 2014). Without adequate psychological knowledge, investors turn out to be amateur psychologists themselves based on their prior financial experiences causing errors and biases (Slovic 1972). The neuroscientific studies have established that individual biases have deep cognitive roots rather than just the result of the external environment (Haselton et al. 2016). The literature documents many behavioural factors or biases within the umbrella of behavioural economics and finance. Various authors have studied the role played by specific biases in the stock markets. Barber and Odean (1999) studied the effect of overconfidence bias and disposition effect in stock market investments. After analysing portfolios of 10000 randomly selected accounts provided by a national discount brokerage house, it was found that investors do exhibit the disposition effect by selling winning stocks more than losing stocks. Overconfident investors traded more, leading to a decrease in their expected utility and thereby earning less. Bakar and Yi (2016) studied the impact of psychological factors on investors' decision-making in the Malaysian Stock Market. The findings show that overconfidence, conservatism and availability bias significantly impact the investor's decision-making while herding behaviour has no significant impact on the investors' decision-making. Hoffman and Post (2014) empirically tested the influence of self–attribution bias on consumer financial decision-making. The results showed a positive relationship between an individual's investment returns in a given period and self-attribution score. With a decrease in returns, the individuals took less personal responsibility for their investment performance. The study of investors concerning stock market investments has helped identify specific biases, some of which apply to general investment or financial risk-taking behaviour. The investing process equates to a roller coaster ride of emotions (see Figure 2.3), with different emotions exhibited at various points giving rise to biased decision-making (Hens and Meir 2015). Not only do amateur investors suffer from various biases while investing, but also those investors who have been investing for a long period.

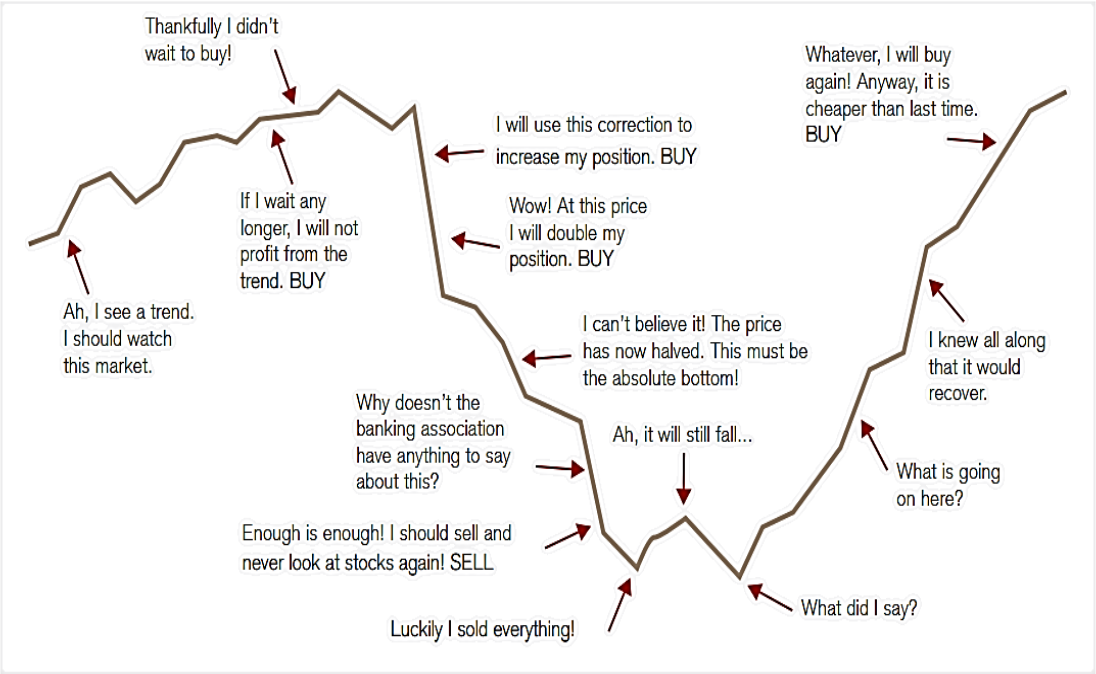

Figure 2.3: Roller-Coaster of Emotions of an Investor

Source: Hens and Meir (2015)

Most of the behavioural factors or biases are related to the stock market (Odean 1998a; 1998b; 1999; Barber and Odean 1990, 2000; Daniel et al. 1998; Balvers et al. 2000; Fenton-O'Creevy et al. 2005; Prosad et al. 2015), but the influence of these factors is not restricted to stock market investments. Oechssler et al. (2009) studied the relationship between behavioural biases, namely conjunction fallacy, conservatism and anchoring, and cognitive abilities, using a large-scale internet-based experiment. Respondents were categorised into two cognitive groups based on the cognition reflection test. The study found that the behavioural biases were more noticeable for the group with low cognitive abilities. Another finding that makes behavioural biases important is that even if the biases were less pronounced in effect for respondents with high cognitive abilities than respondents with low cognitive abilities, the incidences were substantial. A substantial number of studies have highlighted the presence of biases from all three categories of behavioural economics, namely economic psychology, psychological economics and neuroeconomics.

Figure 2.4: List of Biases and Heuristics

Source: Nigam et al. (2018)

Authors in the past have named biases and categorised them based on some inherent characteristics of the Bias through empirical evidence. Nigam et al. 2018 have classified behavioural biases into six broad categories; decision-making biases, belief biases, heuristics, memory errors, sentiments and others. Figure (2.4) shows the pictorial representation of the six categories of biases, and each category has several biases listed from the review of literature carried out by the authors. Sahi et al. (2013) conducted an interview-based study to identify the psychological biases of individual investors that have an impact on financial investment behaviour. An in-depth interview was conducted with 30 respondents based on criterion sampling. The interview revealed 19 themes based on the beliefs and preferences expressed by the respondents. Most of the biases were positively associated with a sense of satisfaction in financial planning,

making investor biases a normal phenomenon. The researchers concluded that these beliefs are both from emotional and logical points of view and are an inherent part of financial decision-making. Pompian (2006) has highlighted the fact that the implications of biases or psychological factors on individual investor behaviour are more important than the categorisation of the biases by merely stating the biases identified broadly as cognitive or emotional. Even though there is no exhaustive list of psychological biases or factors, as the field is still in its nascent stages, the works of researchers in behavioural finance have been reviewed, including studies based on a meta-analysis (e.g., Calzadilla et al. 2021) to provide an understanding of the major biases or psychological factors affecting investors.

The major biases or psychological factors that impact the investment behaviour of individuals, curated from the important works in the behavioural finance literature are given below:

Affect Heuristic

Alternative terms: Positive Affect and Negative Affect, Mood
Description: The tendency to rely on emotions for making decisions rather than information-based decision-making (Watson and Tellegen 1985; Forgas et al. 1995; Tellegen et al. 1999; Finucane et al. 2000; Slovic et al. 2002; 2004; 2005; 2007; Slovic and Peters 2006; Mittal et al. 2021).

Affinity Bias

Description: The tendency to align investment choices and decisions that are considered to reflect the values of the investor. E.g., Patriotism, socially responsible investing (Hong and Kostovetsky 2012; Van Duuren et al. 2016; Auer and Schuhmacher 2016; Pedersen et al. 2021)

Ambiguity Aversion

Description: The tendency to choose those decisions whose probabilities are known rather than those unknown due to lack of information. (Klibanoff et al. 2005; Ellsberg 1961; Heath and Tversky 1991; Fox and Tversky 1995; Tversky and Fox 1995; Chen and Epstien 2002; Dimmock et al, 2016; Bellemare et al. 2022)

Anchoring and Adjustment Bias

Description: Refers to using the security's purchase price as a benchmark figure and basing the decision of selling the stock on this reference point or anchor. (Tversky and Kahneman 1974; Northcraft and Neale 1987; Chapman and Johnson 1994; Brewer and Chapman 2002; Campbell and Sharpe 2009; Oechssler et al 2009; Cen et al. 2013)

Availability Bias

Alternative terms: Attention Bias
Description: Refers to estimating the probabilities of outcomes based on how quickly familiar outcomes can be retrieved from memory. (Tversky and Kahneman, 1973; 1974; Kahneman et al. 1982; Dube-Rioux and Russo 1988; Odean and Barber 2002; Peng and Xiong 2006; Ratnadi et al. 2020; Jain et al. 2020)

Cognitive Dissonance

Description: Refers to the mental discomfort caused by the conflict between new information and pre-existing understandings. (Festinger 1957; Gilad et al. 1987; Rabin 1994; Goetzmann and Peles 1997; Shiller 1999; Friesen and Weller 2006; Antoniou et al. 2013; Chang et al. 2016)

Confirmation Bias

Description: The tendency to support information that aligns with one's belief system and assumptions. (Statman and Fisher 2000; Kosnik 2008; Lewis 2012; Park et al. 2013; Nelson 2014; Duong et al. 2014; Chang and Cheng 2015; Moravec et al. 2019)

Conjunction Fallacy

Description: Refers to the belief that a joint event is more probable than each event happening separately. (Tversky and Kahneman 1983; Agnoli and Krantz 1989; Gavanski and Roskos-Ewoldsen 1991; Cosmides and Tooby 1996; Oechssler et al. 2009; Charness et al. 2010; Rieger 2012)

Conservatism Bias

Description: Refers to the overweighing of original and pre-existing information over new information leading to slow reaction and adjustment to the updated situation.

(Edwards 1968; Barberis et al. 1998; Hirshliefer 2001; Chan et al. 2004; Oechssler et al. 2009; Hoppe and Kusterer 2011; Costello and Watts 2014; Kariofyllas et al. 2017)

Disposition Effect/ Bias

Description: Refers to the selling of winning stocks and holding on to stocks making a loss. (Shefrin and Statman 1985; Odean 1998a; Weber and Camerer 1998; Ferris et al. 1998; Venezia 2001; Feng and Seaholes 2005; Locke and Mann 2005; Grinblatt and Han 2005; Statman et al. 2006; Frazzini 2006; Chen et al. 2007; Barber et al. 2007; Barberis and Xiong 2009; Calvet et al. 2009; Shapira et al. 2012; Barber and Odean 2013)

Endowment Effect/ Bias

Description: The tendency to value an asset more when one is in possession of it compared to when one does not own it. (Knetsch 1989; Kahneman et al. 1991; List 2003; Hoppe and Kusterer 2011; Ashby et al. 2012)

Framing Bias

Description: The tendency of the decision maker to respond to the same piece of fact or information differently based on how the information is presented or framed. (Kahneman and Tversky 1979; 1984; Zeckhauser et al. 1991; Kahneman 2003; De Martino et al. 2006; Dellavigna 2009; Schwager and Rothermund 2013; Gamliel and Kreiner 2013; Singh et al. 2016; Basu and Dulleck 2020)

Gambler's Fallacy

Description: Refers to the erroneous overestimation or underestimation of the effective probabilities of certain future events. (Ayton and Fischer 2004; Johnson et al. 2005; Johnson and Tellis 2005; Rabin and Vayanos 2010; Kudryavtsev et al. 2013)

Herding

Description: The tendency to imitate other people's judgements while making decisions. (Zeckhauser et al. 1991; Lakonishok et al. 1992; Wermers 1999; Nofsinger and Sias 1999; Cont and Bouchaud 2000; Gleason et al. 2004; Tan et al. 2008; Chiang

and Zheng 2010; Economou et al. 2011; Lao and Singh 2011; Litimi et al. 2016; Guney et al. 2017; Indras et al. 2019)

Hindsight Bias

Description: The tendency to overestimate one's own ability to predict an event by having an anticipated explanation for everything after the event has occurred. (Fischoff 1975; Fischhoff and Beyth 1975; Posner 1997; Cooper et al. 2005; Biais and Weber 2008; Roese and Vohs 2012; Tavor 2013)

Hot (Cold) Hand Fallacy

Description: The tendency to believe that a series of past successes (failures) will more likely lead to further success (failure). (Ayton and Fischer 2004; Johnson et al. 2005; Johnson and Tellis 2005; Rabin and Vayanos 2010; Kudryavtsev et al. 2013; Miller and Sanjurjo 2018)

Home Bias

Alternative terms: Familiarity Bias

Description: The behaviour of holding domestic or familiar securities in the portfolio rather than foreign stocks or other more viable options that would help in portfolio diversification. (Kang and Stulz 1997; Lewis 1999; Coval and Moskowitz 1999; Glassman and Riddick 2001; Huberman 2001; Bae et al. 2008; Magi 2009; Ke et al. 2010; Cao et al. 2011; Morse and Shive 2011; Wang et al. 2011; Pool et al. 2012; Kim et al. 2014)

Hyperbolic Discounting

Alternative terms: Present Bias

Description: The predisposition to choose immediate rewards that are certain over future rewards, even when the immediate rewards are smaller. (Laibson 1997; 1998; Rachlin et al. 1991; O'Donoghue and Rabin 1999; Gintis 2000; Bernheim et al. 2001; Harris and Laibson 2001; Johnson and Bickel 2002; Koszegi and Szeidl 2013)

Illusion of Control

Description: The belief that one is in control or greatly influences the outcomes of the decisions taken that are uncontrollable in reality. (Langer 1975; Barber and Odean 2002; Breinholt and Dalrymple 2004; Fellner 2004; Charness and Gneezy 2010; Chu et al. 2012; Noori 2016; Lather et al. 2020; Basu and Dulleck 2020; Hsu et al. 2021; Parmitasari et al. 2022; Ul Abdin et al. 2022)

Loss Aversion

Description: The tendency to place avoiding losses over the acquiring of gains. (Kahneman and Tversky 1979; Mehra and Prescott 1985; Bowman et al. 1999; Barberis et al. 2001; Barberis and Huang 2001; Schmidt and Traub 2002; Berkelaar et al. 2004; Ariely et al. 2005; Cambrer 2005; Novemsky and Kahneman 2005; Köbberling and Wakker 2005; Brooks and Zank 2005; Ert and Erev 2013)

Mental Accounting

Description: Refers to the making of mental compartments of gains and losses that do not exist financially, leading to irrational decisions. (Kahneman and Tversky 1984; Shefrin and Statman 1985; Shefrin and Thaler 1988; Thaler 1999; Prelec and Simester 2001; Barberis et al. 2001; Ackert et al. 2003; Nevins 2004; Grinblatt and Han 2005; Das et al. 2010)

Myopic Loss Aversion

Description: Refers to having a short-term view of stock performance with a constant fear of losses leading to selling stocks in a short period. (Benartzi and Thaler 1995; Gneezy and Potters 1997; Thaler et al. 1997; Gneezy et al. 2003; Haigh and List 2005; Bellemare et al. 2005; Langer and Weber 2005; Fellner and Sutter 2009; Charness and Gneezy 2010; Eriksen and Kvaloy 2010a; 2010b; Lee and Veld-Merkoulova 2016)

Outcome Bias

Description: The tendency to evaluate a decision based on its outcome or past similar outcomes. (Hershey 1988; Boles and Messick 1995; Stanovich and West 1998;

Mazzocco et al. 2004; Stanovich and West 2008; Baron and Teovanović et al 2015; Savani and King 2015; Bachmann 2018; König-Kersting et al. 2021)

Overconfidence Bias

Description: Refers to overestimating one's knowledge and cognitive abilities and the precision of information. (Daniel et al. 1998; Odean 1999; Daniel and Titman 1999; Barber and Odean 2001; Gervais and Odean 2001; Barber and Odean 2002; Peng and Xiong 2006; Glaser and Weber 2007; Hoppe and Kusterer 2011; Lambert et al. 2012; Singh et al. 2016; Basu and Dulleck 2020; Ul Abdin et al. 2022)

Overreaction and Underreaction

Description: Refers to the trading behaviour influenced by either too much (overreaction) reaction or too little (underreaction) reaction to a piece of new information or news. (De Bondt and Thaler 1985; 1987; Abarbanell and Bernard 1992; Chopra et al. 1992; Fama 1998; Barberis et al. 1998; Daniel et al. 1998; Hong and Stein 1999; Lee and Swaminathan 2000; Singh et al. 2016)

Pessimism Bias

Alternative terms: Unrealistic Pessimism

Description: Refers to the tendency to overestimate the probabilities of facing a negative event. (Malmendier and Nagel 2011; Sando et al. 2012; Kuhnen 2015; You et al. 2017; He et al. 2019; McAllister and Nase 2020)

Recency Bias

Description: The tendency of people to make decisions by recalling recent events more easily and clearly and neglecting events that are not fresh in their minds. (Bhootra and Hur 2013; Nofsinger and Varma 2013; Sulistiawan and Wijaya 2015; Low and Tan 2016; Hao et al. 2016; Royal 2017; Gandre 2020; Rudiawarni et al. 2020; Rabbani et al. 2021; Durand et al. 2021)

Regret Aversion Bias

Description: Refers to avoiding regret by refusing to accept that a poor initial investment decision was made, where the decision was either an error of commission

or an error of omission. (Shefrin and Statman 1984; Humphrey 1995; 2004; Singh et al. 2016; Somasundaram and Diecidue 2017; Isidore and Christie 2018; 2019a; 2019b; Ady and Hidayat 2019; Jain et al. 2020; Hala et al. 2020; Hsu et al. 2021; Quaicoe and Eleke-Aboagye 2021; Ritika and Kishor 2022)

Representativeness Bias

Alternative terms: Base Rate Fallacy

Description: It is the tendency to assess the probability of an event based on a mental prototype of similar events while faced with an uncertain situation or event. (Kahneman and Tversky 1972; 1973; Tversky and Kahneman 1974; Kahneman et al. 1982; Gigerenzer et al. 1988; Agnoli and Krantz 1989; Fisher and Statman 1999; Ayton and Fischer 2004; Gennaioli and Shleifer 2010; Luo 2013; Bordalo et al. 2016; Boussaidi and AlSaggaf 2022; Xie et al. 2022)

Self-Attribution Bias

Alternative terms: Self-Serving Bias, Self-Enhancing Bias

Description: The tendency to attribute success to innate aspects and failure to chance or situational factors. (Dunn 1989; Daniel et al. 1998; Gervais and Odean 2001; Barber and Odean 2002; Duval and Silvia 2002; Libby and Rennekamp 2012; Hoffman and Post 2014; Mishra and Metilda 2015; Singh et al. 2016; Mushinada and Veluri 2020; Czaja and Roder 2020; Hsu et al. 2021; Naveed and Taib 2021; Chou et al. 2021)

Self-Control Bias

Description: Refers to the inclination to spend more in the present and save less for the future due to skewed time preference for investing. (Thaler 1980; Shefrin and Statman 1985; Shefrin and Thaler 1988; Levin 1998; Laibson et al. 1998; Lusardi 1999; 2000; O'Donoghue and Rabin 1999; Gul and Pesendorfer 2001; Thaler and Benartzi 2004; Fudenberg and Levine 2006; Gathergood 2012; Stromback et al. 2017; Schildberg-Hörisch 2017)

Status Quo Bias

Description: Refers to the preference of maintaining the current state of affairs and restricting any decisions that would change the existing condition. (Samuelson and Zeckhauser 1988; Kahneman et al. 1991; Horowitz and McConnell 2003; Masatlioglu and Ok 2005; Brown and Kagel 2009; Ortoleva 2010; Oehlmann et al. 2017; Dean et al. 2017; Gilboa and Wang 2019; El Harbi and Toumia 2020)

Unrealistic Optimism

Alternative terms: Optimism Bias

Description: It is the tendency to be excessively hopeful about a positive outcome. (Weinstein 1980; Lovallo and Kahneman 2003; Yang et al. 2007; Balboa et al. 2008; Hong and Kacperczyk 2010; Bracha and Brown 2012; Guan et al. 2012; Sando et al. 2012; Wang et al. 2013; Prosad et al. 2015; Wang et al. 2017; Rappaport 2019; Kartini and Nahda 2021; Hou and Gao 2021)

2.4 PSYCHOLOGICAL FACTORS USED IN THE STUDY

The literature clearly states that psychological factors account for the economic behaviour of individuals (Garling et al. 2009; Hens and Meier 2015). Human beings exhibit a large number of biases while making decisions, be they financial decisions or non-financial decisions.

This study considers the following three psychological factors in the context of financial decision-making based on the review of literature that influences the general financial risk-taking propensity of individuals rather than in relation to any specific investment (Yao et al. 2011):

Optimism

Optimism as a behavioural factor has been heavily documented in psychological literature and less in financial literature. Optimism refers to the positive way of looking at general life events and expecting that a decision will lead to outcomes favouring the decision maker. Puri and Robinson (2007) describe optimism as a trait that impacts physical and psychological well-being "whereby one has a positive general outlook

towards the future". Optimists follow the Pollyanna principle proposed by Matlin and Stang (1978). According to the Pollyanna principle, individuals give more preference to pleasant events over unpleasant events. The demarcation between optimism and optimism bias is the inflated sense of hope about a positive outcome in the latter's case (Darvill and Johnson 1991; Child and Whitesman 2019). As a matter of fact, it is known that too much of anything can start producing negative effects, which is the case with optimism (Wallston 1994; Puri and Robinson 2007). Excessive optimism leads to optimism bias or unrealistic optimism, which causes errors in judgment and decision-making. The study reviews work on both optimism and unrealistic optimism to understand the role played in individual decision-making.

The literature in psychology has distinguished individuals into two categories as, optimists and pessimists, based on their perceptions and expectancies. The two categories can be treated as separate constructs rather than bipolar as they are linked to distinct literature (Dember et al. 1989; Marshall et al. 1992; Chang et al. 1994). The optimists have a more favourable approach to themselves and their world, while pessimists tend to be unfavourable in their outlook (Matlin and Stang 1978; Scheier and Carver 1985; Zakay 1990). As the optimists hold a more positive belief system, this attitude makes them cope with their problems and challenges more actively than the pessimists (Zautra and Simons 1979; Reich and Zautra 1981; Scheier and Carver 1985; Smith et al. 1989; Scheier and Carver 1992).

Individuals are not only categorised as optimists and pessimists but are further disintegrated into two categories within optimism. Optimists vary in the degree of control they place on themselves as being responsible for positive outcomes. Thus this illusion of control can be internal for some optimists and external for others. The optimists with an internal locus of control believe that the ability to overcome adversities stems from the strong conviction that they are in control of positive and negative events (Darvill and Johnson 1991). Most optimists portray this internal locus of control which increases their self-esteem. This majority belongs to the class of cautious optimists who focus on reality and do everything they can to make situations favourable (Wallston 1994). But there also exists a minority who derive a sense of optimism externally by associating good outcomes with a benevolent provider or sheer

luck (Scheier and Carver 1985). They are called cockeyed or naive optimists who live in a fantasy world and leave their fate to chance or the intervention of external forces (Wallston 1994). In both cases, the outcomes could sometimes be favourable and sometimes not. Whether an individual is a cautious optimist or a cockeyed optimist, being optimistic is considered a positive quality. Past researchers have proved that optimism is a significant predictor in many aspects of an individual's life. Optimism is associated with academic performance and subjective well-being of college students (Rand et al. 2020), allocating healthcare resources (Luyten et al. 2019, overcoming difficult situations (Scheier and Carver 1985), degree of accuracy while processing risk-related information (Weinstein 1980), the January effect (Ciccone 2011) ability to face illness (Carver et al. 2010) equity market participation (Puri and Robinson 2007) among many other contexts.

Hilton (2001) defines optimism bias as people's tendency to believe that they are at a lesser risk of experiencing a misfortune compared to others. The work by Weinstein (1980) portrays this tendency of optimism bias among 1 258 college students. The students were asked to estimate their chances of experiencing 42 future life events compared to their classmates. Of the 42 events, 18 were positive events, and 24 were negative events. The mean scores of positive and negative events were compared. It was found that the mean scores of most students about their expectations of experiencing positive events were more than average, and that of experiencing negative events was less than average, thus demonstrating optimism bias. Unrealistic optimism may be the result of pure cognitive errors. When individuals have experienced more positive events than negative ones, they tend to incline towards higher levels of optimism (Schwaba et al. 2019). Individuals may also be optimistically biased when the issue in question is familiar and easy, wherein they could recall positive information from memory to support their positive views (Bracha and Brown 2012). Even though an individual might be correct in assessing the likelihood of experiencing a positive or negative event, testing this on a group basis gives a clear picture of the existence of unrealistic optimism. The belief that one is less prone to negative events than others could cause a miscalculation in judgment and lead to erroneous decision-making (Weinstein 1980). Puri and Robinson (2007) studied in detail the impact of optimism

on various economic choices. Optimism was significantly related to work choices, savings behaviour, and portfolio choices. The relationship between optimism and financial behaviour revealed that the level of optimism contributes to prudency in decision-making. Moderate optimists displayed prudent financial habits, whereas extreme optimists displayed financial behaviours that cannot be justified rationally.

Self-Control

"Self-control is widely regarded as a capacity to change and adapt the self so as to produce a better, more optimal fit between self and world" (Tangney et al. 2004). Self-control greatly influences a person's economic decisions (O'Donoghue and Rabin 1999; Gathergood 2012). Stromback (2017) defines self-control as "the ability of our future selves to control our current self". The battle between the present and future self can result in two consequences; one in which importance is given to the present self, which leads to increased spending in the present and saving less for the future and the other one in which the future self is weighed more than the present leading to cutting down of current expenses to save for the future. The first consequence is due to lack of self-control, and this often leads to lower wealth accumulation (Biljanovska and Palligkinis 2018; Rha et al. 2006), less likely to save for retirement (Choi et al. 2011) and suffer from unforeseen expenses leading to over-indebtedness or default (Gathergood 2012; Miotto and Parente 2015). Self-control problems not only affect consumption and savings habits but also influence the borrowing decisions of individuals (Gathergood 2012; Gathergood and Weber 2014). Self-control can be associated with a wide range of positive outcomes, while lack of it or over-control gives rise to self-control bias contributing to negative outcomes (Tangney et al. 2004). In the words of Pompian (2011), "Self-control bias is a human behavioural tendency that causes people to fail to act in pursuit of their long-term, overarching goals because of a lack of self-discipline". Therefore, the key factor to achieving long-term success in many areas of life lies in controlling one's impulses (Stromback 2017). Casey (2015) defines self-control as "the ability to suppress inappropriate emotions, desires, and actions in favour of alternative, appropriate ones". The ability to delay gratification is an important source of self-control irrespective of age (Romer et al. 2010).

Rha et al. (2006) studied the effect of self-control mechanisms on household saving behaviour using data from a survey of consumer finances. The study included information from 4305 U.S. households on the assets and liabilities and financial services used. The results revealed that the households that employed self-control mechanisms, i.e. having savings rules and savings goals and making notes of foreseeable expenses, saved better than those who did not employ such mechanisms. A similar study was conducted by Biljanovska and Palligkinis (2018), examining the relationship between self-control and household wealth. Three factors of self-control failure considered for the study, namely lack of planning, monitoring and commitment to preset plans, were strongly associated with household wealth. The study findings showed that households with self-control failure had lower net wealth and higher probabilities of facing financial distress. Self-control not only affects the financial behaviours of households but is a significant predictor of individual financial behaviour as well. Stromback (2017) explored the influence of self-control on the financial well-being and financial behaviour of individuals. It was found that better general financial behaviour and self-control were positively associated. The individuals with good self-control were confident about their present and future financial situation and were less worried about financial matters. The study by Stromback et al. (2020) provided further evidence of the positive impact of self-control on financial well-being. Self-control was measured both objectively and subjectively. Objective measures of self-control included three executive functions; inhibition, shifting and working memory. Subjective self-control was assessed using self-reported measures. The subjective measure was a better predictor of financial behaviour and well-being than the three objective executive functions of impulse control. Sehrawat et al. (2021) provided empirical evidence of self-control being a significant predictor of financial behaviour and financial well-being of individuals in the Indian context.

Along with individual differences, the generation that an individual belongs to also has a significant role in determining the influence of self-control on economic and financial decision-making. Rey-Ares et al. (2021) analysed whether self-control is a driver of the financial behaviours of millennials and if the results varied with the older generation. The study found that the level of self-control influenced the financial attitudes of

individuals regardless of generation. The individuals with a high level of self-control were more likely to save and have stock market investments and were less likely to opt for a personal loan. Griesdorn and Durband (2014) assessed wealth creation among young baby boomers using a national longitudinal survey of youth data from 1994 to 2008. The findings showed a significant positive association between self-control and net worth among baby boomers. Individuals with higher levels of self-mastery, greater internal locus of control, and better planning for retirement accumulated more wealth.

Mood

A vital part of human life is taking charge of one's behaviour, thoughts and moods (Dvorak and Simons 2009). Mood is an internal state of feeling that exerts a dramatic influence on almost all aspects of a person's daily life (Grable and Roszkowski 2008). Mood and emotion fall under the umbrella of affect literature. Even though studies have used mood and emotion interchangeably to describe an individual's internal state of feeling, the study by Beedie et al. (2005) has provided a clear distinction between the two. While emotions are more intense and short-lived, affected by some factors, mood is a prolonged state of feeling with or without consciousness and not attached to a particular factor. Mood is generally categorised into positive and negative affect, and literature supports mood as a two-dimensional construct (Watson and Tellegen 1985; Watson et al. 1988). Decision-making under risk is affected by the mood states of individuals, and this effect is more pronounced for women (Fehr-Duda et al. 2011). The effect of mood has slowly found its way into other areas, including financial decision-making. The type of mood state of a person impacts the risk-taking tendency (Isen and Patrick 1983; Hockey et al. 2000; Grable and Roszkowski 2008). Short-term moods affect even judgments and decisions relating to long-term prospects (Hirshliefer 2008).

Studies have examined the role of mood on risk-taking in economic decisions, with numerous studies using induced mood and few recording self-reported mood states. Fehr-Duda et al. (2010) tested the effect of mood on valuing risk prospects between gender groups in a laboratory setting with monetary incentives. The participants were presented with the task of assigning probabilities to risky decisions. Self-reported mood states of the participants were recorded after the tasks were completed. The study found

evidence of the impact of incidental affect on risky behaviour, and this impact was more pronounced for women. Women in happy moods assigned higher probabilities to gambles with greater risks as they had a more optimistic view towards the event.

In comparison, men were more objective in decision-making and based their decisions on the expected pay-offs of the gambles. Another study by Stanton et al. (2014) analysed the impact of induced mood states on gambling decisions. Subjects who were induced with a happy mood showed a greater propensity to take risks by increasing their gambling frequency. Hockey et al. (2000) studied the effects of both natural and induced negative moods on everyday risk-taking scenarios. Three independent studies were conducted, out of which the first two studies used natural mood measurement, and the third used a mood induction technique for assessing risk-taking in hypothetical situations. A mood diary was used to record the natural mood states of participants three times on each day at a fixed time, completed over 14 days for study one and 28 days for study two. All three studies showed that negative mood affects risk-taking in everyday decisions irrespective of naturally occurring negative mood states and induced negative mood. These findings in the literature show that both self-reported and induced mood cause significant differences in the way individuals base their decisions. The current study considers the self-reported natural mood state of individuals in general without using any external mood induction methods on the participants.

2.5 PERSONALITY TRAITS

Personality refers to "the relative enduring styles of thinking, feeling and acting that characterise an individual" (Costa et al. 1995, pp 124). The personality traits influence the investment behaviour of the investors (Jamshidinavid et al. 2012; Gerhard et al. 2018; Rabbani et al. 2019; Rai et al. 2021). Psychology explains personality traits as specific dimensions along which individuals differ in consistent, stable ways. Once the key dimensions are identified, they can be measured to find out how much they differ from one another. Such measured differences can be related to many important forms of behaviour (Baron and Mishra 2016). The literature highlights the relevance of addressing individual personality characteristics when describing financial decision-

making (Bucciol and Zarri 2017; Sekścińska and Rudzinska-Wojciechowska 2020). It has been identified that traits such as sensation seeking, extraversion, impulsivity, openness to experience, conscientiousness, anxiety, and neuroticism affect financial risk-taking (Garling et al. 2009). Furthermore, the investors' personalities are not only associated with their investment choices (Durand et al. 2013) and duration of investment (Mayfield et al. 2008) but also affect the method used for investing (Chitra and Sreedevi 2011). The study by Fernandes and Soares (2017) evaluated the effects of personality and irrationality of financial decisions. They found that extreme psychological profiles presented a higher level of financial irrationality for all five personality traits. In other words, individuals with balanced low-trait personalities tend to be less prone to irrationality in individual decisions. Amiri et al. (2013) examined the relationship between personality traits and behavioural biases in investment decisions in Tehran Stock Exchange. It was found that extraversion, neuroticism, openness to experience and agreeableness significantly impacted financial behaviour.

Personality has been measured using various frameworks in the literature to analyse the behaviour of individuals, specifically in risk-related situations. There are many frameworks and models for understanding personality traits, some of the important models being the Myer briggs type indicator, Enneagram of personality, Keirsey Temperament Sorter, 16 Personality Factors (16PF), Biopsychological theory of personality, ZKPQ (Zuckerman-Kuhlman Personality Questionnaire), HEXACO (Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O)) model of personality structure, Eysenck's model and so on. Researchers have used the frameworks to understand how individuals behave in a given context, but only a few can be applied to academic literature and economic contexts. This study adopts the five-factor model of personality traits (Digman 1990; Goldberg 1990; Costa and McCrae 1992), popularly labelled as the 'Big-Five' factors consisting of extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. The big-five model is well-tested, and the five factors are considered the best orientation in measuring the overall personality of an individual irrespective of gender, language, race, culture and any other demographic or sociographic factor (Costa and McCrae 1992; McCrae and John 1992).

The five-factor model of personality traits is a scientific construct useful in predicting important social and psychological outcomes (Barrick and Mount 1991; Costa and McCrae 1992). The model is generally accepted as a practical approach to understanding the key aspects of human behaviour in general and economic behaviour in specific (Hogan and Hogan 1991; Mayfield et al. 2008; Baron and Mishra 2016).

2.6 DEMOGRAPHIC FACTORS

The study on the impact of demographic factors on financial decisions has received extensive attention from academicians and researchers all over the globe. The investment choice of individuals is influenced by factors such as gender, age, marital status, educational qualification etc. (Amiri et al. 2013; Aren and Aydemir 2015; Thard and Barua 2016; Bhavani and Shetty 2017). There is a general belief that women are more risk-averse than men, and this belief is endorsed by a large number of studies (Byrnes et al. 1999; Fehr-Duda et al. 2006; Eckel and Grossman 2008; Gambetti and Giusberti 2019; Twumasi Baffour et al. 2019). Men and women behave differently while making decisions involving risk and uncertainty. Men are more overconfident and competent than women in their ability to take financial decisions (Prince 1993; Barber and Odean 1999). While Fehr-Duda et al. (2010) found that women take greater risks in gambling provided, they are in a happy mood. The gender differences in the way decisions are made may be due to implicit or explicit ways of thinking, wherein implicit refers to unconscious thinking, and explicit refers to conscious thinking (Hari et al. 2018). The willingness to take risks is more among younger people (Grable and Roszkowski 2008), and with each additional increase in age, the willingness to take financial risks decreases (Yao et al. 2011). The study by Pinjisakikool (2017) found the opposite, where the older age group of individuals had a positive relationship with financial risk tolerance. The study by Kannadhasan (2015) on the role of demographics in differentiating retail investors based on their financial risk tolerance revealed that gender, age, education and occupation could explain the differences in financial risk tolerance and risk behaviour. The study by Cohn et al. (1975) indicated that income and age positively correlated with the proportion of risky asset investments and negatively correlated with marital status. Married individuals invested smaller proportions of their portfolios in risky assets than single individuals. Demographic factors are significant

predictors of risk-taking attitudes and financial decisions. Understanding the saving behaviours of individuals based on demographic factors can help improve the efforts of financial professionals and educators (Fisher 2010; Sahi 2013).

2.7 FINANCIAL RISK-TAKING PROPENSITY

The world of business and finance is uncertain rather than risky, as the probabilities of all outcomes cannot be known (Hari et al. 2018). Financial risk-taking and investment decision-making are challenging when such decisions have to be taken in an uncertain environment. "Whether investors are willing to take financial risks; who are more likely to take these risks; how much risk are they willing to take; and what factors affect individual's willingness to take financial risks become important issues for researchers to investigate" (Yao et al. 2011, pp. 880). Risk-taking propensity cannot be considered a stable personality trait. As Slovic (1972) provided an evaluation of empirical evidence against risk-taking propensity considered as a generalised individual characteristic; rather, the generality applies to only the tasks with similar structure. Financial decisions, including investment decisions, have a similar underlying structure and are significantly influenced by individual risk-taking behaviour. Risk-taking propensity is defined as a general behavioural tendency to take or avoid risk in a specific domain (Sitkin and Weingart 1995). It is closely related to and frequently equated with actual risk-taking behaviour (Sitkin and Pablo 1992; Garling et al. 2009). Moreover, self-assessed risk-taking and investment are strongly associated (Schooley and Worden 1996; Bailey and Kinerson 2005; Barasinka et al. 2012). But this self-assessment of risk is not always accurate with the concerned investment at hand (Morse 1998).

While human beings perceive risk, it is often equated to loss (Aren and Zengin 2016). Investment risk is the result of a combination of four attributes which include the likelihood of incurring a huge loss, the possibility of receiving a below-average return, the capacity to control the losses and the financial knowledge of the individual (Olsen 1997). The proportion of all these attributes makes financial decisions complex and complicated. Assessing the risk attitude of investors is important to understand their beliefs, emotions and financial and economic decision-making processes (Riaz et al. 2012; Abdallah and Hilu 2015; Pak and Mahmood 2015). Understanding who is more likely to take a risk or conceptualising the decision-making of individuals who engage

in risky behaviour would help to detect the fundamental mechanisms of the decision-making processes. And the knowledge of risk-taking would further assist in developing tailored risk communication messages on the part of financial service providers (Lauriola and Weller 2018).

2.8 FINANCIAL LITERACY

Understanding the various forms of financial products offered to individual investors depends on their financial literacy level (Mihalcova et al. 2014). Financial literacy is "the ability to use knowledge, skills and experience of an individual to make effective decisions regarding the use and management of their finances to provide life-long financial security for themselves and their families" (Mihalcova et al. 2014, pp. 319). Financial literacy takes its roots in financial education (Lusardi 2019). Financial literacy, financial knowledge and financial education are often used interchangeably in the literature (Huston, 2010). There is a growing body of research focusing on the relationship between financial education and improved financial behaviour (Abreu and Mendes 2010; Hibbert et al. 2013; Chu et al. 2017; Khan et al. 2019). Financial literacy is not an absolute state; rather, it is a continuous evolution in terms of competency, which enables an individual to adapt to the dynamic economic environment (Mihalcova et al. 2014). Even though a certain level of financial literacy is required to manage financial investments, many households and individuals are unfamiliar with even the basic economic concepts needed to make sensible financial decisions (Lusardi and Mitchell 2007; Al-Tamimi and Kalli 2009).

Agarwalla et al. (2015) measured the level of financial literacy among the working young in urban India. They found that despite of high prevalence of college education in the sample, the level of financial literacy was not significantly higher than the levels among comparable groups under OECD INFI (Organization for Economic Cooperation and Development, International Network on Financial Education) based studies in other countries. The reason for this is general college education is not sufficient by itself to achieve an adequate level of financial literacy. Sood and Medury (2014), in their study, find that those having a high level of financial literacy are more aware of various financial products than those having low financial literacy, and thus the latter group

invests their savings only in traditional and safe financial products. A similar finding is documented by Aren and Zengin (2016), where investors with a low level of financial literacy prefer deposit accounts and foreign currency. With increased levels of financial literacy, investors create portfolios or purchase equity. The results also revealed that financial literacy does not change according to gender at the basic level. However, it was determined that advanced financial literacy was more in men than women. Bansal (2017) conducted a study to understand the extent to which women are aware of various financial investment avenues and their investment habits. The respondents were chosen from the banking, insurance and education sector. A negative correlation was found between age and level of knowledge of investment options. The most preferred investments were bank deposits, insurance and mutual funds. McCannon and Peterson (2015) presented evidence of the effect of education in finance on individuals' decision-making by conducting experiments using the investment game. The respondents consisted of students who had already studied finance and students who chose to study finance. The study showed that finance education fosters wealth-generating activities and promotes pro-social behaviours. Those who have an education in the field of finance were more likely to invest fully and expand wealth and were less likely to hoard by not investing.

2.9 HYPOTHETICAL PORTFOLIO CONSTRUCTION/ CHOICE OF INVESTMENT AVENUES

The study on decision-making is concerned with both normative and descriptive questions. While normative analysis answers the logic of decision-making, descriptive analysis is closely associated with the beliefs and preferences of people as they are and not as they should be (Kahneman and Tversky 1984). A great deal of decision-making is involved in choosing between various investment alternatives. These alternatives vary in their perceived returns and in the perceived probabilities of achieving these returns (Krueger and Dickson 1994). With the advancement of technology, especially financial technology (Fintech), financial markets are giving rise to new and complex financial products (Lusardi 2019). Investments in various investment avenues are made with the expectation of capital appreciation and short-term and long-term earnings. But all investments will not be profitable as an investor will not always make the correct

investment decisions. Private individuals differ in their day-to-day financial behaviour, which influences the choice of financial instruments (Funfgeld and Wang 2009; Abreu and Mendes 2010). This financial behaviour and composition of financial assets correspond directly with the risk-taking capacity of the individuals as well as their financial knowledge (Barasinska et al. 2012; West and Worthington 2014; McCannon and Peterson 2015; Deb and Singh 2016; Bansal 2017; Bollen and Posavac 2017; Chu et al. 2017; Khan et al. 2019).

2.10 RESEARCH GAPS

The following research gaps have been identified based on the literature review;

Research Gap 1

Decision-making is an integral part of human life. Human beings are constantly placed in decision-making situations every single day, and one of the most important decisions is financial decision-making. The environment around us is getting increasingly sophisticated as the days pass by. Managing one's finance was a comparatively more straightforward task a few years earlier. But the speed at which technological advancements are taking place has led to the introduction of various financial products, and personal financial planning is becoming complicated (Agarwalla 2015). While the choices made by individuals may be orderly to some extent, they may not always be rational and may be influenced by psychological factors (Kahneman and Tversky 1979; Tversky and Kahneman 1992; Thaler R. H. 1999; Garling et al. 2009; Aren and Zengin 2016; Goswami et al. 2020; Noman et al. 2020). The individual financial decision-making process has been an area of great interest to academicians and researchers worldwide. Though the decision-making process seems easy, it involves complex activities to be undertaken by the individual before arriving at a decision. Therefore, there is a need to study the factors that impact financial decision-making.

Research Gap 2

The determinants of risk attitudes of individual investors are of great interest in the area of behavioural finance. Behavioural finance is still in its nascent stages of development as a discipline (Ritter 2003; Dhiman and Raheja 2018), especially in a developing

economy like India, and the path along which it develops may result in it becoming a more rigorous discipline. Many studies have been conducted on the risk appetite and risk preferences of investors as a group in the area of the stock market and mutual funds (Lazaro 2007; Wulfmeyer 2016; Bonaparte et al. 2017; Madaan and Singh 2019; Wattanasan et al. 2020) but very few concerning individual investment portfolios with a wide range of avenues.

Investment preferences can be better understood by including psychographic variables because the human decision process cannot be understood solely based on demographic factors. A more realistic understanding of the same requires the observer to appreciate the psychological aspects of the decision process, too (Sahi 2012; Sahi et al. 2012; Lemaster and Strough 2013). Thus, there is a need to study factors that affect financial decision-making at the psychological level. Financial decisions are unique because they are different from other areas of consumer decision-making. Research in this area will help understand consumer financial decision-making and promote financial decisions that maximise well-being over time (Greenberg and Hershfield, 2019; Muradoglu and Harvey, 2012).

Research Gap 3

The power of personality traits has been used in behavioural predictions across areas, such as consumer behaviour and organisational behaviour, but lesser in the financial context (Pinjisakikool 2017; Lai 2019; Ingale and Paluri 2020). Therefore, is a need to analyse the relationship between gender, personality traits, and financial decision-making (Aren and Aydemir 2015; Oehler et al. 2018; Lauriola and Weller 2018; Rosales-Perez et al. 2021).

Research Gap 4

The knowledge of investment risk alters risk attitudes. Financial literacy, therefore, is an avenue to carry out further research to understand the gap between risk attitude and actual investment behaviour (Hari et al. 2018; Ozen and Ersoy 2019; Lim et al. 2020). A deeper understanding of the personal finance process is required for the development of educational strategies to help families, especially those in less affluent segments, to

better plan and manage their budgets, allow savings and avoid defaults (Miotto and Parente 2015; Arrondel 2020).

2.11 CHAPTER SUMMARY

The review of literature explained the evolution of behavioural finance, the important concepts of the field and the variables of the study in depth. The key findings of the existing literature and the critical evaluation led to arriving at research gaps that the researcher intends to empirically test and further expand and contribute to the field of behavioural finance.

CHAPTER 3

THEORETICAL PERSPECTIVES AND HYPOTHESES DEVELOPMENT

3.1 CHAPTER OVERVIEW

This chapter explains the major theories governing the study and the hypothesis the study proposes to test in light of this theoretical framework. The field of behavioural finance rests majorly on the shoulders of the prospect theory, and this has been elucidated in the first part of the chapter. The psychological factors of the study, which are optimism, self-control, mood and personality traits, have their foundations in psychology literature. The theories governing each psychological factor and its association with the financial decision are discussed in the second part of the chapter. The subsequent parts of the chapter discuss the association of personality traits, demographic factors and financial literacy with a financial risk-taking propensity, the relationship between risk-taking and hypothetical portfolio construction and the role of financial literacy as the moderator. Finally, the chapter presents the conceptual model displaying all hypothesized relationships proposed to be tested by the present study.

3.2 PROSPECT THEORY

Kahneman and Tversky became the greatest contributors to behavioural economics and finance through their proposition of prospect theory in 1979 and cumulative prospect theory in 1992. According to the prospect theory, most investors are risk-averse and weigh losses more than gains using a reference point. The theory has formed the basis for many arguments supporting the huge role played by psychological factors in economic and financial decision-making (Fox and Poldrack 2009). The crux of the prospect theory is that every individual is influenced by some or the other types of cognitive biases or psychological factors.

3.3 PSYCHOLOGICAL FACTORS OF THE STUDY AND FINANCIAL RISK-TAKING PROPENSITY

Expectancy-Value Theory and Optimism

The expectancy-value theory is part of psychological theories of motivation, and the concept of optimism is linked to the expectancy-value theory (Schier and Carver 1992; Carver and Scheier 1998). The theory provides a logical explanation of the influence of optimism on the life of an individual. The core theme of expectancy-value theory is that

an individual's behaviour is directed toward achieving a specific goal (Atkinson 1957; Wigfield 1994; Wigfield and Eccles 2000). The goal is the outcome which initiates action, and optimists always seek to achieve a desirable goal. Expectancies refer to the level of confidence that an individual possesses concerning the achievement of the desired outcome. Therefore acting on the goal is proportionate to the level of expectancy that the desired outcome can be achieved. If individuals feel confident that the personal efforts put in will lead to a favourable outcome, they are more likely to fit their behaviour to achieve it. Optimism works in the same way as explained by the expectancy-value theory.

Relationship between Optimism and Financial Risk-Taking Propensity

Optimism is a trait that is more general in nature and is not limited to a particular domain (Scheier and Carver 1985). The degree to which the level of optimism impacts each domain may vary (Puri and Robinson 2007). This variation in optimism across domains was highlighted in the study of Chira et al. (2008). The level of optimism of business students when making financial and non-financial decisions was investigated. The students were found to possess higher levels of optimism concerning their driving ability and school performance but less optimism about their investment ability. It was also found that the students, as a general population, were risk averse. In the stock markets, optimistic investors overestimate their returns on risky assets (Germain et al. 2006; Barone-Adesi et al. 2012). The study by Prosad et al. 2015, assessed the optimism and pessimism bias in the Indian equity market. The data showed evidence of both excessive optimism and pessimism bias. The relationship between risk premium and optimism/pessimism estimates is negative when the investors are rational. But the study found the exact opposite relationship, showing that investors are biased and therefore exhibit irrational behaviour. They conclude that when investors suffer from biases, their perceived risk-return relationship is negative. Higher levels of optimism, therefore, can lead investors to take higher financial risks than required by underestimating risk and overestimating the returns. Underestimating real risks may cause failure to take adequate preventive measures and lead to disastrous outcomes (Shefrin and Statman 2011).

H1a: There is a significant positive relationship between optimism and the financial risk-taking propensity of individuals.

Dual-Self Model and Self-Control

Thaler and Shefrin (1981) proposed that the working of the agency model is in close line with the concept of self-control. Considering an individual as an organization, one can analyze the conflict between a farsighted planner and a myopic doer. The concept of self-control was considered paradoxical in the absence of the multi-self of an individual. The work by Thaler and Shefrin (1981) formally presented the two-self-economic model of self-control, providing a ground for further developments in how self-control was modelled. Further, Fudenberg and Levine (2006) put forth the dual-self model of impulse control. The theory proposes that any choice an individual face is a sort of game between the short-term impulsive self and the long-term patient self. Various researchers have highlighted the framework of two modes of self-control (Eisenberg et al. 2004; Strack and Deutsch 2004; Carver 2005; Wills et al. 2006; Wills et al. 2007; Lieberman 2007; Lieberman et al. 2007; Dvorak and Simons 2009). The names assigned to the two selves based on self-control vary in these studies, but the underlying theory governing the behaviour remains the same.

The dual-self model can be applied to situations involving future decisions, including financial decisions and choices. The dual-self model has findings supporting two opposite types of the impact of self-control on risk-taking. One stream of research argues that the short-term-impulsive self has low levels of self-control, which is a significant risk factor for many personal and interpersonal problems due to increased risk-taking propensity (Freeman and Muravan 2010; Gathergood 2012; Gerhardt et al. 2017; Friehe and Schildberg-Hörisch 2017). At the same time, the long-term patient self delays instant gratification producing positive benefits across diverse domains (Tangney et al. 2004). The second group of studies uphold that lower levels of self-control contribute to risk aversion (Fudenberg and Levine 2006; 2011; 2012; Fudenberg et al. 2014). Among the two, the self that overpowers has a direct effect on the actions of an individual, and this is being tested in the present study in terms of the risk-taking propensity of individuals.

Relationship between Self-Control and Financial Risk-Taking Propensity

Using an experimental approach, Freeman and Muraven (2010) tested the impact of different levels of self-control on risk-taking. The risk-taking propensity of one group of individuals whose self-control was temporality decreased was compared with the second group whose self-control was not decreased. Risk-taking capacity appeared to be directly associated with the self-control level of individuals. Self-control-depleted individuals took greater risks even when the benefits of such high risks were unknown. Self-control bias can create an imbalance in the construction of portfolios. This can take place in two possible ways, one in which riskless assets form a major part of the portfolio of individuals who believe in spending more today.

In contrast, some individuals may prefer risky assets because they are unable to control their behaviour of taking higher risks. This imbalance can result in not having enough to cope with inflation or losing the existing wealth by taking unnecessary risks (Pompian 2012). Even the most sensible people can make these ill-advised decisions due to a temporary depletion in the ability to control oneself (Freeman and Muraven 2010).

Jordan and Rand (2018) found that self-control leads to delay in gratification and risk aversion in economically relevant behaviour from aggregated data from 28 studies. The study found a correlation between self-control and economic decision-making concerning intertemporal choice and discounting payoffs. The participants displayed reliance on reason compared to reliance on intuition for decision-making in the presence of adequate self-control. Mishra and Lalumiere (2011) assessed the individual differences in risk propensity and risky behaviour in five domains based on impulsivity, sensation seeking and self-control. The results showed that individuals with personality traits such as higher impulsivity and sensation seeking, and lower self-control had a behavioural preference for risky outcomes.

H1b: Lack of self-control has a negative influence on the financial risk-taking propensity of Individuals.

Mood Maintenance Hypothesis (MMH) and Affect Infusion Model (AIM)

According to the Mood Maintenance Hypothesis (MMH) (Isen and Patrick 1983; Isen 2000), positive affect can lead to risk aversion so that a good mood is maintained, and negative affect results in a willingness to take higher risks to improve the current negative mood. Several studies show that negative mood can cause arousal to take higher risks in different situations, supporting MMH (Pietromonaco and Rook 1987; Isen and Geva 1987; Mano 1992; Lieth and Baumeister 1996; Isen et al. 1998; Hockey et al. 2000; Kliger and Kudryavtsev 2014; Lepori 2015). The individuals differ in their risk-taking capacities under different mood states depending on the intervening task. Positive affect leads to risk-taking only when the risk is low (Isen and Patrick 1983; Isen 1984).

The MMH is contradicted by a set of studies in the literature that find that the risk-taking tendency is greater for those individuals who are in a happy mood than those who are in a sad mood (Nygren et al. 1996; Mittal and Ross Jr 1998; Jorgensen 1998; Ackert et al. 2003; Yuen and Lee 2003; Chou et al. 2007; Stanton et al. 2014). The contradictions favour the Affect Infusion Model (AIM) (Forgas 1982; 1989; 1994; 1995; Isen et al. 1982; Isen 1993; Grable and Roszkowski 2008). The AIM hypothesizes that individuals in elated mood states look at the world as a safer place with lesser risks and therefore indulge in greater risk-taking propensity. The study by Drichoutis and Nayga Jr (2013) found that both positive and negative moods lead to risk aversion, supporting both MMH and AIM. Thus the literature denotes that risk-taking capacity based on mood differs based on the decision criteria and context. The current study expects MMH to be overriding AIM in the context of the financial risk-taking propensity of Individuals in the Indian context due to the consideration of general mood states rather than induced mood states.

Relationship between Mood and Financial Risk-Taking Propensity

The type of mood state and willingness to take risks varies across individuals and also within individuals, as these mood states are subject to changes concerning time and the type of experiences in a person's life. Good experiences give way to feelings of well-being, and these feelings influence an individual's attitude towards risk (Loewenstein

and Lerner 2003). The effects of negative mood states on risk-taking decisions studied by Hockey et al. (2000) show that there can be variations in individuals' risk-taking due to the change in mood states caused by the decision problem itself. Yuen and Lee (2003) found that individuals with induced negative mood states were less willing to take risks concerning critical life decisions than those with elated and neutral moods. The assessment of the probabilities that individuals assign to risky situations also differs significantly between positive and negative mood states (Johnson and Tversky 1983; Wright and Bower 1992). Mood has been studied concerning gambling propensity (Stanton et al. 2014; De Vries et al. 2012), performance at work (Chi et al. 2015), firm-level decision-making (Chhaocharia et al. 2019), music-induced mood and trading behaviour (Shu 2010; Kostopoulus and Meyer 2018), lunar phase induced mood and stock returns (Floros and Tan 2013). The reasons for variations in mood are many. Still, this study focuses on the measurement of mood based on the self-reported mood of an individual, which could remain stable over a considerable period without attributing it to any external factors. In other words, it measures how an individual generally feels on most days rather than the current mood state. The hypotheses on mood states are framed in the context of MMH as predicted for the current study.

H1c: There is a significant positive relationship between negative affect and the financial risk-taking propensity of individuals.

H1d: There is a significant negative relationship between positive affect and the financial risk-taking propensity of individuals.

3.4 RELATIONSHIP BETWEEN BIG FIVE PERSONALITY TRAITS AND FINANCIAL RISK-TAKING PROPENSITY

The association of personality traits and risk-taking in various areas has provided insight into notable individual differences, including economic and financial domains. Personality and financial risk-taking are associated significantly, the evidence of which has been provided by many studies (Mishra and Lalumiere 2011; Twumasi Baffour et al. 2019; Sekścińska and Rudzinska-Wojciechowska 2020). Yet there is no consensus on the direction of the association of specific traits and risk-taking propensity. Oehler et al. (2018) analyzed the decision-making of individuals based on two personality

traits, namely extraversion and neuroticism, in an experimental asset market. It was found that individuals with a higher degree of neuroticism hold less risky assets in their financial portfolios, and this result was unchanged even after controlling for gender differences. Gambetti and Giusberti (2019) assessed the investment decision-making of investors based on the 16-personality factor questionnaire. The degree of stocks in the portfolios chosen by the individuals was analyzed to understand the risk acceptance levels. Extroverted individuals tended to make riskier financial decisions, and those with higher neuroticism avoided risk-taking. Openness to experience had a positive correlation with risk acceptance. A similar study was undertaken by Bucciol and Zarri (2017) on US survey data assessing risk-taking based on the amount of stocks in the portfolio. The results indicated a negative correlation between agreeableness, anxiety, cynical hostility, and risk-taking.

Dhiman and Raheja (2018) found a significant impact of agreeableness, extraversion and openness to experience on the risk tolerance of investors. Pak and Mahmood (2015) studied the relationship between risk-taking attitudes and personality traits among potential private investors in Kazakhstan's Post-Soviet transition country. The findings revealed that extraversion and openness to experience positively correlated with individual risk tolerance behaviour. On the other hand, agreeableness, conscientiousness and neuroticism were negatively correlated with risk-tolerance behaviour. These relationships were also found in the study of Pinjisakikool (2017) among the Dutch population. Czerwonka (2019) found only extraversion and conscientiousness to be significant predictors of risk-taking in the sample with Poland and U.S. respondents. Lauriola and Levin (2001) examined the relationship between the big five personality traits and risk-taking through a controlled experiment. Separate experiments were conducted to record the subjects' responses based on the two trials, one in which the subject could achieve a gain, and the other, to avoid a loss. In the domain of achieving gains, openness to experience was associated with high risk-taking and neuroticism was associated with low risk-taking. But in the domain of avoiding losses, neuroticism had the opposite effect as it was scored high for greater risk-taking. Personality variables and situational factors affect both risk perception and the ability to take risks (Weber et al. 2002).

H2a: Openness to experience is significantly positively associated with the financial risk-taking propensity of individuals.

H2b: Conscientiousness is significantly negatively related to the financial risk-taking propensity of individuals.

H2c: Extraversion is significantly positively associated with the financial risk-taking propensity of individuals.

H2d: Agreeableness has a significant negative impact on the financial risk-taking propensity of individuals.

H2e: Neuroticism has a significant negative influence on the financial risk-taking propensity of individuals.

3.5 RELATIONSHIP BETWEEN DEMOGRAPHIC FACTORS AND FINANCIAL RISK-TAKING PROPENSITY

In the study done by Geetha and Vimala (2014), it was found that there is an association between various demographic factors like age, income, education, occupation, family size and the capacity to take risks. Onsiro and Ombati (2017) identified the factors influencing investment choices and found an association of variables, like age, qualification, and investment objective, with the preferred investment avenue. The study by Das et al. (2008) reveals that investors with graduate-level and postgraduate levels of academic qualification are investing more in life insurance, and professionals are investing more in mutual funds. Singh (2012) in his study analyzed the influence of demographic factors on investment in mutual funds. Gender, income and level of education significantly influence the investors' attitude towards mutual funds, while age and occupation did not influence the attitude of investors towards mutual funds. The study undertaken by Bashir et al. (2014) reveals that certain demographic characteristics, such as age and education, have a significant and positive relationship with risk perception, while income has a significant but negative relationship with risk perception. Apart from age, education and gender, the effect of marital status on investment decisions is also significant. Yao and Hanna (2005) studied the effect of gender difference and marital status on financial risk tolerance. The analysis found that

risk tolerance was highest in single males, followed by married males, unmarried females and lastly, married females. The most studied area of financial decision-making concerns gender differences and the variance in risk aversion. Women and men tend to look at the issue of money and financial affairs very differently (Stendardi et al. 2006). They adopt different strategies in financial decision environments, but these do not significantly impact their ability to perform in financial decision-making (Powell and Ansic 1997). Women invest less and thus appear more financially risk-averse than men (Charness and Gneezy 2012; Lemaster and Strough 2014; Bhavani and Shetty 2017). The results of the research done by Fisher and Yao (2017) showed that women are less risk tolerant than men, not due to gender itself, but because of the gender difference in other factors, like income uncertainty and net worth, that are related to risk tolerance.

H3a: There is a significant relationship between gender and the financial risk-taking propensity of individuals.

H3b: There is a significant relationship between age and the financial risk-taking propensity of individuals.

H3c: There is a significant relationship between marital status and the financial risk-taking propensity of individuals.

H3d: There is a significant positive relationship between educational qualification and the financial risk-taking propensity of individuals.

H3e: There is a significant relationship between occupation and the financial risk-taking propensity of individuals.

H3f: There is a significant positive relationship between income level and the financial risk-taking propensity of individuals.

H3g: There is a significant relationship between the individuals' zone of residence and their financial risk-taking propensity.

3.6 RELATIONSHIP BETWEEN FINANCIAL RISK-TAKING PROPENSITY AND THE CREATION OF A HYPOTHETICAL PORTFOLIO

The relationship between risk-taking and portfolio composition has been theoretically discussed by Campbell et al. (2003) using the hump-shaped function to explain the probability of holding multiple assets. The study stated that both risk-averse and risk-loving investors hold extremely underdiversified portfolios. In contrast, those with moderate risk have a greater probability of holding a more diversified portfolio with the most assets available. Many empirical studies also have proven that risk aversion or risk-taking has a direct impact on the diversification of the portfolio (Kelly 1995; King and Leape 1998; Gomes and Michaelides 2005; Barasinska et al. 2012).

Deb and Singh (2016) from their study concluded that risk perception and investment volume in mutual funds are inversely related. Investors with a high-risk perception are either not investing in mutual funds or investing in low volume. Safe and low-yielding assets like savings deposits and government bonds form a major part of the portfolio of risk-averse individuals. In contrast, individuals who are willing to take risks choose riskier and higher-yielding portfolios such as stocks and corporate bonds (West and Worthington 2014). Barasinska et al. (2012) explored the relationship between risk aversion and the composition of financial portfolios of German private investors. The study showed that the level of diversification and the risk level of the type of assets that comprised the portfolio was dependent on the risk attitudes of the individuals. The investors with greater risk aversion allocated most of their wealth to risk-free assets, creating incomplete and underdiversified portfolios. The prior studies have considered the actual investment portfolios of private investors, and the majority of them have been carried out in developed countries. The current research is confined to the Indian context, where only a few per cent of the population are investors owning a portfolio. Therefore the researchers consider it more apt to explore the relationship between self-declared risk propensity and creating a hypothetical portfolio.

H4: There is a significant relationship between the financial risk-taking propensity of individuals and their creation of hypothetical portfolios.

3.7 MODERATING ROLE OF FINANCIAL LITERACY

There is a significant relationship between financial literacy and investment decisions (Al-Tamimi and Kalli 2009; Sood and Medury 2012; Aren and Zengin 2016; Gerhard 2018). The knowledge about the various avenues of investments and the risk-return factors associated with each investment avenue contributes to the efficient allocation of money and thereby helps in wealth creation. When an individual's financial literacy increases, the risk propensity also increases, leading to an increase in the expectation of returns (Aren and Aydemir 2015). It is also found that financial literacy is positively related to retirement planning and wealth accumulation (Van Rooij et al. 2012).

The role of financial education as a moderating variable is highlighted in the study by Hibbert et al. (2013). They compared two samples – one consisting of households and the other consisting of finance professors. They found that among highly educated individuals in the first sample, women were significantly more risk-averse than men. However, from the sample of finance professors, it was evident that when men and women both attained a high level of financial education, they were equally likely to invest a significant portion of their portfolio in risky assets. Their finding suggests that financial education mitigates the difference in financial risk aversion. Generalizing risk-taking propensity based on gender or demographic factors is not always useful. Apart from finding no significant gender difference in the risk tolerance of professional wealth managers, Bollen and Posavac (2018) also found a significant variation within both genders of their student sample. The importance of financial education for investors has been highlighted as the responsibility of choosing the right level of risk ultimately lies with the individual.

The study by Hari et al. (2018) supports the role of financial literacy in risk-taking attitudes. The study showed no significant difference between men and women concerning their risk attitude, given both had similar experience and financial knowledge. The purpose of financial education is to be able to evaluate risky decisions that make way for wealth-generating activities. When investors are made to understand the impact of their today's investment or allocation of savings on the distribution of their future wealth, the investors are more likely to accept a riskier portfolio (McCannon and Peterson 2015; Bollen and Posavac 2018). Thus, to say that financial literacy is not

only necessary for avoiding excessive risk-taking concerning financial investment but also for procuring required finances (Mihalcova et al. 2014). Adil et al. (2022) explored financial literacy as a moderator in the investors' planned behaviour in India. Financial literacy proved to improve the prediction of investment intention when incorporated into the behavioural intention model

H5: There is a significant moderating effect of financial literacy between the financial risk-taking propensity of individuals and hypothetical portfolio creation.

3.8 THE CONCEPTUAL MODEL

The conceptual model is a visual representation of the relationships between the independent and dependent variable(s) of the study. The pictorial representation helps to easily understand the hypothesized relationships the researcher intends to test based on the literature review and theoretical support. Figure 3.1 shows the conceptual model for the present study that will be tested in three phases or parts based on the varying nature of variables.

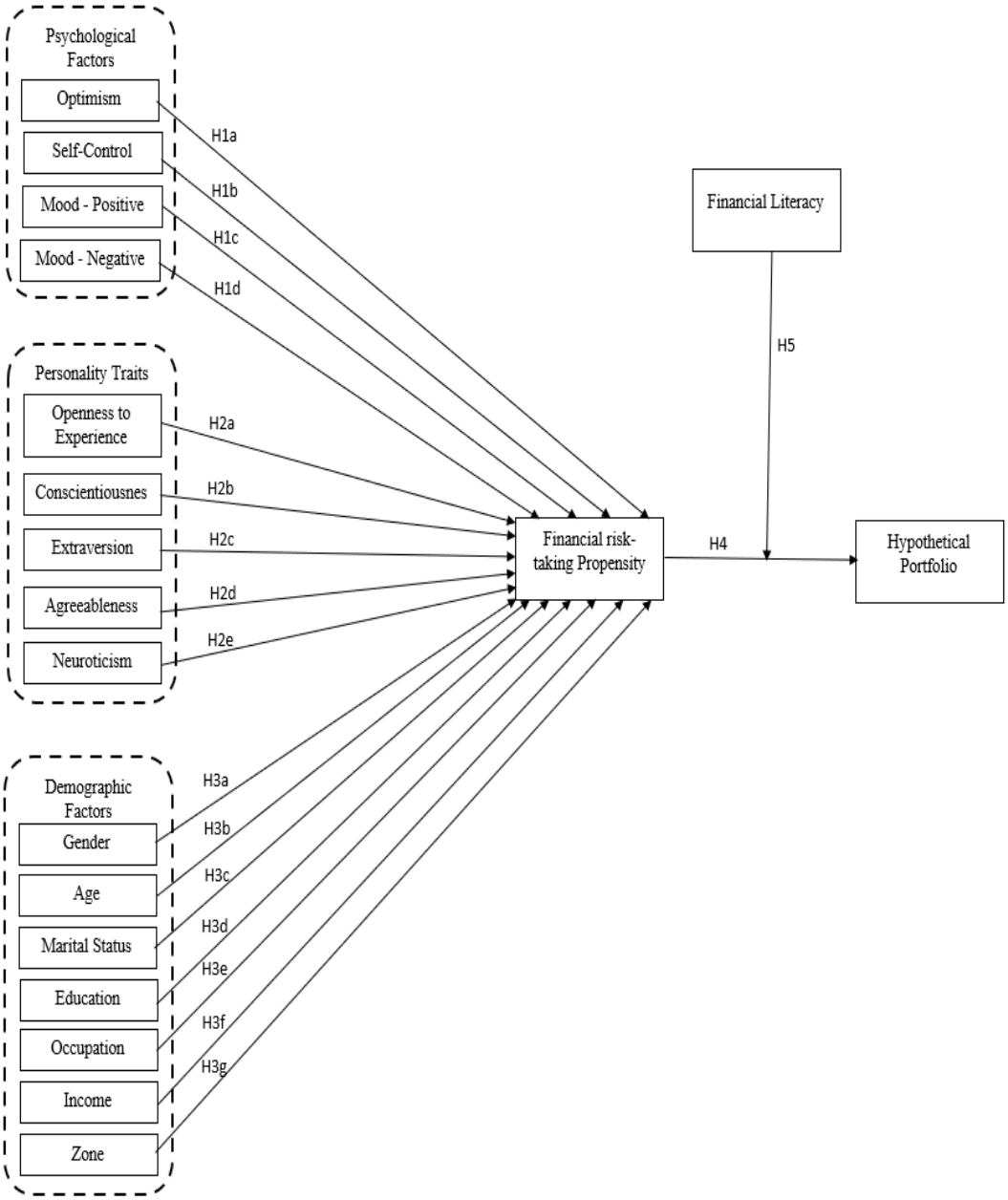

Figure 3.1: Conceptual Model

Source: Author (based on literature review and theoretical framework)

3.9 CHAPTER SUMMARY

The chapter provided the theoretical underpinning for the study constructs and also put forth the relationship between variables found in prior research. Based on these relationships and the context of the present study, the research hypotheses to be tested were developed. The conceptual model summarized the hypotheses through a visual representation of the way the study would proceed for analysis of the data.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 CHAPTER OVERVIEW

This chapter provides the methodology adopted to achieve the objectives laid down by the study. Details on the research paradigm adopted, and the research design followed have been described. The chapter explains how each latent construct is measured quantitatively. The tools and techniques used to collect, process and interpret the data have been discussed. The use of structural equation modelling and other tools and techniques to analyse the data has been highlighted.

4.2 INTRODUCTION

The researcher needs to adopt a proper plan to answer the research questions correctly to help generalise the findings. The 'Research Onion' (Saunders et al. 2019) lays down a systematic procedure for undertaking decisions relating to the research methodology to be adopted depending on the objectives of the study. The layers of the research onion should be carefully constructed, and decisions should be made at every layer, beginning with the research philosophy, followed by the research approach and the research design. When all these layers fit together, the researcher will be in a position to investigate the research problem with ease.

4.3 RESEARCH PHILOSOPHY AND PARADIGM

Every research is based on a certain set of beliefs and a philosophical framework. The research philosophy is categorised into three segments, viz., ontology, epistemology and Axiology (Saunders et al. 2019). Ontology refers to the assumptions about the nature of reality or is concerned with what is known. Epistemology refers to the assumptions of knowledge dealing with how reality is known and how this knowledge can be obtained and shared with others. Axiology refers to the values and beliefs of the researcher. Ontology, epistemology and axiology jointly provide an outline for the research paradigm adopted by the researcher. Different research paradigms exist for natural sciences, art and humanities, and social science research. Saunders et al. 2019 have put forth five research paradigms, namely positivism, interpretivism, pragmatism, critical realism and postmodernism, that apply to business and management research. The choice of paradigms depends on ontological, epistemological and axiological

assumptions. Two important paradigms apply to most of the works in social science research. One is the positive paradigm, and the other is interpretivism. The researcher, following a positivist philosophy, tries to emphasise objectivity and operates on empirical evidence. In positivism, the researcher uses existing theories and develops testable hypotheses to understand reality. The interpretivism paradigm emphasises subjectivity and relies on a qualitative approach.

The initial studies in behavioural finance were based on the interpretivism paradigm for understanding the role of psychological factors affecting individuals in economic decision-making. These subjective studies gave rise to certain common patterns of behaviours that could be roughly generalisable. With these common patterns, the field of behavioural finance has slowly employed empirical observations to understand the objective reality of human behaviour in economic situations. An ample number of studies have undertaken experimental and observational studies that have led to theoretical developments in the field. The current research, therefore, is based on the positivist paradigm, as the researcher employs quantitative techniques to arrive at answers based on questions posited within an existing theoretical framework.

4.4 RESEARCH APPROACH

Theory testing and theory building are inseparable parts of all research undertakings. There are two contrasting approaches depending on whether a theory is tested or built; they are the inductive and deductive approaches. In the inductive approach, first, the data is collected to analyse behaviour patterns or explore a phenomenon. Once these patterns are established, the researcher tries to build a new theory or modify an existing one. The inductive approach moves from specific to general for generalisability.

In contrast, the deductive approach tries to test whether the premises on which a theory is built are true or not. In other words, the deductive approach focuses on testing the theory. Data is then collected to test the hypothesis relating to the existing theory. Generalisations are made from general to specific in the deductive approach.

The researcher follows the deductive research approach as the present study is based on the hypotheses formulated based on the prospect theory of behavioural finance and

other theories of psychology governing financial decisions. The data is then collected and analysed, and the results are used to add new evidence supporting the theory.

4.5 RESEARCH DESIGN

Based on the governing paradigm and approach of the study, a research design needs to be formulated to gather the required data and analyse it to arrive at answers to the research questions. The research design involves looking deeper into the sublayers such as follows:

Type of Research

The research design varies based on the type of research undertaken. The type of research may be descriptive, exploratory or explanatory. Each type of research fulfils a different purpose or aim. The descriptive research type is being used in the study. Descriptive research aims to describe the characteristics of an individual, a group or a situation.

Research Methods

The choice of research methods will depend on the need for numeric or non-numeric data to be collected. Numeric data is collected using quantitative methods, and non-numeric data is collected using qualitative methods. Studies also use mixed methods to obtain numeric and non-numeric data governed by the research paradigm and objectives, and questions of the research study. Saunders et al. (2019) have divided the research methods into six categories; mono-method quantitative, mono-method qualitative, multi-method quantitative, multi-method qualitative, mixed-method simple and mixed-method complex. Following the positive paradigm and assumptions of the study, the researcher has adopted a mono-method quantitative methodological choice to collect numeric data.

Research Strategy

After the researcher has made the methodological choice, the next question concerns the research strategy to collect the data. Both quantitative and qualitative methods have multiple strategies that can be considered to gather data. The quantitative method

includes experimental and survey research strategies. Survey strategies can take the form of questionnaires, structured interviews and structured observations. The quantitative method includes strategies, namely action research, ethnography, case study, grounded theory and narrative inquiry.

The research strategy adopted for the present study is a survey strategy using a self-administered structured questionnaire. The questionnaire consists of four sections. The first section corresponds to questions on three psychological factors, namely optimism, self-control and mood; five personality traits, namely openness to experience, conscientiousness, extraversion, agreeableness and neuroticism; and risk-taking propensity. The second section deals with basic and advanced financial literacy, and the third section relates to the level of awareness, level of risk associated and the preference level of sixteen investment avenues available widely in the Indian financial market and constructing a hypothetical portfolio from the given list of these investment avenues. The fourth section describes the demographic profile of the respondents.

Research Techniques

The research technique refers to using instruments and the researcher's behaviour in performing the research operation (Kothari 2004). In the case of a self-administered questionnaire, using a measurement scale for variables used in the construct constitutes the research technique. The study variables are measured using well-established scales explained in detail below.

Optimism

The Life Orientation Test-Revised (LOT-R) was used for measuring optimism adapted from Scheier et al. 1994. The scale consists of six items, of which three are reverse-coded. The filler items of the scale were not used in this study. The responses for the scale items were recorded on a five-point Likert scale that ranged from strongly disagree (1) to strongly agree (5). The sample items of the questionnaire are "I usually expect the best to happen even when I am not sure about certain situations" and "If something can go wrong for me, it will". A high score indicates a high level of optimism

Self-Control

An adapted version of the seven-item short scale of self-control by Gerhard et al. 2018 was used. The original scale consists of thirteen items by Tangney et al. 2004. All items indicate a lack of self-control and are reverse-coded. The responses for the scale items were recorded on a five-point Likert scale that ranged from strongly disagree (1) to strongly agree (5). The sample items of the questionnaire are "I find it very difficult to break bad habits" and "I sometimes do things which would make me regret about it later". A low score indicates a low level of self-control.

Mood

The PANAS (Positive affect Negative affect schedule) by Watson et al. 1988 was used to measure the participants' self-reported mood. As the study does not use inductive mood states, this scale helps to capture the overall mood of the respondent in general. In other words, the mood state over a longer duration of time is considered rather than the mood state when taking the survey. The PANAS scale has two parts, one on positive mood states and the other concerning negative mood states. Both parts have ten questions, each measured on a five-point Likert scale ranging from very slightly or not at all (1) to extremely (5). The sample items of the questionnaire for positive affect are "Generally/Most of the days I am – Interested", and the items for negative affect are "Generally/Most of the days I am – Upset". The mean scores of PA and NA are compared for each respondent to derive the general mood state. A higher score on PA as compared to NA relates to a positive mood state, and a higher score on NA compared to PA relates to a negative mood state.

Big Five Personality Traits

The five personality traits are measured using the short scale by Mayfield et al. (2008), which is a revised version of the NEO Five Factor Inventory scale by Costa and McCrae (1992) consisting of sixty items (12 per domain). The full scale with big five traits consists of twenty-three items measured on a five-point Likert scale ranging from Strongly disagree (1) to Strongly agree (5). The items have been reworded to suit the population of interest.

Openness to experience is measured using five items, out of which one item is reverse-coded. The sample items include "I have very good power of imagination" and "I often enjoy understanding a subject or idea deeply".

Conscientiousness is measured using five items, with three items being reverse-coded. The sample items are "I keep my belongings neat and clean" and "I waste a lot of time before starting to do the required work".

Extraversion is measured using four items. The sample items include "I really enjoy talking to people" and "I am a very active person".

Agreeableness is measured using four items, out of which three items are reverse-coded. The sample items are "I often get into arguments with my family and co-workers" and "I generally try to be kind and understanding".

Neuroticism is measured using five items. The sample items are "I often feel inferior to others" and "Sometimes I feel completely worthless".

Financial Risk-Taking

The scale provided by the De Nederlandsche Bank sponsored CentER Savings Survey (DNB CSS) and validated by Kapteyn and Teppa (2011), consisting of six items, was used for measuring Risk-taking propensity. The reworded version of the scale from Bucciol and Miniaci (2018) was adapted for the present study. Three out of six items are reverse-coded. The level of agreement was recorded on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The sample items of the questionnaire are "I would never consider investments in shares because I find this too risky" and "I am prepared to take the risk to lose money when there is also a chance to gain money". Higher scores represent a higher propensity to take a risk.

Financial Literacy

The level of financial literacy is measured by using ten multiple-choice questions by Potrich et al. (2018), which is an adapted version from Van Rooij et al. (2011), OECD (2013), Klapper et al. (2013), and the National Financial Capability Study (NFCS, 2013). The first five questions measure basic financial literacy, and the next five

measure advanced financial literacy. In the present study, financial literacy is a moderator variable, and the scores obtained from the respondents have to be converted into categorical data. For this purpose, the Chen and Volpe (1998) rating method has been used. Each of the ten financial knowledge questions was assigned a weighting of 0.5 for the correct answer. The financial knowledge index ranges from 0 (score obtained if the individual mistakes all questions) to 5 (score if the individual correctly answers all questions). According to this score, respondents were classified as having a low level of financial knowledge (score less than 60% of the maximum), a medium level of financial knowledge (between 60% and 79% of the maximum score), and a high level of financial knowledge (over 80% of the maximum score). The three categories were used to test the moderating effects of financial literacy on the relationship between the independent and dependent variables. Additional dichotomous questions about the knowledge of financial concepts and work experience in the field of banking, finance, or investments were also included.

Awareness, Perceived Risk Level, and Preference of Investment Avenues

The level of awareness of investment avenues, the level of risk associated, and the preference level of the respondents for the investment avenues were analysed. Sixteen investment avenues were considered that are widely available to the general public in the Indian financial market and are monitored by various government regulatory bodies. The investments range from high-risk return avenues (Equity shares) to low-risk-return avenues (Savings account). The level of awareness for each of these investment avenues was measured on a five-point Likert scale ranging from not at all aware (1) to extremely aware (5). The respondents were asked to indicate the way they feel about the level of risk associated with each of the investment avenues on a five-point Likert scale ranging from not at all risky (1) to extremely risky (5). The preference level for each investment avenue was recorded on a five-point Likert scale with scores ranging from do not prefer (1) to extremely prefer (5). Along with this, a multiple-choice question on the planned proportion of investment was also included.

Hypothetical Portfolio Creation

To analyse the choice of investment avenues of the respondents, they were required to create a hypothetical investment portfolio with any combination of the given 16 investment avenues. Investment percentages (intended proportion of the total savings) were needed to be assigned to all those investments preferred by the respondents, with the total portfolio percentage adding to 100 per cent. The respondents were asked to put zero for those investments in which they do not wish to invest. The portfolios were categorised into five types based on the risk proportion of investments.

Time Horizon

The survey conducted for data collection was cross-sectional, i.e., the data for the study was collected at one point in time. In light of the objectives of the research and the limited time and resources at the disposal of the researcher, the time horizon was chosen. Data were collected during the period from March 2020 to April 2021.

4.6 POPULATION AND SAMPLING

Sampling design enables the researcher to select a group of respondents representing the population termed a sample. Given limited time and resources, it is unlikely to solicit responses from such a vast population. The selection of an adequate sample size is a prerequisite to generalising the results.

Population and Target Population

Saunders et al. (2019) have drawn a line between the population and the target population for selecting an appropriate sample (Figure 4.1). The population is the total observations about whom conclusions need to be drawn. But in reality, the researcher may not have access to all the population elements or know all the cases. Moreover, the entire population may not interest the researcher due to the specific nature of the research objectives. Hence the researcher must redefine the population and draw a subset known as the target population. The researcher has therefore defined the population and target population separately for the study.

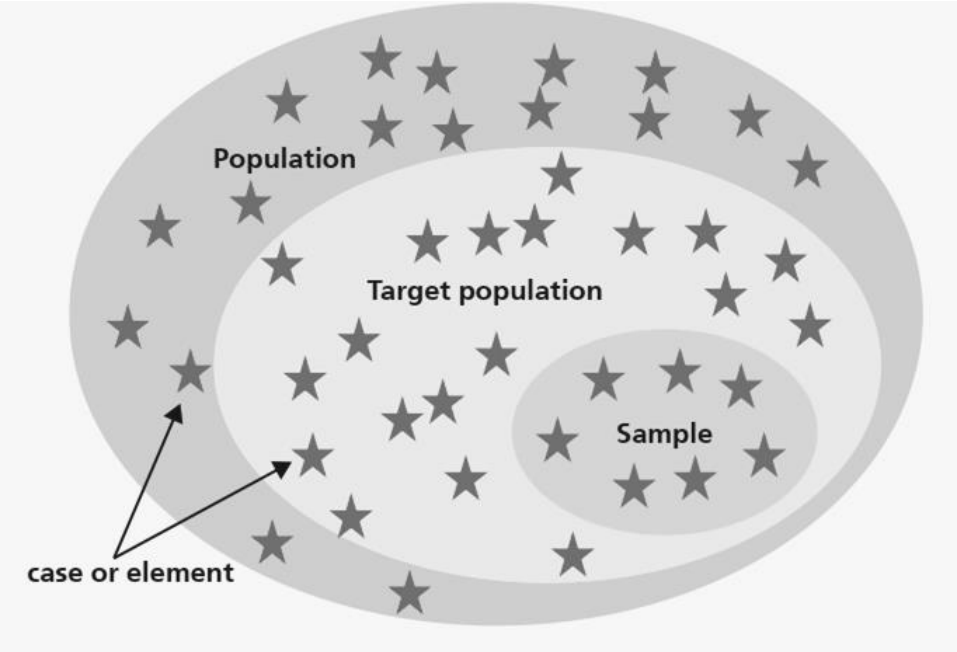

Figure 4.1: Population, Target Population and Sample

Source: Saunders et al. (2019)

The study's population is the population of India, according to the 2011 census report belonging to the age group of 18 years and above. As adults, the responsibility of decision-making concerning all areas of life is vested in the individual. Hence considering the age group of 18 years and above will help the researcher understand the financial decision-making process more realistically. The total population of India aged 18 years and above is 762,211,845 (Census 2011). From the total population, the target population was defined in line with the research questions to be answered by the study. The respondents were required to fulfil certain criteria to be a part of the sample. As the study is concerned with financial risk-taking and portfolio creation, only the investing class was considered the population of interest. India has a very small percentage of households termed investors (SEBI 2015). In the present study, the requirements were that a respondent should be of age 18 or above, a citizen of India, and residing in India. The respondents were also required to have a minimum of three investments, which helped filter the respondents. The filter question helped identify respondents who would be potential clients for financial service providers.

Sample Size

The researcher has adopted Slovin's formula to arrive at a sample size required to carry out the study, which is $n = N/(1+Ne^2)$, where n = sample size or the number of participants constituting the sample, N = Total Population, e = error tolerance level.

The sample size for the present study is calculated as follows with the use of Slovin's formula:

$n = N/(1+Ne^2)$

$= 762211845/ (1+762211845(0.05)^2)$

$=399.9997$

$n=400$

Here the total population refers to population of India aged 18 years and above is 762,211,845 from the 2011 Census Report of India. For most business and management research, researchers are content to estimate the population's characteristics with 95 per cent certainty with a 5 per cent error margin (Saunders et al. 2019). Therefore, the required sample size for the study with a 95 per cent confidence level, as per Slovin's formula, is 400. The current study adopts structural equation modelling (SEM) to measure the interrelationships between the dependent and independent variables. The standard practice of estimating the sample size while adopting SEM is multiplying the number of questionnaire items (free parameters) by 10. The total number of items in the current study relating to the nine constructs equals 62, excluding questions about the demographic profile and financial literacy of the respondents. The sample required would be 62 multiplied by ten, i.e., 620.

Sampling Technique

Sampling techniques are broadly classified into probability and non-probability sampling. In probability sampling, the probability of each case of the population being selected in the sample is equal. Whereas in non-probability sampling, the probability is not known. Probability sampling is more applicable in cases where the population is homogeneous and the total number of elements is known. When the population is

heterogeneous, and the number of elements is unknown, non-probability sampling is useful to the researcher.

The data was collected using multi-stage sampling techniques. In the first stage, a quota sampling technique was used. Quota sampling is useful when the population is widespread and has marked differences in its underlying characteristics. As the present research is a Pan India study, responses are required from all over the country. Therefore, the country was divided into six officially declared administrative zones, i.e., the northern zone, north-eastern zone, central zone, eastern zone, western zone and southern zone, under the states reorganisation act of 1956 and north-eastern council act of 1971 (Ministry of home affairs, Government of India). These zones broadly address cultural and linguistic patterns and can be considered relatively homogeneous.

Table 4.1: Zone-wise sample requirement for the population of 18 years and above and the actual sample collected

Zone	Population (18 years and above)	Proportion to the total population (Percentage)	Sample required for 400 (Slovin's formula)	Sample required for 620 (total number of items of the constructs *10)	Actual sample collected
Northern	99499878	13.5	52	81	123
North-eastern	27975993	3.67	15	23	94
Central	178682743	23.44	94	145	215
Eastern	163834326	21.49	86	133	218
Western	116607912	15.30	61	95	139
Southern	175610993	23.04	92	143	267
Total	762211845	100	400	620	1056

Source: Author's calculation from Census data, 2011

The age-wise classification of the population of age 18 and above for each zone was extracted from the total population. Once the groups were created, a proportionate sampling technique was employed to determine the number of samples required from each group. Zone-wise sample requirement was calculated based on the proportion of the population of each zone compared to the total population of India of years 18 and above. The proportionate sampling calculation is displayed in Table 4.1. After determining the proportion of sample required from each zone in the second stage, the third stage involved collecting data from each sub-group. Two non-probability sampling techniques, namely purposive sampling and convenient sampling, were used. Non-probability sampling is useful when the researcher has a scheme or pattern in mind for choosing the respondents (Cooper and Schindler 2014). Purposive sampling is used when the researcher requires respondents with specific characteristics (Saunders et al. 2009). As the respondents were required to meet certain predetermined requisites to qualify as the study sample, purposive sampling was the most suitable technique. Convenient sampling is used when the researcher has limited time and resources for data collection and when the respondents are widely spread across a huge geographical area.

4.7 DATA COLLECTION PROCEDURES

The study was based on data using primary sources. A pilot study was conducted to test the effectiveness and reliability of the questionnaire using 100 respondents as a sample. Based on the pilot study results of 76 usable responses, necessary modifications were incorporated into the study questionnaire. In the final study, questionnaires were administered by identifying respondents through purposive and convenient sampling techniques. The data relates to financial aspects and requires confidentiality; therefore, only those respondents who agreed to participate voluntarily and met the sample criteria were considered. The researcher collected 1056 responses through offline and online modes based on the proportion required from each population sub-group.

4.8 STATISTICAL TOOLS

The study data was assessed using two statistical tools. IBM SPSS (Statistical Package for Social Science) (version 20) was used for identifying outliers and missing variables,

calculating descriptive statistics, normality, reliability, multi-collinearity, and validity of the questionnaire. IBM AMOS (Analysis of Moment Structures) (version 21) was used to assess the unidimensionality of the constructs and factor loadings. Both SPSS and AMOS tools were used for testing the research hypotheses.

4.9 STATISTICAL TECHNIQUES

The study's hypotheses were tested by adopting suitable statistical techniques, namely structural equation modelling (regression model), t-test, ANOVA (Analysis of Variance) and ordinal logistic regression.

Structural Equation Modelling

Structural equation modelling (SEM), often called second-generation regression or multivariate data analyses technique, helps test a hypothesised model by simultaneously analysing all the study variables to determine its consistency with the data (Bryne 2001; Hair et al. 2014). SEM as an estimation technique is appropriate when a series of regression equations have to be estimated at the same time. SEM is a theory-driven technique as the decision of the independent and dependent variables is based on the theoretical background known to the researcher. For SEM to be a useful technique, certain assumptions need to be satisfied, such as data normality, absence of missing data, absence of measurement and sampling error, and adequate model fit indexes (Kumar and Kumar 2015). There are two parts to carrying out the SEM analyses: a) Measurement Model and b) Structural model. The measurement model helps assess the factor loadings of the selected variables of the study and is a form of confirmatory factor analysis (Hair et al. 2014). The confirmatory analysis for individual variables helps to confirm the unidimensionality of the variable. The structural model is called the path model, with the testable hypothesised relationships between independent and dependent variables based on an underlying theory. The measurement and structural models must fulfil goodness of fit criteria to provide meaningful results. SEM using AMOS provides a graphical model of the study variables with the proposed relationships to provide a clearer representation (Bryne 2001). The proposed model for the current study consists of three psychological factors and five personality traits as the independent variables and risk-taking propensity as the dependent variable.

Psychological factors consist of optimism, self-control and mood (positive affect and negative affect). Openness to experience, conscientiousness, extraversion, agreeableness and neuroticism constitute the five personality traits.

T-Test and ANOVA

The hypotheses on the impact of demographic factors on financial risk-taking propensity was tested using the student's T-test and ANOVA. A T-test is used when a comparison of the mean has to be carried out between two groups or categories (Hair et al. 2014). The difference in mean scores of financial risk-taking propensities based on gender and marital status was tested using a t-test, as these two demographic variables had only two categories for comparison. ANOVA is used when the mean comparison is made for two or more categories (Hair et al. 2014). Comparison of financial risk-taking for various categories of age, educational qualification, occupation, income, and zones was analysed by employing ANOVA.

Ordinal Logistic Regression

Ordinal regression is used when the dependent variable belongs to an ordered category, and the independent variable is either categorical, scale or continuous. In other words, ordinal regression is a parsimonious way of representing data when there are two or more categories of the dependent variable, and they are ordered. It is a predictive model which is used to predict the dependent variable outcome based on the independent variable. Ordinal regression can be performed using either a simple ordinal logit model (OLM) or a generalised ordered logit model. Unlike multinomial logistic regression, where there are different sets of regression estimates based on the categories of the dependent variable, in ordinal logistic regression, only one set of estimates is calculated for the entire model. The ordinal logit model works with one most important assumption called the proportional odds assumption. The proportional odds assumption requires that the relationship between the independent and dependent variable remains unchanged irrespective of the category of the dependent variable or outcome variable.

Regarding practical application, the ordinal logit model is a restrictive model with often proportional odds assumption violated. The assumption is violated because of the

presence of a large number of independent variables or a large sample size, or there is a continuous explanatory variable in the model (Brant 1990; Clogg and Shihadeh 1994; Allison 1999; Williams 2006). Compared to the OLM, generalised ordinal logit models are a form of partial proportional odds models that are less restrictive than the parallel-lines model. This method is more interpretable as it provides additional information on the odds ratio, which makes it a more powerful method for prediction.

4.10 OVERVIEW OF RESEARCH METHODOLOGY

The research methodology adopted for the study is put forth using the research onion. The research onion provides a bird's eye view of the overall methodology. Figure 4.2 demonstrates the research onion of the current study.

4.11 ETHICAL CONSIDERATION

All research studies involving human participants need approval from an ethics committee of the concerned University. The Research Progress Assessment Committee (RPAC) is the body for providing approval on ethical aspects at the National Institute of Technology Karnataka (NITK), Surathkal. The researcher framed the survey questionnaire, and the same was presented to the RPAC members. The members approve of using the questionnaire only after the researcher abides by certain protocols. The researcher needs to look into the following aspects as a part of the ethical requirements; a) provide complete disclosure of the topic and need for study at the beginning of the questionnaire, b) preserve the anonymity of the study participants, c) ensure confidentiality of the collected data, d) seek responses based on voluntary participation with the provision of withdrawal of participation anytime during the survey, e) disclosure on the use of data for academic purposes only and safe storage of data after the completion of the study. The study fulfilled ethical criteria at every research stage through formal presentations in front of the committee members.

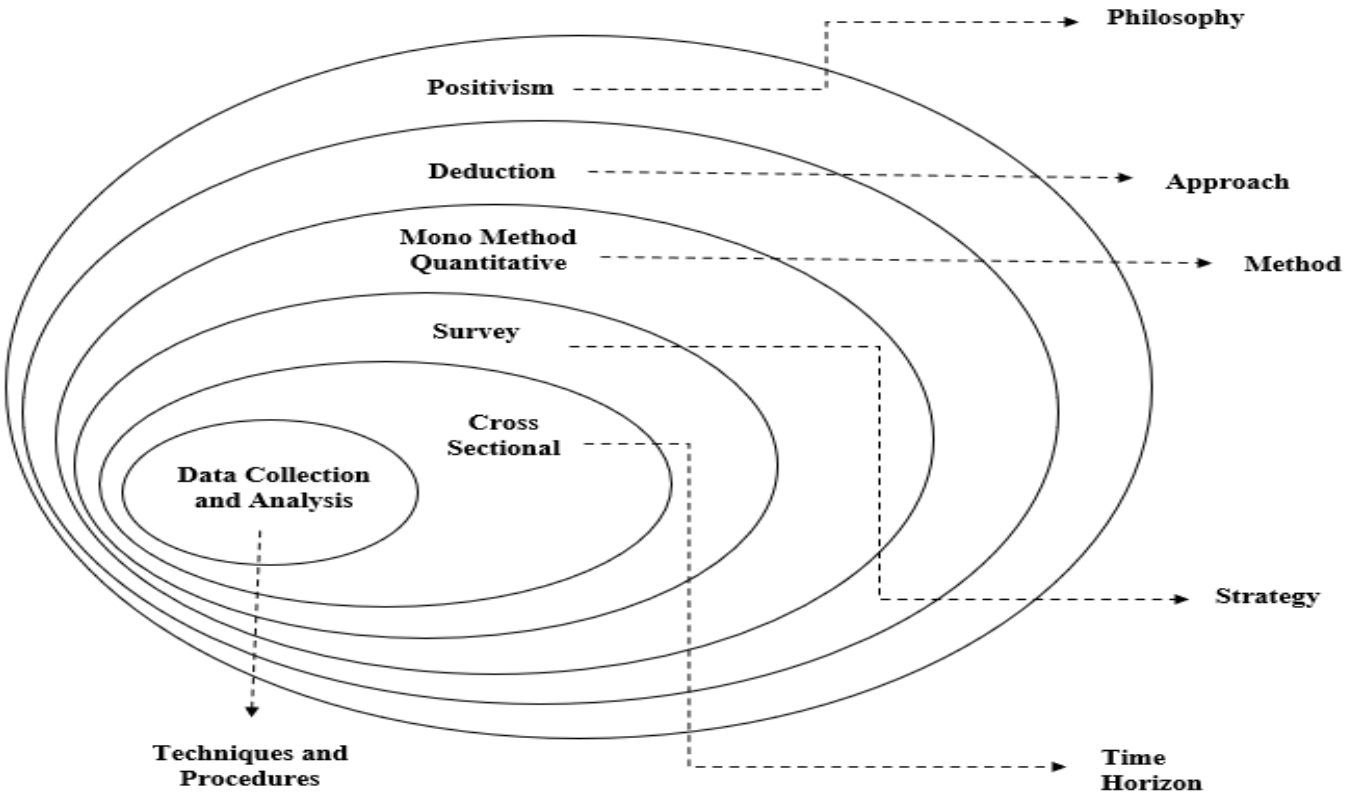

Figure 4.2: Research Onion for the Current Study

Source: Author (Based on Saunders et al., 2019)

4.12 CHAPTER SUMMARY

The chapter provided the research design of the study within the lens of the research paradigm that lays the pathway to the entire work. A detailed discussion on the population, sampling, quantitative techniques, and statistical tools used has been done in this chapter, along with the bird's eye view of the methodological flow through a graphical representation of the research onion specific to the present study. The ethical considerations for conducting the survey and collecting data from the target population have also been laid down in the chapter.

CHAPTER 5

DATA ANALYSIS AND RESULTS

5.1 CHAPTER OVERVIEW

This chapter provides a detailed analysis of the research data. Firstly the chapter presents the results of the preliminary analysis, followed by the demographic profile of the respondents of the final study, and lastly, the final study analysis and results. The results of the final study are further reported in four steps. In the first step, the procedure of initial analysis, such as data screening, cleaning and editing, has been presented. In the second step, the normality, reliability and validity of the study constructs are established. The third step assesses the measurement models of individual constructs and the overall measurement model for Structural Equation Modelling (SEM) analysis. In the fourth step, the hypothesised relationships are analysed through path analysis and other statistical tests.

5.2 PRELIMINARY ANALYSIS / PILOT SURVEY RESULTS

A pilot survey was undertaken before the final study to establish validity and reliability criteria for the research instrument. The following measures were adopted to validate the research questionnaire.

Face Validity and Content Validity

Researchers frequently use multi-item scales produced in earlier research to measure constructs to evaluate measurement theories. When previously used scales are included in the same model, the researcher should ensure that the item content of the scales does not overlap, even if the scales have been applied effectively with sufficient reliability and validity in past studies. To put it another way, the researcher should verify the scales' face validity even if they are borrowed. Likely, face validity and content validity problems that did not surface when the scales were employed separately would surface when two borrowed scales are combined into a single measurement model (Hair et al. 2014).

While content validity entails a formal assessment by subject matter experts to determine appropriateness of content and identify any misunderstandings or omissions, face validity is an informal review of a questionnaire by non-experts or the

researchers themeselves who assess its clarity, comprehensibility, and appropriateness for the target-group (Tanner 2018).

In the present study face validity was assessed by the researcher and the content validity of the research instrument was established by soliciting expert opinions from two academicians with over fifteen years of teaching and research experience in finance and one industry expert with more than ten years of experience in dealing with various types of investment products and financial advisory services. Based on the suggestions and comments provided by the experts, necessary changes were incorporated into the survey instrument.

Treatment of Missing Values and Outliers

Data was collected from 100 respondents based on convenience sampling. Out of the 100 responses, incomplete responses were deleted. The responses with missing observations constituted less than 10 per cent of the sample. Therefore the missing observations were replaced with the series means of the respective latent construct. After treating missing values, univariate and multivariate were detected with the help of z score and Mahalanobis distance, respectively. A total of 76 responses were considered for the preliminary analysis after deleting incomplete responses and treating for missing values and outliers.

Construct Validity and Reliability

The data was subjected to factor analysis to determine the relationship of individual items with the underlying latent construct. Cronbach's Alpha (α) value was computed for each construct to ensure that the constructs are reliable. Principal Component Analysis (PCA) with varimax rotation was used to determine the factor loadings for each of the items of the constructs. The results of the analysis are summarised in table 5.1.

Table 5.1: Construct Validity and Reliability for Pilot Survey

Construct	No. of items	Factor loadings range	α	Total Variance Explained (%)
Optimism	06	0.720 – 0.830	0.885	
Self-control	07	0.637 – 0.826	0.847	
Mood – Positive affect	10	0.618 – 0.824	0.893	
Mood – Negative affect	10	0.713 – 0.829	0.901	
Openness to experience	05	0.740 – 0.836	0.846	68.85
Conscientiousness	05	0.730 – 0.863	0.863	
Extraversion	04	0.671 – 0.850	0.802	
Agreeableness	04	0.801 – 0.884	0.857	
Neuroticism	05	0.645 – 0.859	0.838	
Risk-Taking propensity	06	0.794 – 0.881	0.910	

Source: Calculated by Author Based on the Data Collected

The constructs displayed satisfactory values for factor loadings, Cronbach's Alpha, and total variance explained by all constructs in the model. These values were above the threshold requirement (Cronbach's Alpha > 0.7, factor loadings > 0.5 and total variance explained > 60 per cent) and thereby indicating that the research instrument could be used for the final study after making the necessary changes based on the preliminary results.

5.3 FINAL STUDY RESULTS

Data Screening, Cleaning and Editing

The total number of responses collected was 1056. After checking for incomplete and unengaged responses, there were 982 usable responses. Responses with missing values in the data set constituted less than 10 per cent of the total responses; thus, they were replaced by the series mean of the respective construct. Further, the multivariate outliers were identified by calculating the Mahalanobis distance. Those responses away from the centroid with a probability value of less than 0.001 were deleted (Hair et al. 2014). The responses considered for the final analysis after detecting and eliminating outliers numbered 976.

Demographics of the Sample

Gender of the Respondents

The following table shows the distribution of the study sample based on the gender of the respondents.

Table 5.2: Gender of the Respondents

Gender	Number of Respondents	Percent
Male	515	52.8
Female	461	47.2
Total	976	100

Source: Calculated by Author Based on the Data Collected

Of the 976 respondents, males constituted the majority, i.e., 52.8 per cent, while the female respondents formed 47.2 per cent of the sample. The data shows that the sample constituted a balance between the gender groups. The male respondents were slightly higher but not significantly higher than the female respondents. The balance in the sample contributed to the results unhindered by gender bias.

Age of the Respondents

The following table presents the distribution of the respondents based on their age, categorised into five groups.

Table 5.3: Age of the Respondents

Age (years)	Number of Respondents	Percent
18 – 27	389	39.9
28 – 37	204	20.9
38 – 47	234	24.0
48 – 57	92	9.4
Above 57	57	5.8
Total	976	100

Source: Calculated by Author Based on the Data Collected

It can be noted that most of the respondents were from the age category 18 years to 27 years. More than 50 per cent of the total respondents were below 37 years of age. The disproportion in the study sample could be attributed to the fact that more than 60 per cent of the Indian population is below the age of 35 years (Census 2011). The median age of the Indian population is 28.7 years, and 59.07 per cent of the population falls between the age group of 15 years to 54 years (Central Intelligence Agency). This skewed distribution can also be noticed in the study sample, where the majority of the respondents are between 18 to 47 years of age.

Marital Status of the Respondents

Table 5.4 presents the marital status of the respondents.

Table 5.4: Marital Status of the Respondents

Marital Status	Number of Respondents	Percent
Single	512	52.5
Married	464	47.5
Total	976	100

Source: Calculated by Author Based on the Data Collected

The sample consisted of respondents proportionately distributed based on their marital status. The single respondents comprised most of the sample compared to the married respondents.

Educational Qualification (Completed) of the Respondents

The following table demonstrates the educational qualification of the respondents.

Table 5.5: Educational Qualification of the Respondents

Educational Qualification	Number of Respondents	Percent
Below 10^{th} / SSLC	15	1.5
10^{th}/ SSLC	21	2.2
12^{th} / PUC	144	14.8
Diploma	83	8.5

Graduate	420	43.0
Postgraduate	277	28.4
Doctorate	16	1.6
Total	976	100

Source: Calculated by Author Based on the Data Collected

The respondents with graduation formed close to half of the study sample, followed by respondents with post-graduation. The skewness in the sample based on the educational qualification of the respondents does not truly represent the educational status of the average Indian population. The skewed sample can be attributed to two main reasons based on the scope of the study. Firstly, the current study required respondents to know or invest in at least a few financial products in the Indian financial market to be able to create a hypothetical portfolio. Secondly, the platform for soliciting the majority of the responses was online due to the pandemic, requiring respondents to be technology friendly for answering online survey forms. In addition, the questionnaire was a self-administered one with the English language used due to the PAN India study. This required the respondents to have a basic understanding of the language to answer the questions effectively.

Current Occupation of the Respondents

The table below showcases the distribution of respondents into seven categories based on their occupation.

Table 5.6: Occupation of the Respondents

Occupation	**Number of Respondents**	**Percent**
Student	192	19.7
Student with a part-time job	74	7.6
Private-sector employee	340	34.8
Government sector employee	222	22.7
Self - employed	107	11.0
Retired	10	1.0

Not employed currently	31	3.2
Total	976	100

Source: Calculated by Author Based on the Data Collected

Most of the respondents belonged to the working class, with private-sector employees being the majority, followed by government-sector employees. The non-working class comprising of students, those retired and those that are not currently employed together formed only a small part of the sample.

Monthly Income Level of the Respondents

The following table summarises the respondents bifurcated based on their individual monthly income.

Table 5.7: Income Level of the Respondents

Income (Monthly)	Number of Respondents	Percent
NIL	233	23.9
Less than 20000	148	15.2
20000 – 40000	270	27.7
40001 – 60000	96	9.8
60001 – 80000	109	11.2
80001 – 100000	73	7.5
Above 100000	47	4.8
Total	976	100

Source: Survey Data

The respondents with a monthly income between 20000 to 40000 rupees were the majority. As the study sample consisted of most of the respondents falling into younger age groups, they would be in the early stages of their careers. The years of experience in such a case would be lesser with lesser pay scales.

Zone of Residence of the Respondents

The table below depicts the respondents spread across six administrative zones of India.

Table 5.8: Zone of the Respondents

Zone	Number of Respondents	Percent
Eastern	202	20.7
Western	124	12.7
Northern	114	11.7
Southern	243	24.9
Northeastern	86	8.8
Central	207	21.2
Total	976	100

Source: Calculated by Author Based on the Data Collected

The study respondents were from six administrative zones of India, as the present study is a PAN India study. The proportionate sampling technique was considered to gather responses based on the population of each zone. No further division was considered between urban and rural respondents of each zone as this was beyond the scope of the study.

Descriptive Statistics

The mean and standard deviation for all nine constructs was calculated. Table 5.9 shows the descriptive statistics for all the study constructs measured on the Likert scale.

Table 5.9: Descriptive Statistics of Constructs of the Study

Sl. No.	Construct	Mean	Standard Deviation
1.	Optimism	3.508	0.784
2.	Self - Control	3.082	0.826
3.	Mood - Positive Affect	3.518	0.716
	Mood - Negative Affect	2.400	0.852
4.	Openness to Experience	3.987	0.640
5.	Conscientiousness	3.291	0.826
6.	Extraversion	3.801	0.734

7.	Agreeableness	3.535	0.869
8.	Neuroticism	2.954	0.987
9.	Financial Risk-taking Propensity	4.441	0.824

Source: Calculated by Author Based on the Data Collected

The first eight constructs, optimism to neuroticism, that form the independent variables were measured on a five-point Likert scale. The dependent variable risk-taking propensity was measured on a seven-point Likert scale. As the study uses structural equation modelling, the scores get standardised for the computation of final estimates, irrespective of the type of Likert scale measure.

KMO and Bartlett's test

Determining underlying factors or causes that can be used to explain the relationship between two or more variables is the aim of factor analysis in statistics. In the decision to undertake factor analysis of the constructs of the study, two tests, namely the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity, are considered crucial. The KMO measure shows how each variable in a given set of variables can be accurately predicted by other variables without errors. The KMO value ranges from 0 to 1, with values close to 1 being acceptable and below 0.50 as unacceptable (Kaiser 1974). The KMO value for the variables of the study displayed sampling adequacy. Bartlett's test of sphericity is based on the null hypothesis that the correlation matrix of variables is an identity matric. This null hypothesis needs to be rejected to establish that the variables are related and suitable to be subjected to factor analysis. A statistically significant value of less than 0.50 indicates a substantial correlation among the variables of interest, and therefore factor analysis can be employed (Bartlett 1954).

Table 5.10: KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.90
Bartlett's Test of Sphericity	0.00

Source: Literature

The KMO and Barlett's test of sphericity values for study variables were within the acceptable threshold requirements. Therefore factor analysis could be used for the study data.

Multicollinearity Test

The relationship between the study's independent variables should be such that the variables should be related to each other yet independently measure the underlying construct without overlapping. In other words, the independent constructs should not display high correlations among themselves to be free from multicollinearity. The rise in multicollinearity reduces the collective predictability of the independent variables. Thus collinearity diagnostics have to be undertaken to see if the extent of shared variance of the independent variables is within the threshold. The independent constructs of the study were checked for multi-collinearity problems by analysing the Variance Inflation Factor (VIF) values. Linear regression was carried out with the dependent and independent variables of the model. Hair et al. 2014 suggest that VIF values of less than 10 as generally acceptable. The independent variables of the study showed the absence of any multicollinearity, as the VIF values were well below the acceptable limit.

Table 5.11: Collinearity Statistics

Dependent Variable	Model Predictors	Tolerance	VIF
Financial Risk-taking Propensity	Optimism	0.843	1.186
	Self - Control	0.924	1.082
	Mood - Positive Affect	0.864	1.158
	Mood - Negative Affect	0.841	1.190
	Openness to Experience	0.922	1.085
	Conscientiousness	0.802	1.247
	Extraversion	0.769	1.301
	Agreeableness	0.900	1.112
	Neuroticism	0.869	1.151

Source: Calculated by Author Based on the Data Collected

Principal Component Analysis

Factor analysis is a data reduction technique that helps identify common factors that are more manageable from a large set of items. The extraction of variables based on the underlying commonality helps to simplify the data and use it effectively in analysing relationships between the factors. Factor analysis comprises broadly two methods; one is the Exploratory Factor Analysis (EFA), and the second is the Principal Component Analysis (PCA). EFA is used in case of scale developments or when the researcher is unsure about the underlying factors in a given set of items, and PCA is used when the study constructs are theoretically based, and the researcher has a fair idea of the underlying constructs.

All the items of the nine study variables were subject to PCA with varimax rotation to obtain the factor matrix. The factors with an eigenvalue above 1.0 indicate the factors to be retained. To ensure that the factors identified exhibit practical significance, the percentage of variance criterion has to be looked into. In social sciences, the identified factors should account for a total variance of 60 per cent and above to be considered a satisfactory solution. The component matrix converged the items into ten distinct variables. The variable mood was two-dimensional, comprising two factors, positive affect and negative affect, which aligns with the theoretical underpinnings. The total variance explained by the study variables was 62.49%. All ten factors displayed an eigenvalue above 1.0. The rotated component matrix shows the absence of cross-loadings between factors showing the distinctness of each factor from the other.

Table 5.12: Rotated Component Matrix

	Components									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
NA10	**0.763**	-0.062	-0.051	0.023	0.116	-0.026	-0.025	0.004	0.007	-0.045
NA9	**0.755**	-0.101	-0.025	0.054	0.136	-0.003	-0.070	-0.018	-0.020	-0.001
NA2	**0.739**	-0.120	-0.074	-0.028	0.067	0.004	0.016	0.008	-0.013	-0.020
NA6	**0.731**	-0.112	-0.034	0.056	0.097	0.068	-0.005	0.009	-0.001	0.001
NA1	**0.717**	-0.104	-0.092	-0.019	0.100	0.036	-0.050	0.011	-0.023	0.012
NA7	**0.713**	-0.141	-0.008	0.016	0.042	0.037	-0.053	-0.018	-0.066	-0.034

NA4	**0.702**	-0.116	-0.079	-0.014	0.103	0.040	-0.022	0.042	0.008	-0.070
NA5	**0.695**	-0.161	-0.082	0.022	0.067	0.054	0.024	-0.070	0.009	0.074
NA3	**0.677**	-0.166	-0.061	0.033	0.047	0.019	-0.028	0.017	-0.111	0.000
NA8	**0.668**	-0.150	-0.009	0.078	0.009	0.099	0.017	0.013	-0.069	0.056
PA4	-0.120	**0.753**	0.020	-0.013	-0.078	0.019	-0.041	-0.008	-0.037	0.031
PA5	-0.107	**0.750**	0.044	-0.049	-0.057	0.007	-0.032	-0.021	0.010	0.038
PA8	-0.124	**0.742**	0.080	0.002	0.007	0.020	0.029	0.022	0.019	-0.021
PA10	-0.115	**0.728**	0.006	-0.069	-0.081	0.032	-0.067	0.005	0.029	-0.017
PA1	-0.121	**0.728**	0.019	0.050	-0.061	0.009	0.031	-0.004	-0.034	-0.029
PA2	-0.122	**0.720**	0.038	0.046	-0.042	0.016	-0.003	-0.007	-0.060	-0.017
PA7	-0.119	**0.713**	0.102	0.004	-0.013	0.030	0.054	0.037	0.014	0.015
PA6	-0.134	**0.712**	0.082	0.015	-0.054	0.028	0.006	-0.008	0.030	-0.032
PA3	-0.110	**0.689**	0.052	0.001	-0.010	-0.018	0.053	0.023	-0.010	-0.007
PA9	-0.108	**0.679**	0.034	-0.018	-0.066	0.042	-0.034	0.033	-0.005	-0.047
SC3	-0.072	0.068	**0.756**	-0.063	-0.178	0.005	-0.016	-0.003	0.013	-0.030
SC1	-0.029	0.112	**0.756**	-0.023	-0.157	-0.029	-0.045	0.013	0.001	-0.002
SC5	-0.082	0.081	**0.744**	-0.030	-0.136	-0.006	0.017	-0.061	-0.013	-0.018
SC6	-0.108	0.059	**0.742**	0.010	-0.154	0.020	0.018	-0.025	0.000	0.003
SC4	-0.038	0.064	**0.742**	-0.103	-0.138	-0.047	-0.012	-0.044	0.013	0.005
SC2	-0.033	0.038	**0.729**	-0.013	-0.185	-0.007	-0.010	-0.006	-0.010	-0.050
SC7	-0.096	0.027	**0.721**	-0.054	-0.109	-0.029	-0.032	-0.027	0.011	0.043
OP6	-0.006	0.001	-0.045	**0.802**	0.067	0.028	0.054	0.044	0.047	0.110
OP3	-0.002	0.007	-0.043	**0.790**	0.127	-0.061	0.070	0.104	-0.009	0.161
OP5	0.069	-0.011	-0.033	**0.783**	0.112	-0.080	0.095	0.065	0.006	0.107
OP4	0.006	-0.027	-0.056	**0.780**	0.096	-0.032	0.040	0.060	0.039	0.049
OP1	0.053	0.024	-0.075	**0.780**	0.135	0.001	0.044	0.005	0.030	0.095
OP2	0.076	-0.008	-0.027	**0.679**	0.126	-0.066	0.077	-0.068	0.036	0.086
RTP1	0.124	-0.070	-0.209	0.147	**0.786**	0.037	-0.002	0.073	0.034	0.036
RTP2	0.144	-0.112	-0.237	0.147	**0.772**	0.011	0.032	0.041	-0.036	0.085
RTP4	0.162	-0.051	-0.182	0.128	**0.762**	0.075	0.015	0.051	-0.002	0.071
RTP5	0.167	-0.065	-0.209	0.118	**0.752**	0.028	0.024	0.091	-0.006	0.034

RTP3	0.134	-0.121	-0.226	0.124	**0.751**	0.073	0.010	0.053	-0.027	0.063
RTP6	0.125	-0.087	-0.231	0.126	**0.742**	0.096	0.000	0.016	0.024	0.036
NE4	0.053	0.041	-0.035	-0.056	0.062	**0.862**	-0.101	-0.015	-0.073	-0.057
NE1	0.077	0.053	-0.002	-0.088	0.050	**0.845**	-0.134	-0.070	-0.069	-0.059
NE2	0.110	0.046	-0.034	-0.016	0.028	**0.844**	-0.131	-0.070	-0.059	-0.027
NE5	0.022	0.015	-0.021	0.026	0.060	**0.824**	-0.091	-0.037	-0.092	-0.042
NE3	0.050	0.037	-0.005	-0.084	0.075	**0.823**	-0.086	-0.027	-0.078	-0.107
CO5	-0.010	0.045	-0.034	0.033	0.009	-0.159	**0.804**	0.055	0.080	0.105
CO1	-0.056	0.029	-0.030	0.075	-0.069	-0.077	**0.781**	0.008	0.104	0.139
CO3	-0.070	-0.024	0.001	0.125	0.083	-0.039	**0.777**	-0.070	0.096	0.034
CO2	-0.019	-0.048	-0.036	0.109	0.034	-0.100	**0.753**	0.018	0.038	0.137
CO4	-0.019	0.006	0.017	0.027	0.004	-0.139	**0.684**	0.010	0.102	0.099
OE3	-0.017	0.063	-0.047	0.001	0.066	-0.066	-0.004	**0.802**	-0.006	-0.002
OE4	0.018	0.006	-0.022	0.052	0.029	-0.004	0.014	**0.783**	0.050	0.107
OE5	-0.008	0.009	-0.080	-0.011	0.026	-0.072	-0.017	**0.775**	0.126	0.101
OE1	0.013	-0.003	-0.013	0.072	0.078	0.007	0.022	**0.761**	-0.036	0.119
OE2	-0.004	-0.002	0.015	0.063	0.049	-0.060	0.004	**0.754**	0.043	0.048
AG2	-0.074	-0.010	0.024	0.006	-0.038	-0.073	0.110	0.040	**0.856**	-0.007
AG3	-0.041	-0.022	0.008	0.054	-0.001	-0.134	0.127	0.050	**0.851**	0.024
AG4	-0.058	0.001	-0.003	0.030	0.030	-0.022	0.081	0.062	**0.820**	0.059
AG1	-0.072	-0.017	-0.013	0.058	-0.002	-0.125	0.099	0.026	**0.782**	-0.002
EX3	-0.002	-0.019	-0.030	0.172	0.085	-0.099	0.144	0.105	0.055	**0.820**
EX2	-0.029	-0.036	-0.023	0.177	0.045	-0.100	0.140	0.147	-0.008	**0.804**
EX1	0.028	0.012	0.028	0.129	0.091	-0.001	0.093	0.063	0.009	**0.803**
EX4	-0.038	-0.052	-0.027	0.172	0.061	-0.116	0.203	0.125	0.026	**0.790**

Source: Calculated by Author Based on the Data Collected

Assessment of Normality

To employ SEM, the data requires to be normally distributed. The normality of the data can be assessed with the help of skewness and kurtosis statistics (Hair et al., 2014). The data is normal when the absolute skewness is below two, and the absolute kurtosis value is below seven for a sample size greater than 200 (West et al. 1996;

Kline 2005). The following table (Table 5.13) shows the skewness and kurtosis statistics for all nine study constructs. The values for all the items of the nine constructs did not show any deviation from normality, thereby indicating no further data treatment was required to carry out SEM.

Table 5.13: Skewness and Kurtosis Statistics

Construct	Indicators	Skewness	Kurtosis
Optimism	OP1	-0.588	0.128
	OP2	-0.326	0.009
	OP3	-0.651	-0.073
	OP4	-0.183	-0.602
	OP5	-0.549	-0.242
	OP6	-0.554	-0.136
Self-Control	SC1	-0.201	-0.903
	SC2	0.057	-0.678
	SC3	-0.154	-0.753
	SC4	-0.145	-1.032
	SC5	0.315	-0.688
	SC6	-0.120	-0.943
	SC7	-0.039	-0.636
Mood - Positive Affect	PA1	-0.223	-0.663
	PA2	-0.298	-0.504
	PA3	-0.173	-0.409
	PA4	-0.087	-0.381
	PA5	-0.150	-0.542
	PA6	-0.145	-0.539
	PA7	-0.135	-0.522
	PA8	-0.134	-0.573
	PA9	-0.236	-0.602
	PA10	-0.121	-0.691
Mood - Negative Affect	NA1	0.312	-0.860
	NA2	0.479	-0.518

	NA3	0.576	-0.559
	NA4	0.498	-0.643
	NA5	0.553	-0.709
	NA6	0.763	-0.264
	NA7	0.759	-0.492
	NA8	0.714	-0.288
	NA9	0.443	-0.750
	NA10	0.407	-0.815
Openness to Experience	OE1	-0.388	-0.273
	OE2	-0.732	0.765
	OE3	-0.332	-0.457
	OE4	-0.825	1.154
	OE5	-0.549	0.139
Conscientiousness	CO1	-0.520	-0.474
	CO2	-0.193	-0.549
	CO3	-0.059	-0.780
	CO4	0.093	-0.670
	CO5	-0.384	-0.513
Extraversion	EX1	-0.645	0.137
	EX2	-0.176	-0.165
	EX3	-0.547	0.279
	EX4	-0.105	-0.462
Agreeableness	AG1	-0.210	-0.358
	AG2	-0.374	-0.399
	AG3	-0.321	-0.609
	AG4	-0.568	-0.303
Neuroticism	NE1	-0.123	-0.963
	NE2	0.025	-0.885
	NE3	-0.061	-0.823
	NE4	0.009	-1.074
	NE5	0.120	-0.596

Financial Risk-taking propensity	RTP1	-0.518	-0.070
	RTP2	-0.455	-0.359
	RTP3	-0.461	-0.326
	RTP4	-0.521	-0.071
	RTP5	-0.244	-0.468
	RTP6	-0.172	0.051

Source: Calculated by Author Based on the Data Collected

Assessment of Reliability

Reliability refers to the overall consistency of a variable or construct. There are three broad categories of consistency considered by psychologists based on the context of the study, viz., test-retest reliability, internal consistency, and inter-rater reliability (Jhangiani et al. 2019). The test-retest reliability is used when the consistency of a construct is to be measured across time on the same group of people. Internal consistency assesses the consistency in the responses across the items of a multi-item measure. Inter-rater reliability requires consistency in the judgement of behavioural measures on the part of the observer or rater.

Reliability for self-reported measures in behavioural and psychological studies mainly focuses on the internal consistency of the items of the constructs. Reliability testing in such cases ensures that the items of a particular construct measure the underlying construct accurately. Cronbach's Alpha is the most commonly used internal consistency measure. The reliability of the study constructs was assessed by calculating Cronbach's Alpha for each construct.

Table 5.14: Reliability statistics for the constructs of the study

Sl. No.	Construct	Cronbach's Alpha
1.	Optimism	0.881
2.	Self - Control	0.881
3.	Mood - Positive Affect	0.905
	Mood - Negative Affect	0.905
4.	Openness to Experience	0.844
5.	Conscientiousness	0.843

6.	Extraversion	0.870
7.	Agreeableness	0.866
8.	Neuroticism	0.912
9.	Financial Risk-taking Propensity	0.906

Source: Calculated by Author Based on the Data Collected

The reliability value for the construct should be 0.7 or above (Nunnally 1978) to say that the items are statistically reliable and adequately measure the construct. The reliability values for all the study constructs were above 0.7, indicating that further analysis could be done.

Common Method Bias

Common method bias or common method variance is a form of measurement error where the variation in the responses to the survey instrument is attributed to the instrument itself and not the measured constructs (Podsakoff et al. 2003). This measurement error is a major problem in behavioural research as it can have a severe impact on the type of findings and conclusions drawn in the presence of method bias (MacKenzie and Podsakoff 2012; Aguirre-Urreta and Hu 2019). Prior to analysing the responses and reaching any conclusions based on the type of responses, researchers have to take care that the common method bias is diagnosed and corrected. One of the widely accepted methods for detecting common method bias in quantitative research is 'Harman's single-factor test'. In this test, the constructs of the instrument are loaded on a single factor to analyse the total variance explained. To say that a study is free from method bias, the total variance explained by the single factor should be less than 50 per cent. PCA was used to extract the total variance explained by a single factor by loading all the constructs of the study onto a single factor. The total variance explained was 14.75 per cent. The result clearly indicates that the measurement instrument for the current study does not suffer from common method bias. Hence, no further corrective measures were needed before analysing the hypothesised relations.

Table 5.15: Harman's One-Factor Test

Comp	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	9.142	14.746	14.746	9.142	14.746	14.746
2	6.528	10.528	25.274			
3	4.915	7.927	33.201			
4	3.635	5.863	39.064			
5	3.068	4.948	44.013			
6	2.976	4.800	48.812			
7	2.553	4.117	52.930			
8	2.367	3.818	56.748			
9	1.879	3.031	59.779			
10	1.681	2.712	62.491			
11	0.846	1.365	63.856			
12	0.785	1.266	65.121			
13	0.727	1.172	66.294			
14	0.708	1.142	67.436			
15	0.684	1.104	68.539			
16	0.673	1.085	69.624			
17	0.662	1.068	70.692			
18	0.645	1.040	71.733			
19	0.605	0.976	72.709			
20	0.595	0.960	73.669			
21	0.576	0.929	74.599			
22	0.567	0.915	75.514			
23	0.552	0.890	76.404			
24	0.536	0.864	77.268			
25	0.530	0.855	78.122			
26	0.525	0.846	78.968			

27	0.513	0.827	79.795
28	0.494	0.797	80.592
29	0.485	0.783	81.374
30	0.478	0.771	82.145
31	0.472	0.762	82.907
32	0.456	0.736	83.643
33	0.453	0.731	84.374
34	0.452	0.729	85.103
35	0.430	0.694	85.797
36	0.422	0.681	86.478
37	0.418	0.674	87.152
38	0.408	0.658	87.810
39	0.403	0.651	88.461
40	0.394	0.635	89.096
41	0.387	0.623	89.719
42	0.379	0.611	90.330
43	0.372	0.600	90.930
44	0.368	0.594	91.524
45	0.353	0.570	92.093
46	0.345	0.557	92.650
47	0.341	0.550	93.200
48	0.336	0.542	93.743
49	0.325	0.524	94.267
50	0.323	0.521	94.788
51	0.316	0.510	95.298
52	0.311	0.502	95.800
53	0.305	0.491	96.291
54	0.288	0.465	96.757
55	0.287	0.462	97.219
56	0.284	0.458	97.677
57	0.264	0.425	98.102

58	0.256	0.412	98.514
59	0.250	0.403	98.917
60	0.242	0.390	99.307
61	0.230	0.372	99.679
62	0.199	0.321	100.000

Source: Calculated by Author Based on the Data Collected

Unidimentionality of Constructs

A series of Confirmatory Factor Analyses (CFA) are undertaken for each study construct to establish unidimensionality. In other words, the components analysed together at the principal component stage are confirmed individually to see if they display unidimensionality in the study data and fit the data well. Once all the constructs show a good model fit, the measurement model is determined to assess the discriminant validity of the constructs. Only after the measurement model offers a good fit to the data, the structural model with the hypothesised relations can be tested.

Table 5.16: Threshold Values for Fit Indices

Fit Index	Threshold Value
Normed Chi-square (χ^2/df)	≤ 3 or < 5
Goodness of Fit Index (GFI)	≥ 0.90
Tucker-Lewis Index (TLI)	≥ 0.90 or ≥ 0.95
Comparative fit index (CFI)	≥ 0.90 or ≥ 0.95
Root mean square error approximation (RMSEA)	≤ 0.60 or ≤ 0.80

Source: Literature

The model fit indices are analysed based on absolute fit measures (i.e., Normed Chi-square, GFI and RMSEA) and comparative fit measures (TLI and CFI). The recommended threshold values (Wheaton et al. 1977; Bollen 1990; Hu and Bentler 1995) for the fit indices are given in Table 5.16.

Confirmatory Factor Analysis for Optimism

Optimism is measured using a scale with six items. The CFA process was done by taking all six items as a single factor. The initial measurement model (χ^2 =37.001, χ^2/df=4.111, GFI=0.987, TLI=0.982, CFI=0.990, RMSEA=0.56) indices were above the threshold values. The normed chi-square (χ^2/df) value could be improved by implementing certain modifications. The measurement model may be modified to better fit the data by examining the standardised factor loadings, standardised residuals, and modification indices. Firstly, the standardised regression weights were looked into, and the value for all six items was above the standard value of 0.5 (Table 5.17). Secondly, the standard residual values were examined for model modification. All standard residual covariances were below 4.0, indicating the absence of cross-loading. Further examination of modification indices revealed the scope for covariation of the error terms to achieve an improved model fit. The modification index between e2 <--> e4 was the highest (14.871); therefore, the model was modified by covariating these error terms. After this modification was incorporated, the model fit for the revised CFA model improved (χ^2 = 20.939, χ^2/df= 2.617, GFI= 0.993, TLI= 0.991, CFI= 0.995, RMSEA= 0.041). The revised measurement model indicated a good fit for the data.

Table 5.17: Standardised Regression Weights for optimism

Item	Direction	Variable	Estimate
OP1	<---	optimism	0.766
OP2	<---	optimism	0.606
OP3	<---	optimism	0.798
OP4	<---	optimism	0.710
OP5	<---	optimism	0.766
OP6	<---	optimism	0.783

Source: Calculated by Author Based on the Data Collected

Table 5.18: Model Fit Indices for Optimism

Measurement model	χ^2	χ^2/df	P	GFI	TLI	CFI	RMSEA
Initial measurement model	37.001	4.111	0.000	0.987	0.983	0.990	0.056
Final measurement model	20.939	2.317	0.007	0.993	0.991	0.995	0.041

Source: Calculated by Author Based on the Data Collected

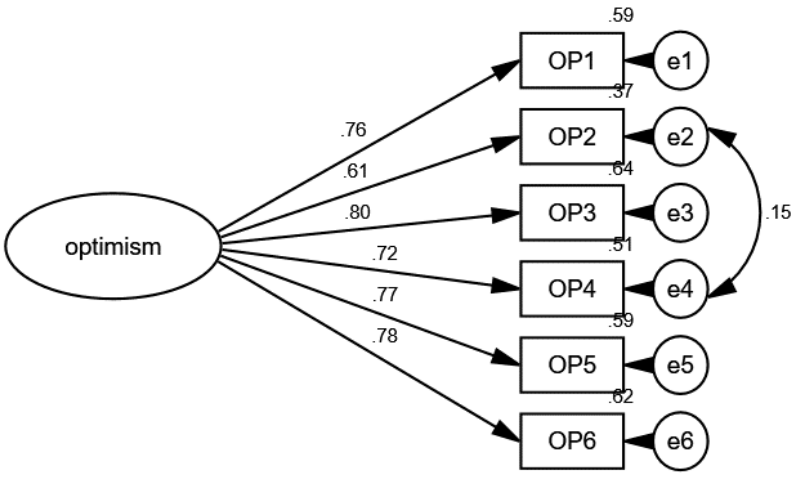

Figure 5.1 Final CFA Model for Optimism

Confirmatory Factor Analysis for Self-Control

Self-control is measured using a scale with seven items. The CFA process was done by taking all seven items as a single factor. The measurement model indices (χ^2 = 16.125, χ^2/df= 1.152, GFI= 0.995, TLI= 0.999, CFI= 0.999, RMSEA= 0.012) were all above the recommended values and indicated a good fit to the data. The standard regression weights were above 0.5 for all the items.

Table 5.19: Standardised Regression Weights for Self-control

Item	Direction	Variable	Estimate
SC1	<---	SelfControl	0.738
SC2	<---	SelfControl	0.703
SC3	<---	SelfControl	0.748

SC4	<---	SelfControl	0.715
SC5	<---	SelfControl	0.721
SC6	<---	SelfControl	0.720
SC7	<---	SelfControl	0.680

Source: Calculated by Author Based on the Data Collected

Table 5.20: Model Fit Indices for Self-Control

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Final measurement model	16.125	1.152	0.306	0.995	0.999	0.999	0.012

Source: Calculated by Author Based on the Data Collected

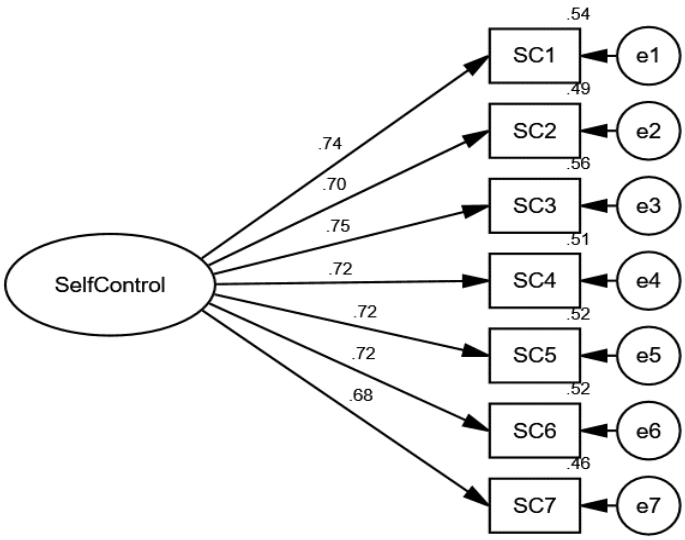

Figure 5.2 Final CFA Model for Self-Control

Confirmatory Factor Analysis for Mood

Mood is measured using the Positive Affect Negative Affect Schedule (PANAS). There are two factors, namely, Positive Affect (PA) and Negative Affect (NA), and ten items measure each factor. Earlier studies have established the measurement structure for PANAS as a two-factor correlated model (Crawford and Henry 2004; Tucitto et al. 2010; Este'vez-Lo' pez et al. 2016) rather than a second-order construct. Therefore, the same method has been followed by taking PA and NA as two factors

measuring the mood state. The CFA process was done by taking mood as a two-factor model with ten items for PA and ten for NA. The measurement model indices (χ^2 = 622.373, χ^2/df= 3.683, GFI= 0.938, TLI= 0.944, CFI= 0.950, RMSEA= 0.052) showed a good fit. The standardised regression weights and the standard residual values met the threshold limits. The modification indices revealed the scope for improvement. The error terms e13 <--> e18 were covariated as they had the highest modification index (52.568). The fit indices after covariation were (χ^2 = 567.886, χ^2/df= 3.380, GFI= 0.943, TLI= 0.950, CFI= 0.956, RMSEA= 0.049). The next highest modification index (44.593) was between the error terms e13 <--> e18. Thus these error terms were covariated. The resulting model fit indices were (χ^2 = 520.833, χ^2/df= 3.119, GFI= 0.947, TLI= 0.956, CFI= 0.961, RMSEA= 0.047). Further reduction of the normed chi-square (χ^2/df) value was possible by looking at the next highest modification index. The modification indices revealed that the error terms e11 <--> e12 had a modification index of 33.562, and thus these terms were covariated. All the measurement model indices for the revised model (χ^2 = 483.207, χ^2/df= 2.911, GFI= 0.951, TLI= 0.960, CFI= 0.965, RMSEA= 0.044) met the required standard values.

Table 5.21: Standardised Regression Weights for Mood (Positive Affect and Negative Affect)

Item	Direction	Variable	Estimate	Item	Direction	Variable	Estimate
PA1	<---	PosAffect	0.702	NA1	<---	NegAffect	0.713
PA2	<---	PosAffect	0.697	NA2	<---	NegAffect	0.730
PA3	<---	PosAffect	0.655	NA3	<---	NegAffect	0.656
PA4	<---	PosAffect	0.737	NA4	<---	NegAffect	0.696
PA5	<---	PosAffect	0.731	NA5	<---	NegAffect	0.667
PA6	<---	PosAffect	0.697	NA6	<---	NegAffect	0.696
PA7	<---	PosAffect	0.693	NA7	<---	NegAffect	0.695
PA8	<---	PosAffect	0.721	NA8	<---	NegAffect	0.625
PA9	<---	PosAffect	0.651	NA9	<---	NegAffect	0.729
PA10	<---	PosAffect	0.707	NA10	<---	NegAffect	0.727

Source: Calculated by Author Based on the Data Collected

Table 5.22: Model Fit Indices for Mood							
Measurement model	**χ^2**	**χ^2/df**	**p**	**GFI**	**TLI**	**CFI**	**RMSEA**
Initial measurement model	622.373	3.683	0.000	0.938	0.944	0.950	0.052
Final measurement model	483.207	2.911	0.000	0.951	960	0.965	0.044

Source: Calculated by Author Based on the Data Collected

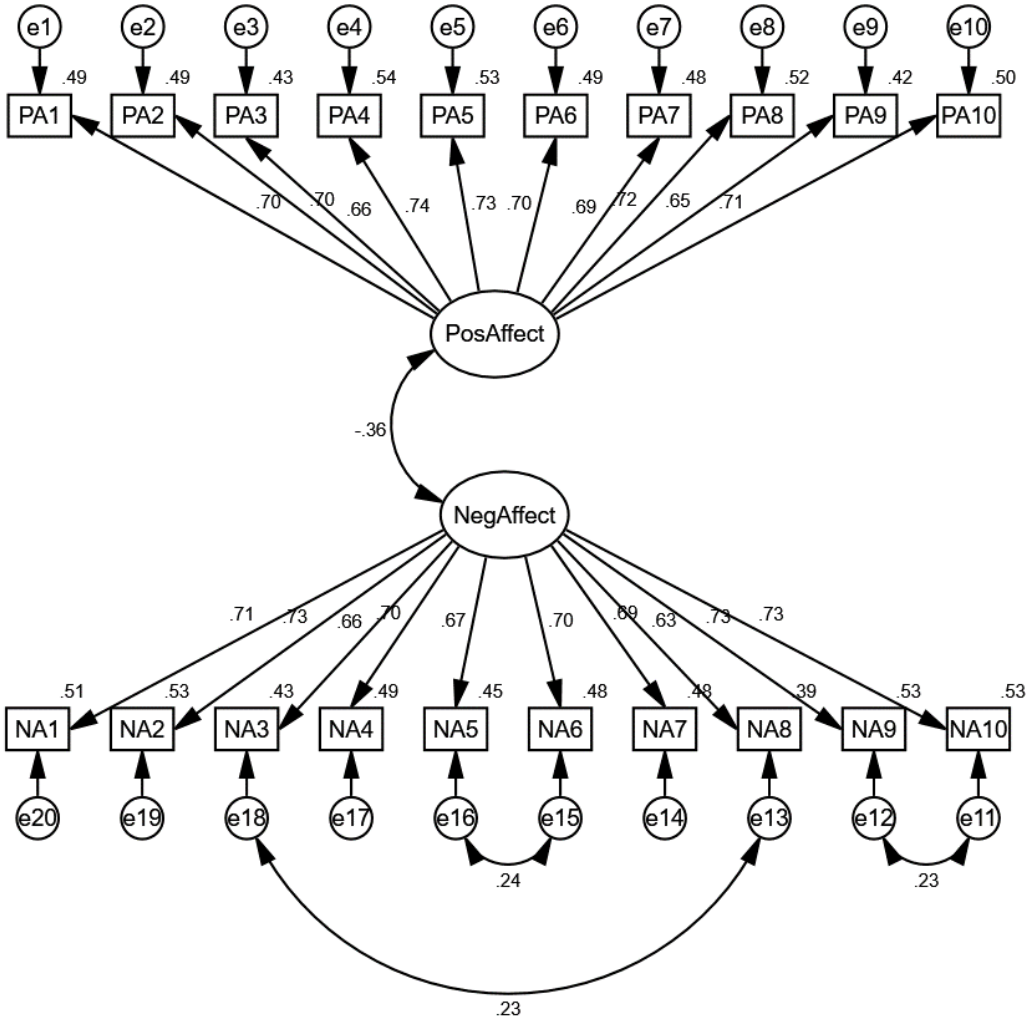

Figure 5.3 Final CFA Model for Correlated Two-Factor Mood

Confirmatory Factor Analysis for Openness to Experience

Openness to experience was measured using a five-item scale. CFA was carried out by taking all five items as a single factor. The resulting model fit indices (χ^2 =47.035, χ^2/df=9.407, GFI= 0.982, TLI= 0.953, CFI= 0.977, RMSEA= 0.093) did not meet the standard values. The standardised regression weights were above 0.5, and the standard residual values were below 4.0. The modification indexes were examined for possible modifications. The error terms e1 <--> e5 showed a modification index of 19.653. The chi-square value could be decreased by covariating these error terms and thereby improving the normed chi-square value. The model fit indices after incorporating this covariation showed a better model fit (χ^2 = 16.625, χ^2/df= 4.156, GFI= 0.993, TLI= 0.983, CFI= 0.993, RMSEA= 0.057).

Table 5.23: Standardised Regression Weights for Openness To Experience

Item	Direction	Variable	Estimate
OE1	<---	OpenToExp	0.744
OE2	<---	OpenToExp	0.669
OE3	<---	OpenToExp	0.746
OE4	<---	OpenToExp	0.712
OE5	<---	OpenToExp	0.772

Source: Calculated by Author Based on the Data Collected

Table 5.24: Model Fit Indices for Openness To Experience

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Initial measurement model	47.035	9.407	0.000	0.982	0.953	0.977	0.093
Final measurement model	16.625	4.156	0.002	0.993	0.983	0.993	0.057

Source: Calculated by Author Based on the Data Collected

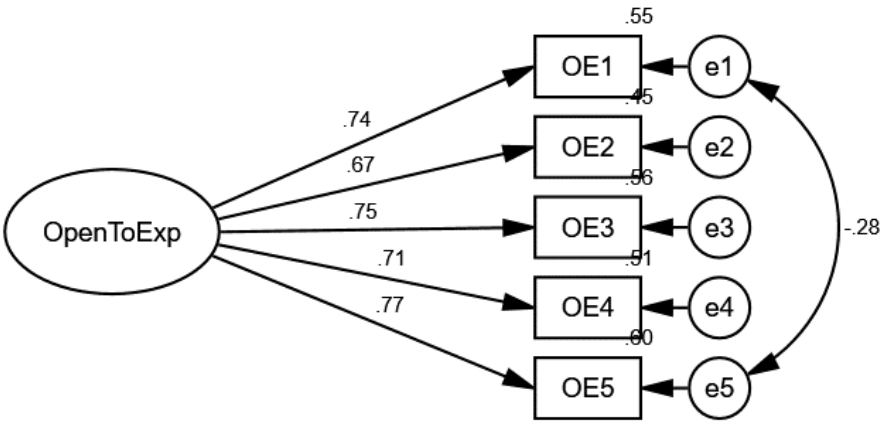

Figure 5.4 Final CFA Model for Openness To Experience

Confirmatory Factor Analysis for Conscientiousness

Conscientiousness was measured using a five-item scale. CFA was done by taking all five items as a single factor. The measurement model indices (χ^2 =51.606, χ^2/df=10.321, GFI= 0.979, TLI= 0.950, CFI= 0.975, RMSEA= 0.098) met the threshold values except for the normed chi-square (χ^2/df) value. The standardised regression weights were above 0.5, and the standard residual values were within the threshold. The modification indices were analysed for possible modifications in the model. The error terms e2 <--> e3 had a high modification index (29.430), and therefore these error terms were covariated. The resulting model fit indices (χ^2 = 13.879, χ^2/df= 3.470, GFI= 0.994, TLI= 0.987, CFI= 0.995, RMSEA= 0.050) met the threshold values.

Table 5.25: Standardised Regression Weights for Conscientiousness

Item	Direction	Variable	Estimate
CO1	<---	Conscientious	0.767
CO2	<---	Conscientious	0.666
CO3	<---	Conscientious	0.679
CO4	<---	Conscientious	0.636

CO5	<---	Conscientious	0.812

Source: Calculated by Author Based on the Data Collected

Table 5.26: Model Fit Indices for Conscientiousness

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Initial measurement model	51.606	10.321	0.000	0.979	0.950	0.975	0.098
Final measurement model	13.879	3.470	0.008	0.994	0.987	0.995	0.050

Source: Calculated by Author Based on the Data Collected

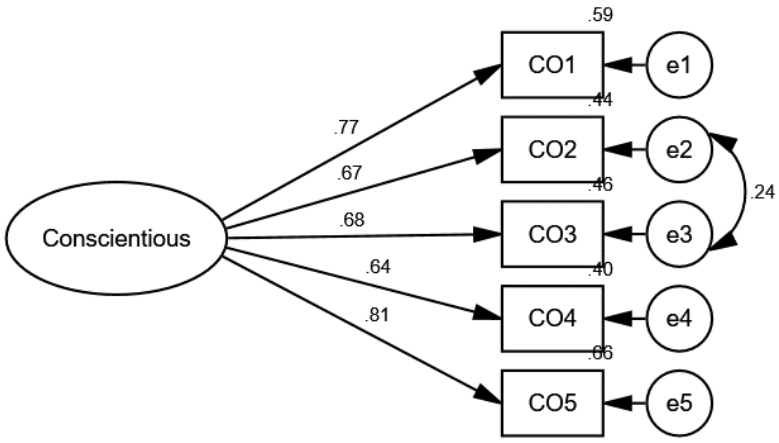

Figure 5.5 Final CFA Model for Conscientiousness

Confirmatory Factor Analysis for Extraversion

Extraversion was measured using a four-item scale, and the CFA was carried out by considering the four items as a single factor. The model fit indices (χ^2 =9.194, χ^2/df= 4.597, GFI= 0.995, TLI= 0.989, CFI= 0.996, RMSEA= 0.061) of the measurement model showed a moderate fit to the data. The standardised regression weights were above 0.5, and the standard residual values between the items were below 4.0. There was no scope for further modification as covariating any error terms would reduce the

degrees of freedom. The resulting model would turn out to be just identified. Therefore, no changes to the measurement model were incorporated.

Table 5.27: Standardised Regression Weights for Extraversion

Item	Direction	Variable	Estimate
EX1	<---	Extraversion	0.726
EX2	<---	Extraversion	0.811
EX3	<---	Extraversion	0.824
EX4	<---	Extraversion	0.815

Source: Calculated by Author Based on the Data Collected

Table 5.28: Model Fit Indices for Extraversion

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Final measurement model	9.914	4.597	0.010	0.995	0.989	0.996	0.061

Source: Calculated by Author Based on the Data Collected

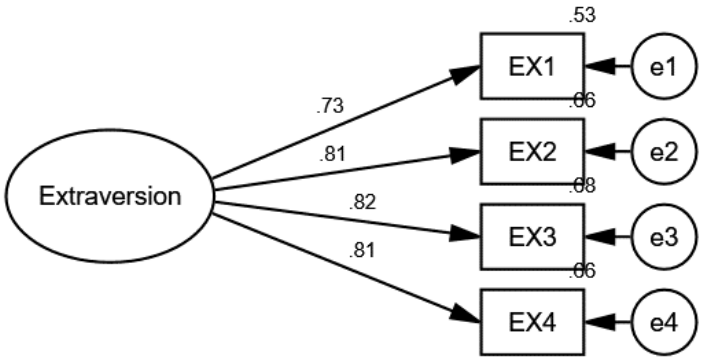

Figure 5.6 Final CFA Model for Extraversion

Confirmatory Factor Analysis for Agreeableness

Agreeableness was measured on a four-item scale. The CFA was performed by taking all four items as a single factor. The measurement model results showed good fit indices meeting the required threshold values (χ^2 = 4.583, χ^2/df= 2.291, GFI= 0.998, TLI= 0.996, CFI= 0.999, RMSEA= 0.036). All the items loaded well on a single

factor with the standardised regression weights above 0.5. No cross-loading was reported as all the standard residual values were minimum.

Table 5.29: Standardised Regression Weights for Agreeableness

Item	Direction	Variable	Estimate
AG1	<---	Agreeableness	0.713
AG2	<---	Agreeableness	0.837
AG3	<---	Agreeableness	0.847
AG4	<---	Agreeableness	0.747

Source: Calculated by Author Based on the Data Collected

Table 5.30: Model Fit Indices for Agreeableness

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Final measurement model	4.583	2.291	0.101	0.998	0.996	0.999	0.036

Source: Calculated by Author Based on the Data Collected

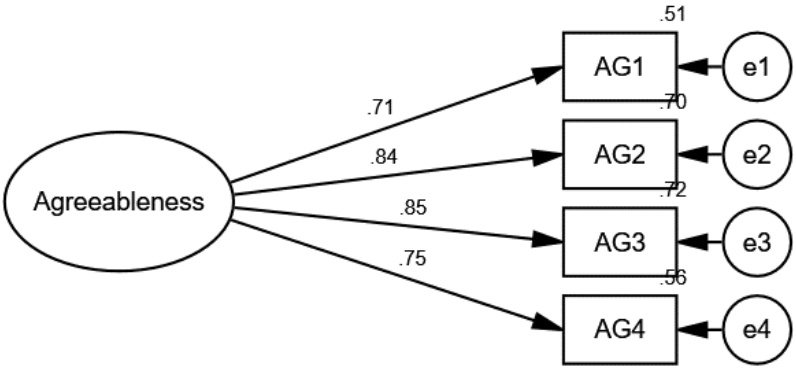

Figure 5.7 Final CFA Model for Agreeableness

Confirmatory Factor Analysis for Neuroticism

Neuroticism was measured using a five-item scale. All five items were taken as a single factor for performing CFA. The model fit indices (χ^2 =22.881, χ^2/df= 4.576, GFI= 0.991, TLI= 0.989, CFI= 0.994, RMSEA= 0.061) showed a moderate fit to the data. The standardised regression values for all five items were above 0.5. The

standard residual values were below 4.0, indicating the absence of cross-loading. The model fit indices could be improved by reducing the chi-square value with the help of modification indices. The modification index between the error terms e4 <--> e5 was the highest (9.713). Thus, these error terms were covariated. After incorporating this modification, the fit model indices (χ^2 =10.042, χ^2/df=2.511, GFI= 0.996, TLI= 0.995, CFI= 0.998, RMSEA= 0.039) improved and showed a better fit to the data.

Table 5.31: Standardised Regression Weights for Neuroticism

Item	Direction	Variable	Estimate
NE1	<---	Neuroticism	0.852
NE2	<---	Neuroticism	0.829
NE3	<---	Neuroticism	0.809
NE4	<---	Neuroticism	0.840
NE5	<---	Neuroticism	0.765

Source: Calculated by Author Based on the Data Collected

Table 5.32: Model Fit Indices for Neuroticism

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Initial measurement model	22.881	4.576	0.000	0.991	0.989	0.994	0.061
Final measurement model	10.042	2.511	0.040	0.996	0.995	0.998	0.039

Source: Calculated by Author Based on the Data Collected

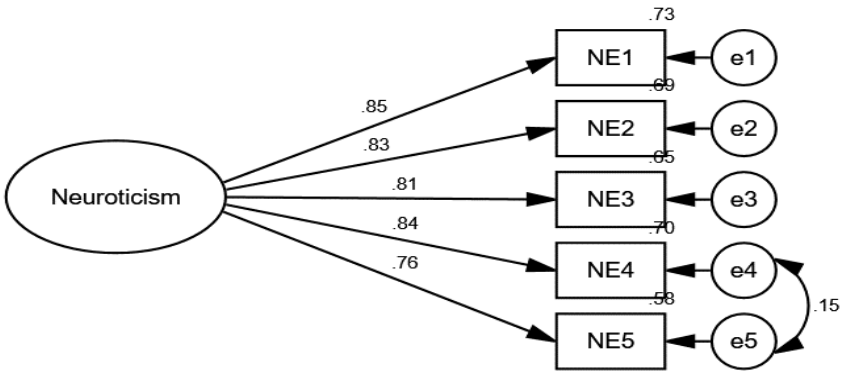

Figure 5.8 Final CFA Model for Neuroticism

Confirmatory Factor Analysis for Financial Risk-Taking Propensity

Financial risk-taking propensity is measured using a six-item scale. All six items were taken as a single factor, and the CFA was done. The measurement model indices showed a moderate fit to the data (χ^2 = 37.199, χ^2/df= 4.133, GFI= 0.987, TLI= 0.986, CFI= 0.992, RMSEA=0.057). There was a scope for improvement of the model by incorporating modifications. The standard regression weights of all the items were above 0.5. The standard residual covariances were below 4.0, indicating the absence of cross-loading. Therefore, the modification indices between error terms were examined for possible model improvement. The modification index between e4 <--> e6 was the highest (18.465). The model was modified by covariating these error terms. The resulting model fit indices (χ^2 = 16.321, χ^2/df= 2.040, GFI= 0.994, TLI= 0.995, CFI= 0.998, RMSEA=0.033) indicated a good fit for the data.

Table 5.33: Standardised Regression Weights for Financial Risk-Taking Propensity

Item	Direction	Variable	Estimate
RTP1	<---	Risk	0.815
RTP2	<---	Risk	0.824
RTP3	<---	Risk	0.785
RTP4	<---	Risk	0.754
RTP5	<---	Risk	0.775
RTP6	<---	Risk	0.741

Source: Calculated by Author Based on the Data Collected

Table 5.34: Model Fit Indices for Financial Risk-Taking Propensity

Measurement model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Initial measurement model	37.199	4.133	0.000	0.987	0.986	0.992	0.057
Final measurement model	16.321	2.040	0.038	0.994	0.995	0.998	0.033

Source: Calculated by Author Based on the Data Collected

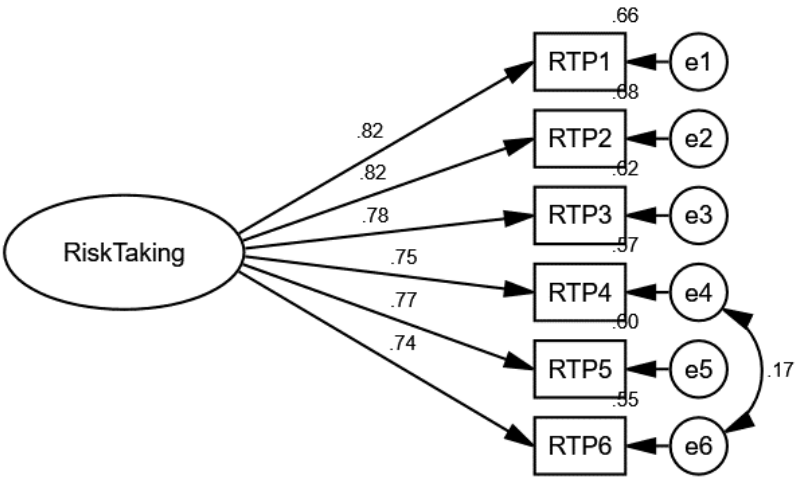

Figure 5.9 Final CFA Model for Financial Risk-Taking Propensity

Measurement Model

The measurement model was created with all nine constructs of the study before testing the structural model. Only when the measurement model shows a good fit to the data the path analysis can be performed. The measurement model combines all the independent and dependent variables of the study to assess the discriminant validity and identify any cross-loadings between the constructs. The model had eight independent variables: optimism, self-control, mood measured by positive affect and negative affect, openness to experience, conscientiousness, extraversion, agreeableness, neuroticism and one dependent variable, i.e., risk-taking propensity. The model fit indices for the measurement model yielded a good fit to the data (χ^2 = 2590.621, χ^2/df= 1.459, GFI= 0.922, TLI= 0.971, CFI= 0.973, RMSEA=0.022). The standardised regression weights for all the model items were above the desired value of 0.5. Before proceeding with path analysis, Average Variance Extracted (AVE) and the inter-construct correlations were calculated and analysed to establish convergent and divergent validity. The AVE for positive affect (0.489) and negative affect (0.482) were below 0.5 and thereby violating the rules of convergent validity. Therefore even if the model showed a good model fit, it required revision. The reason for the low AVE value is that one or more construct items do not adequately explain

the variance in that construct. Therefore, the standardised factor loadings were analysed by scrutinising one construct and one item within the construct at a time. First, the standardised regression weights of the positive affect construct were analysed, and the item with the lowest factor loading was identified. Item PA 9 had the lowest loading (0.651) among the items; therefore, this item was deleted from the measurement model. After the modification the fit indices were $\chi^2 = 2519.117$, $\chi^2/df = 1.468$, GFI= 0.922, TLI= 0.971, CFI= 0.973, RMSEA=0.022. The AVE for positive affect increased to 0.497. But this value was still below the threshold value of 0.5. The item with the next lowest loading was PA3 (0.651) and was deleted from the overall measurement model. The resulting AVE after this modification was 0.506. the value obtained was above the desired minimum of 0.5, and convergent validity was obtained for the positive affect construct. The fit indices after modification showed a good fit to the data ($\chi^2 = 2444.662$, $\chi^2/df = 1.475$, GFI= 0.923, TLI= 0.971, CFI= 0.973, RMSEA=0.022). The items of the next construct, negative affect, were analysed for low factor loading values. Item NA8 had the lowest loading (0.625) among the items. Therefore, this item was deleted from the overall measurement model. The model fit indices slightly improved after this modification ($\chi^2 = 2343.339$, $\chi^2/df = 1.465$, GFI= 0.926, TLI= 0.972, CFI= 0.974, RMSEA=0.022). The resulting AVE value for negative affect (0.492) was still below the required standard; therefore, the process was repeated. Item NA3 had the next lowest loading (0.657), and this item was deleted from the overall measurement model. The model fit indices after deleting NA3 showed a good and improved model fit ($\chi^2 = 2204.404$, $\chi^2/df = 1.429$, GFI= 0.929, TLI= 0.975, CFI= 0.976, RMSEA=0.021). The AVE value of negative affect increased to 0.501 and thus meeting the required threshold. The final measurement model employing all the necessary modifications yielded a good model fit. The factor loadings for the final overall measurement model are displayed in Table 5.35, and Figure 5.10 shows the final measurement model for the study.

Table 5.35: Standardised Regression Weights for the Measurement Model

Items	Direction	Construct	Standardised Regression weights	S.E	C.R	P
OP1	<---	Optimism	0.764			
OP2	<---	Optimism	0.612	0.043	18.623	***
OP3	<---	Optimism	0.803	0.046	25.217	***
OP4	<---	Optimism	0.713	0.043	22.093	***
OP5	<---	Optimism	0.767	0.045	24.003	***
OP6	<---	Optimism	0.778	0.042	24.390	***
SC1	<---	SelfControl	0.737			
SC2	<---	SelfControl	0.704	0.040	21.125	***
SC3	<---	SelfControl	0.749	0.041	22.529	***
SC4	<---	SelfControl	0.715	0.047	21.477	***
SC5	<---	SelfControl	0.720	0.041	21.633	***
SC6	<---	SelfControl	0.720	0.043	21.615	***
SC7	<---	SelfControl	0.678	0.039	20.339	***
PA1	<---	PositiveAffect	0.685			
PA2	<---	PositiveAffect	0.702	0.051	19.797	***
PA4	<---	PositiveAffect	0.739	0.052	20.715	***
PA5	<---	PositiveAffect	0.738	0.052	20.708	***
PA6	<---	PositiveAffect	0.708	0.054	19.955	***
PA7	<---	PositiveAffect	0.696	0.055	19.640	***
PA8	<---	PositiveAffect	0.713	0.053	20.067	***
PA10	<---	PositiveAffect	0.706	0.052	19.901	***
NA1	<---	NegativeAffect	0.711			
NA2	<---	NegativeAffect	0.737	0.044	21.286	***
NA4	<---	NegativeAffect	0.691	0.049	20.017	***
NA5	<---	NegativeAffect	0.664	0.048	19.177	***
NA6	<---	NegativeAffect	0.700	0.047	20.207	***
NA7	<---	NegativeAffect	0.675	0.049	19.561	***
NA9	<---	NegativeAffect	0.742	0.049	21.253	***

NA10	<---	NegativeAffect	0.740	0.050	21.208	***
OE1	<---	OpenToExp	0.747			
OE2	<---	OpenToExp	0.668	0.046	18.907	***
OE3	<---	OpenToExp	0.741	0.051	20.651	***
OE4	<---	OpenToExp	0.711	0.048	19.974	***
OE5	<---	OpenToExp	0.776	0.052	19.878	***
CO1	<---	Conscientious	0.768			
CO2	<---	Conscientious	0.673	0.041	19.686	***
CO3	<---	Conscientious	0.678	0.045	19.859	***
CO4	<---	Conscientious	0.639	0.042	18.895	***
CO5	<---	Conscientious	0.807	0.045	23.582	***
EX1	<---	Extraversion	0.717			
EX2	<---	Extraversion	0.813	0.043	23.485	***
EX3	<---	Extraversion	0.822	0.044	23.720	***
EX4	<---	Extraversion	0.822	0.042	23.700	***
AG1	<---	Agreeableness	0.715			
AG2	<---	Agreeableness	0.835	0.051	23.787	***
AG3	<---	Agreeableness	0.850	0.049	24.093	***
AG4	<---	Agreeableness	0.744	0.047	21.507	***
NE1	<---	Neuroticism	0.853			
NE2	<---	Neuroticism	0.829	0.031	31.507	***
NE3	<---	Neuroticism	0.810	0.032	30.371	***
NE4	<---	Neuroticism	0.838	0.035	31.649	***
NE5	<---	Neuroticism	0.763	0.032	27.282	***
RTP1	<---	RiskTaking	0.811			
RTP2	<---	RiskTaking	0.824	0.037	28.984	***
RTP3	<---	RiskTaking	0.787	0.036	27.250	***
RTP4	<---	RiskTaking	0.755	0.037	25.682	***
RTP5	<---	RiskTaking	0.774	0.036	26.686	***
RTP6	<---	RiskTaking	0.745	0.036	25.195	***

Source: Calculated by Author Based on the Data Collected

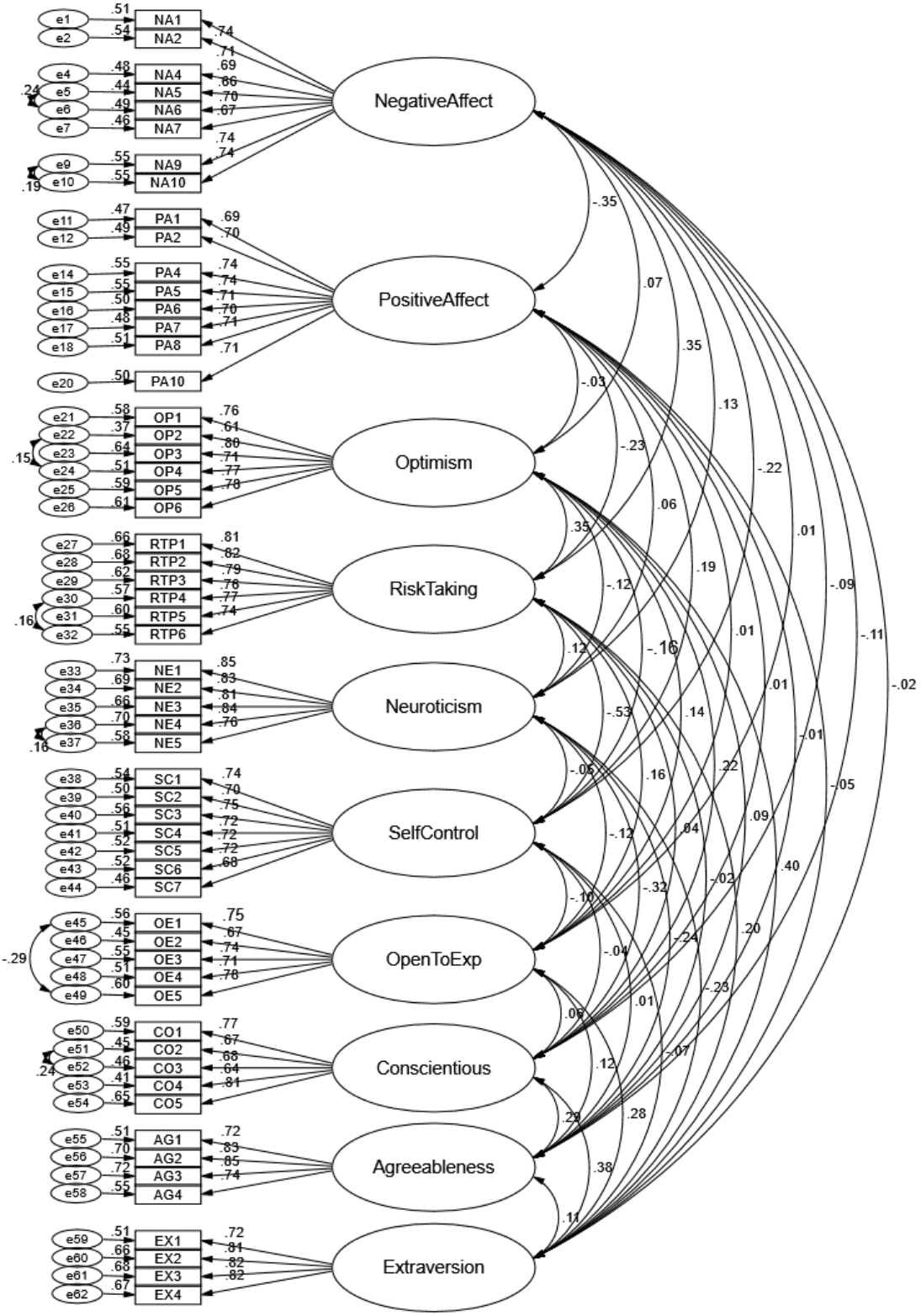

Figure 5.10: Final Overall Measurement Model

Convergent and Discriminant Validity

The inter-construct correlations and AVE are calculated to confirm the convergent and discriminant validity of the constructs. For the discriminant validity to be established, the values of Maximum Shared Variance (MSV) should be less than AVE, i.e. MSV < AVE (Fornell and Larcker 1981). The AVE for all the constructs was above 0.5 showing convergent validity. Table 5.36 provides the AVE, MSV and inter-correlation values between constructs. The square root of AVE replaces the diagonal values, and the off-diagonal values represent the correlation between the constructs. The diagonal values are greater than the correlation between the constructs providing evidence for the discriminant validity.

Table 5.36: Inter-Correlation Values of Constructs of the Study

	AVE	MSV	AG	NA	PA	OP	RTP	NE	SC	OE	CO	EX
AG	0.621	0.083	**0.788**									
NA	0.501	0.124	-0.107	**0.708**								
PA	0.506	0.124	-0.013	-0.352	**0.711**							
OP	0.551	0.158	0.093	0.073	-0.028	**0.742**						
RTP	0.613	0.279	-0.018	0.348	-0.225	0.351	**0.783**					
NE	0.671	0.104	-0.243	0.129	0.061	-0.120	0.119	**0.819**				
SC	0.515	0.279	0.015	-0.216	0.193	-0.159	-0.528	-0.050	**0.718**			
OE	0.532	0.080	0.122	0.006	0.011	0.142	0.161	-0.121	-0.095	**0.730**		
CO	0.512	0.147	0.288	-0.092	0.012	0.216	0.039	-0.322	-0.043	0.059	**0.716**	
EX	0.632	0.158	0.106	-0.023	-0.051	0.398	0.200	-0.227	-0.070	0.282	0.384	**0.795**

Note: AVE: Average Variance Extracted; MSV: Maximum Shared Variance; AG: Agreeableness;

NA: Negative Affect; PA: Positive affect; O.P.: Optimism; RTP: Risk-taking Propensity; NE: Neuroticism;

SC: Self-Control; O.E.: Openness to Experience; CO: Conscientiousness; EX: Extraversion

Source: Calculated by Author Based on the Data Collected

Structural Model and Hypotheses Testing

The second step in SEM is the structural model or the model for path analysis. The path model with the hypothesised relationships is shown in figure 5.11. Out of the nine predictor variables, seven variables, namely optimism, self-control, positive affect, negative affect, and openness to experience, significantly predicted the financial risk-taking propensity of individuals (Table 5.37).

Table 5.37: Standard Path Coefficients for the Hypothesised Model

Items	Direction	Construct	Standardised Regression weights	S.E	C.R	P
RiskTaking	<---	NegativeAffect	0.199	0.031	5.947	***
RiskTaking	<---	PositiveAffect	-0.073	0.038	-2.289	0.022
RiskTaking	<---	Optimism	0.241	0.037	7.126	***
RiskTaking	<---	Neuroticism	0.133	0.026	4.184	***
RiskTaking	<---	SelfControl	-0.412	0.032	-12.043	***
RiskTaking	<---	OpenToExp	0.079	0.041	2.526	0.012
RiskTaking	<---	Conscientious	-0.008	0.034	-0.215	0.830
RiskTaking	<---	Agreeableness	0.002	0.034	0.067	0.947
RiskTaking	<---	Extraversion	0.087	0.043	2.382	0.017

Source: Calculated by Author Based on the Data Collected

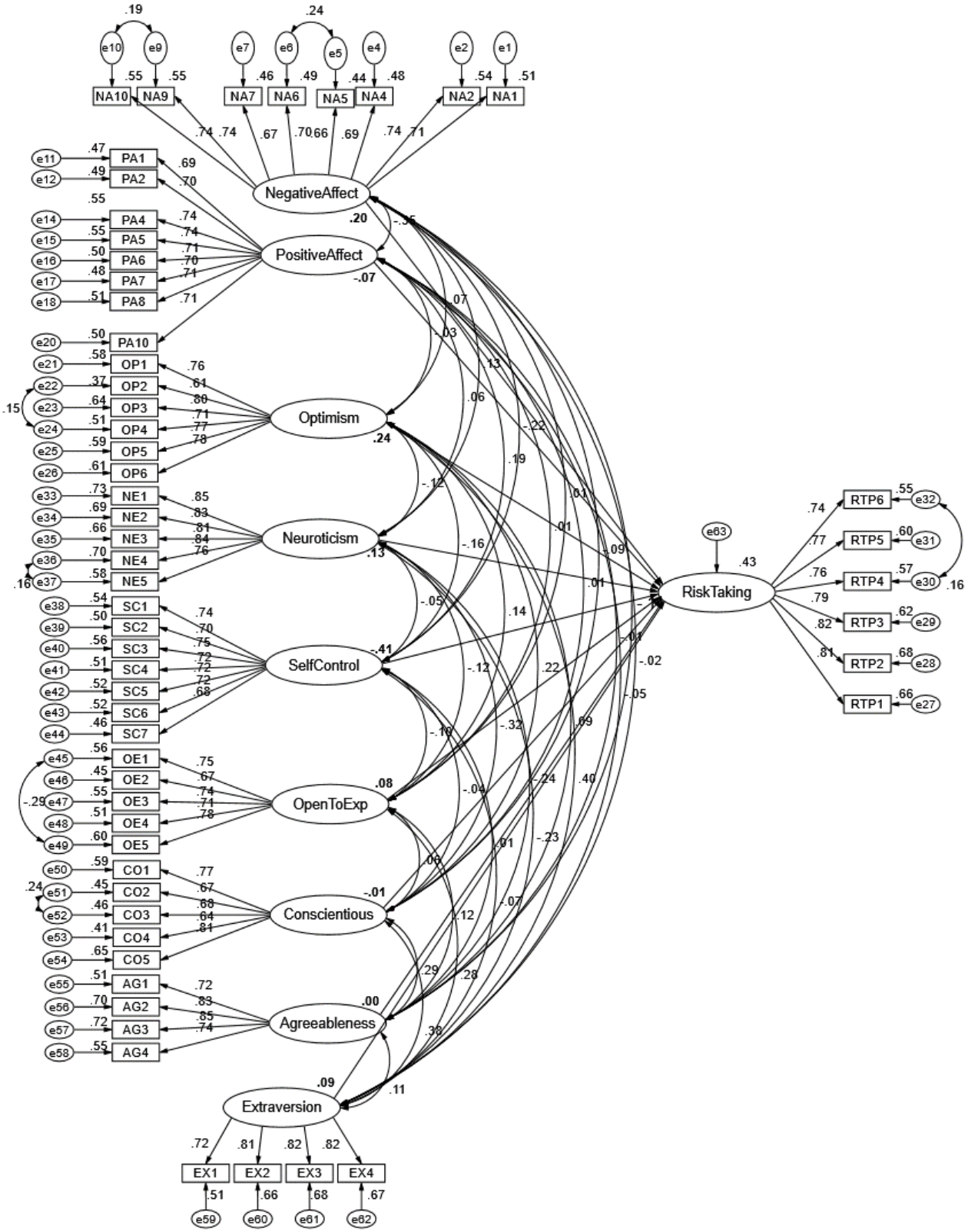

Figure 5.11 Hypothesised Structural Model for Path Analysis

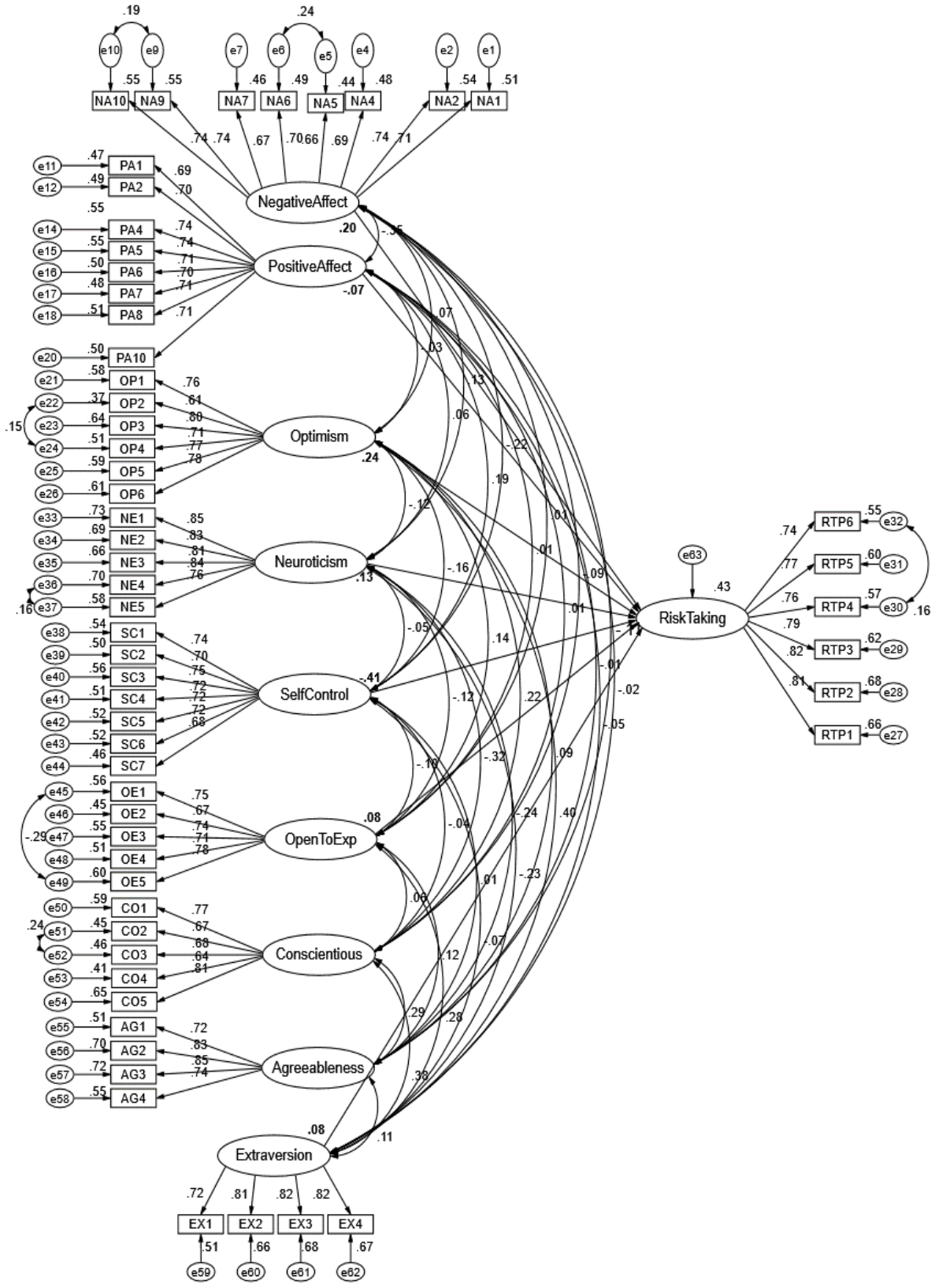

Figure 5.12 Revised Structural Model for Path Analysis

The hypothesised model was revised by removing the two insignificant paths (RiskTaking <--- Conscientious and RiskTaking <---Agreeableness). The revised model showed a good fit to the data with all significant paths.

Table 5.38: Fit Measures of the Structural Model

Structural Model	χ^2	χ^2/df	p	GFI	TLI	CFI	RMSEA
Hypothesised model	2204.404	1.429	0.000	0.929	0.975	0.976	0.021
Revised model	2201.451	1.427	0.000	0.929	0.975	0.976	0.021

Source: Calculated by Author Based on the Data Collected

The revised structural model showed a slightly better fit, with only significant paths retained in the model. The summary of the hypothesised relationships and decisions about each hypothesised path is given in Table 4.28.

Table 5.39: Summary of the Hypothesised Relationships

Direction	Standardised Regression weights	C.R	P	Decision
H1a: RTP <--- Optimism	0.241	7.126	***	Accepted
H1b: RTP <--- SelfControl	-0.412	-12.043	***	Accepted
H1c: RTP <--- PositiveAffect	-0.073	-2.289	0.022*	Accepted
H1d: RTP <--- NegativeAffect	0.199	5.947	***	Accepted
H2a: RTP <--- OpenToExp	0.079	2.526	0.012*	Accepted
H2b: RTP <--- Conscientious	-0.008	-0.215	0.830	Refuted
H2c: RTP <--- Extraversion	0.087	2.382	0.017*	Accepted
H2d: RTP <--- Agreeableness	0.002	0.067	0.947	Refuted
H2e: RTP <--- Neuroticism	0.133	4.184	***	Accepted

Note: C.P: Critical ratio; P: significance; $p < 0.05$ = *; $p < 0.01$ = **; $p < 0.001$ = ***

Source: Calculated by Author Based on the Data Collected

Results of the Hypothesis Testing of Psychological Factors

The three psychological factors, optimism, self-control and mood, significantly explained the variation in the financial risk-taking propensity of individuals. Optimism showed a significant positive impact ($\beta = 0.241$, $p < 0.001$) on financial risk-taking propensity. Higher levels of optimism were associated with an increased tendency to take financial risks. In contrast, self-control had a significant negative impact ($\beta = -0.412$, $p < 0.001$) on the propensity to take financial risks.

The two mood factors, namely positive affect and negative affect, impacted risk-taking significantly. Positive affect and risk-taking propensity were negatively associated ($\beta = -0.073$, $p<0.05$), whereas negative affect and risk-taking propensity were positively associated ($\beta = 0.199$, $p<0.001$). The four hypotheses, H1a, H1b, H1c, and H1d, on the impact of psychological factors on financial risk-taking propensity, were supported.

Results of the Hypothesis Testing of Personality Traits

The big five personality traits – OCEAN, were tested for their impact on financial risk-taking propensity. Openness to experience had a significant positive impact ($\beta = 0.079$, $p<0.05$) on financial risk-taking propensity, leading to acceptance of Hypothesis H2a. Conscientiousness did not impact financial risk-taking, so hypothesis H2b was not supported. Extraversion had a significant positive impact ($\beta = 0.087$, $p<0.05$) on financial risk-taking; hence hypothesis H2c was supported. Agreeableness did not have a statistically significant impact on financial risk-taking propensity, thereby refuting hypothesis H2d. Neuroticism significantly positively impacted ($\beta = 0.133$, $p<0.001$) on financial risk-taking, supporting hypothesis H2e. Out of the big five traits, only three traits, openness to experience, extraversion and neuroticism, had a strong association with the financial risk-taking levels of the individuals.

Demographic Variables and Financial Risk-Taking Propensity

The effect of seven demographic variables, namely gender, age, marital status, education, occupation, income level and zone on financial risk-taking propensity, was

analysed using t-tests for variables with two groups and one-way ANOVAs for variables with more than two groups. ANOVAs are done to arrive at better interpretations by performing the posthoc tests if there is heteroscedasticity in the error variances across groups.

Gender and Financial Risk-Taking Propensity

An independent sample t-test was conducted to analyse the difference in financial risk-taking propensity among males and females. The result showed a significant difference in financial risk-taking propensity concerning gender (t_{974} = 5.023, *p* =0.000) with equal variances assumed as per the results of Levene's test. The means of both groups were further compared to analyse which group had a higher appetite for financial risk. The mean comparison showed that males were slightly higher risk-takers (M= 4.565, S.D. = 0.808) than females (M= 4.303, S.D. = 0.820).

Table 5.40: Risk-Taking Propensity Across Gender Groups

Gender	Mean	SD
Male	4.565	0.808
Female	4.303	0.820

Source: Calculated by Author Based on the Data Collected

Age and Financial Risk-Taking Propensity

To see any significant difference in financial risk-taking propensity among different age groups, one-way ANOVA was performed. The result revealed a substantial difference in financial risk-taking propensity across age groups (F(4, 971) = 10.660, p = 0.000). But Levene's test statistic was significant and revealed heterogeneity of variance across the groups. Therefore, Welch test was conducted, which is a robust test considering the heterogeneity in variances across groups with unequal sample sizes. The Welch test result was significant (F (4, 248.939) = 9.261, p = 0.000), confirming a significant difference in financial risk-taking propensity across age groups. The means of various age groups were further compared. The respondents aged 28 to 37 years had the highest propensity to take financial risks (M = 4.689, S.D. = 0.831).

Table 5.41: Risk-Taking Propensity Across Age Groups		
Age (Years)	**Mean**	**SD**
18 – 27	4.482	0.741
28 – 37	4.689	0.831
38 – 47	4.233	0.833
48 – 57	4.419	0.717
Above 57	4.161	1.137

Source: Calculated by Author Based on the Data Collected

Marital Status and Financial Risk-Taking Propensity

An independent sample t-test was conducted to analyse the difference in financial risk-taking propensity between married and single respondents. The result showed a significant difference in financial risk-taking propensity concerning gender (t_{974} = 4.511, p = 0.000), but there was no homogeneous variance across groups as per the results of Levene's test. The test with equal variance not assumed showed a significant difference between financial risk-taking propensity and gender ($t_{913.462}$ = 4.476, p = 0.000). The means of both groups were further compared, and the results showed that single respondents had greater financial risk-taking propensity (M = 4.553, S.D. = 0.751).

Table 5.42: Risk-Taking Propensity Based on Marital Status		
Marital Status	**Mean**	**SD**
Single	4.553	0.751
Married	4.317	0.882

Source: Calculated by Author Based on the Data Collected

Educational Qualification and Financial Risk-Taking Propensity

One-way ANOVA was performed to analyse differences in financial risk-taking propensity among respondents with different educational qualifications. The result showed a significant difference in the financial risk-taking propensity for varying levels of education (F(6, 969) = 11.769, p = 0.000). Levene's test statistic was significant, and therefore Welch test was conducted. The Welch test result was

significant (F (6, 79.881) = 8.497, p = 0.000), showing a significant difference in the financial risk-taking propensity for different levels of education. The means of various levels of educational qualification were compared. The respondents with post-graduation had the highest inclination to take financial risks (M = 4.624, S.D. = 0.641).

Table 5.43: Risk-Taking Propensity Based on Educational Qualification

Educational Qualification	Mean	SD
Below 10^{th} / SSLC	4.300	0.655
10^{th}/ SSLC	3.333	1.095
12^{th} / PUC	4.498	0.740
Diploma	4.423	0.774
Graduate	4.392	0.892
Postgraduate	4.624	0.641
Doctorate	3.729	0.933

Source: Calculated by Author Based on the Data Collected

Occupation and Financial Risk-Taking Propensity

The difference in financial risk-taking propensity of respondents based on their occupation was analysed with a one-way ANOVA.

Table 5.44: Risk-Taking Propensity Based on Occupation

Occupation	Mean	SD
Student	4.488	0.779
Student with a part-time job	3.991	0.800
Private-sector employee	4.453	0.835
Government sector employee	4.477	0.850
Self - employed	4.682	0.601
Retired	3.083	1.069
Not employed currently	4.436	0.688

Source: Calculated by Author Based on the Data Collected

The result showed a significant difference in financial risk-taking propensity across respondents with different occupations (F (6, 969) = 10.501, p = 0.000). Levene's test showed an unequal variance across groups, and therefore, the Welch test was performed. The Welch test was statistically significant (F (6, 96.186) = 9.182, p = 0.000). The mean comparison showed that self-employed respondents had the highest risk-taking propensity among the groups (M = 4.682, S.D. = 0.601).

Income Level and Financial Risk-Taking Propensity

One-way ANOVA was performed to analyse differences in financial risk-taking propensity among respondents with different income levels. There was a significant variation in the risk-taking propensity of respondents concerning income (F (6, 969) = 4.118, p = 0.000). Levene's test statistic was significant, and therefore Welch test was conducted. The Welch test result was significant (F (6, 280.216) = 4.581, p = 0.000), showing a significant difference in the financial risk-taking propensity for different income levels. The mean comparison showed that respondents with income levels of Rs.40001 to Rs.60000 tended to take financial risks (M = 4.675, S.D. = 0.578).

Table 5.45: Risk-taking propensity Based on Level of Income

Income Level	Mean	SD
NIL	4.422	0.829
Less than 20000	4.537	0.804
20000 – 40000	4.452	0.775
40001 – 60000	4.675	0.578
60001 – 80000	4.176	0.953
80001 – 100000	4.292	0.856
Above 100000	4.536	1.010

Source: Calculated by Author Based on the Data Collected

Zone of India and Financial Risk-Taking Propensity

The performance of a one-way ANOVA was done between financial risk-taking propensity and the zone to which the respondents belong. The results showed a statistical significance (F (5, 970) = 17.421, p = 0.000). As Levene's test was

significant, the results of the Welch test were considered for interpretation. The Welch test showed a statistical significance in the difference between financial risk-taking propensity and the zone to which the respondents belong (F (5, 369.118) = 25.125, p = 0.000). The means were compared between different zones, and it was found that respondents belonging to the western zone were higher risk-takers than other zones (M = 5.012, S.D. = 0.591).

Table 5.46: Risk-Taking Propensity Based on Zone

Zone	Mean	SD
Eastern	4.273	0.867
Western	5.012	0.591
Northern	4.440	0.911
Southern	4.402	0.813
Northeastern	4.136	0.922
Central	4.436	0.652

Source: Data Analysis

Results of Hypothesis of Demographic Factors

The level of the financial risk-taking propensity of individuals was found to be impacted by all seven demographic variables, namely gender, age, marital status, educational qualification, occupation and zone. Thus all seven hypotheses (H3a, H3b, H3c, H3d, H3e, H3f, H3g) concerned with the association of demographic factors and financial risk-taking propensity stood accepted.

Table 5.47: Summary of the Hypothesis Relating to Demographic Factors

Hypotheses	T test / F test statistic	Df	P	Decision
H3a: RiskTaking <--- Gender	5.023	974	***	Accepted
H3b: RiskTaking <--- Age	9.261	4, 248.939	***	Accepted
H3c: RiskTaking <--- Marital Status	4.476	913.462	***	Accepted
H3d: RiskTaking <--- Educational qualification	8.497	6, 79.881	***	Accepted

H3e: RiskTaking <--- Occupation	9.182	6, 96.186	***	Accepted
H3f: RiskTaking <--- Income Level	4.581	6, 280.216	***	Accepted
H3g: RiskTaking <--- Zone	25.125	5, 369.118	***	Accepted

Note: Df: degrees of freedom; P: significance value; p < *0.05 = *;* p < *0.01 = **;* p < *0.001 = ****

Source: Calculated by Author Based on the Data Collected

Financial Knowledge and Work Experience

The respondents' financial literacy was measured with ten multiple-choice questions along with information on the knowledge of financial concepts and work experience in banking, finance or investments. The table below summarises the information on prior financial knowledge and work experience

Table 5.48: Knowledge of Financial Concepts and Work Experience

	Response	**Number of respondents**	**Percentage**
Knowledge of financial concepts in the past	Yes	604	61.89
	No	372	38.11
	Total	**976**	**100**
Work experience in the field of Banking/Finance/Investments	Yes	153	15.68
	No	923	8.32
	Total	**976**	**100**
Number of years of experience (If applicable)	Less than 1 year	11	7.19
	1 to 5 years	112	73.20
	6 to 10 years	19	12.42
	11 to 15 years	4	2.61
	16 to 20 years	3	1.97
	Above 20 years	4	2.61
	Total	**153**	**100**

Source: Calculated by Author Based on the Data Collected

The majority of the respondents (61.89%) had prior knowledge of financial concepts, and a few of them (15.68%) had work experience in the field of banking/finance/investments.

Financial Literacy of Respondents

The financial literacy of the respondents was assessed with the help of ten multiple-choice questions. Five questions measured basic financial literacy, and another five measured advanced financial literacy. Basic financial literacy considers concepts such as compounding interest, division, financial comparisons etc. Advanced financial literacy deals with knowledge of non-traditional investment avenues, capital expenditure decisions etc.

The table below summarises the response to each financial literacy question, both basic and advanced.

Table 5.49: Summary of Mean Responses to Basic and Advanced Financial Literacy Questions

Financial Literacy Category	Questions	Mean	Correct %	Incorrect %
Basic financial literacy	Imagine you have Rs.100 in a savings account, and the interest rate is 10% per year. After five years, how much money will you have in this account?	0.48	47.5	52.5
	Imagine the interest rate applied to your savings account is 6% per year, and the inflation rate (i.e. the rate at which there is a general increase in prices of products and services) is 10% per year. After one year, how much will you be able to buy with the money from this account?	0.51	51.4	48.6

	Imagine you take a loan of Rs. 10000 to be paid after one year, and the total loan amount with interest is Rs. 10600. The interest rate that you pay for this loan is:	0.71	70.7	29.3
	Imagine you saw the same television at two different stores at the initial price of Rs.10000. Store A offers a discount of Rs.1500, while store B offers a discount of 10%. Which is the best alternative?	0.81	80.6	19.4
	Imagine five friends receive a donation of Rs. 1000, and they must split the money equally between them. How much each will get?	0.90	89.9	10.1
	Basic financial literacy score	**3.40**	**-**	**-**
Advanced financial literacy	Considering a long time (e.g. 10 years), which asset described below normally gives the highest rate of return?	0.45	45.5	54.5
	Normally which asset shows the highest Oscillations (fluctuations or changes) over time?	0.82	81.7	18.3
	When investors diversify their investments, the money invested is divided among different assets. Therefore, the risk of losing money in	0.65	65.5	34.5

this case:			
A loan lasting 15 years typically requires higher monthly payments than a 30-year loan, but the total interest paid at the end of the 15-year loan will be less. This statement is:	0.58	58.3	41.7
An investment with a high rate of return will have a high risk. This statement is:	0.82	82.3	17.7
Advanced financial literacy score	**3.33**	**-**	**-**

Source: Calculated by Author Based on the Data Collected

The average financial literacy of the respondents was looked into to see how many of them provided the correct answers. The overall mean financial literacy score was above average for the study respondents. As most respondents are undergraduates and postgraduates and belong to the digital age, average financial knowledge is reflected due to exposure to unlimited sources of information at the disposal of individuals.

Table 5.50: Mean Financial Literacy Scores

Financial literacy Category	Mean	Average Correct %	Average Incorrect %
Basic financial literacy	3.40	68.0	32.0
Advanced financial literacy	3.33	66.7	33.3
Overall Financial literacy score	6.73	67.3	32.7

Source: Calculated by Author Based on the Data Collected

Out of 976 respondents, a very small percentage fell on two extreme ends of the level of financial literacy. In the case of basic financial literacy, only 24.4 per cent of the respondents answered all five questions correctly, while 3.9 per cent of them answered all questions incorrectly. For advanced financial literacy, 26 per cent of

respondents answered all five questions correctly, and 5.3 per cent answered all five questions incorrectly. The overall analysis of both basic and advanced financial literacy indicated that only a few respondents (9.8%) were able to answer all the ten questions correctly, and a negligible percentage of respondents were not able to answer any of the questions correctly.

Table 5.51: Cumulative Summary of Correct Responses to Financial Literacy Questions

Financial Literacy Category	No. of questions answered correctly	Frequency	Percentage (%)
Basic financial literacy	0	38	3.9
	1	53	5.4
	2	156	16.0
	3	199	20.4
	4	292	29.9
	5	238	24.4
	Total	**976**	**100.0**
Advanced financial literacy	0	52	5.3
	1	84	8.6
	2	130	13.3
	3	186	19.1
	4	270	27.7
	5	254	26.0
	Total	**976**	**100.0**
Overall financial literacy	0	21	2.2
	1	21	2.2
	2	32	3.3
	3	29	3.0
	4	73	7.5
	5	85	8.7

6	116	11.9
7	182	18.6
8	136	13.9
9	185	19.0
10	96	9.8
Total	**976**	**100.0**

Source: Calculated by Author Based on the Data Collected

Investment Avenues for the Study

The current study took into account 16 investment avenues that are widely available in the Indian financial market for capturing responses on investment-related aspects from the respondents. The 16 avenues are a mixture of both traditional and non-traditional investments with low, moderate and high levels of risks associated. These investments were chosen from the Reserve Bank of India report on investment avenues for individual investors. The investment avenues considered for the study were narrowed down from an extensive list of investments bearing in mind the opinions of industry and academic experts consulted for the validity of the study instrument.

Level of Awareness of Investment Avenues

The respondents were asked to indicate the level of awareness that they have concerning each of the investment avenues. The level of awareness was measured on a five-point Likert scale, with 1 indicating 'not at all aware' and 5 indicating 'extremely aware'. The table below provides the mean and standard deviation values of the level of awareness of the 16 investment avenues.

Table 5.52: Descriptive Statistics of the Level of Awareness of Investment Avenues

Investment Avenues	Mean	S.D.
Bank savings account	4.10	1.019
Bank recurring deposit	3.75	0.942
Bank fixed deposit	3.85	0.806

Post office savings scheme	3.32	0.805
Public provident fund	3.22	0.854
National savings certificate	3.10	1.184
Microfinance (Self-help groups)	2.72	0.958
Debentures	3.02	1.111
Company fixed deposits	2.76	0.917
Government securities	2.99	1.183
Corporate bonds	2.87	1.075
Mutual funds	3.08	0.982
Equity shares	3.02	1.022
Gold/Silver	3.39	0.885
Exchange-traded funds (ETFs)	1.89	1.037
Real Estate	3.23	0.918

Source: Calculated by Author Based on the Data Collected

Most respondents were at least slightly or moderately aware of the majority of the investments. The bank-related deposits had the highest level of awareness among respondents, followed by post office deposits and public provident funds. Respondents were least aware of investments such as exchange-traded funds (M=1.89), microfinance (M=2.72), and company fixed deposits (M=2.76).

The following table shows the frequency of the level of awareness of each investment avenue.

Table 5.53: Level of Awareness of Respondents on Investment Avenues

Investment Avenues	**Level of Awareness**									
	Not at all aware		**Slightly aware**		**Somewhat aware**		**Moderately aware**		**Extremely aware**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Bank savings account	-	-	122	12.5	97	9.9	320	32.8	437	44.8
Bank recurring deposit	-	-	87	8.9	324	33.2	311	31.9	254	26.0

Bank fixed deposit	-	-	23	2.4	329	33.7	391	40.1	233	23.9
Post office savings scheme	-	-	121	12.4	512	52.5	254	26.0	89	9.1
Public provident fund	26	2.7	142	14.5	446	45.7	311	31.9	51	5.2
National savings certificate	92	9.4	227	23.3	279	28.6	243	24.9	135	13.8
Microfinance (SHGs)	123	12.6	231	23.7	440	45.1	160	16.4	22	2.3
Debentures	124	12.7	197	20.2	213	21.8	419	42.9	23	2.4
Company fixed deposits	107	11.0	221	22.6	453	46.4	185	19.0	10	1.0
Government securities	104	10.7	251	25.7	298	30.5	198	20.3	125	12.8
Corporate bonds	126	12.9	238	24.4	268	27.5	325	33.3	19	1.9
Mutual funds	55	5.6	215	22.0	359	36.8	292	29.9	55	5.6
Equity shares	92	9.4	180	18.4	359	36.8	303	31.0	42	4.3
Gold/Silver	37	3.8	75	7.7	410	42.0	375	38.4	79	8.1
Exchange-traded funds (ETFs)	484	49.6	204	20.9	199	20.4	85	8.7	4	0.4
Real Estate	66	6.8	100	10.2	378	38.7	406	41.6	26	2.7

Note: Total Respondents = 976

Source: Calculated by Author Based on the Data Collected

Perception of Risk Levels of Investment Avenues

The respondents were required to indicate their perceptions about the risk associated with each investment avenue. The perception of risk levels was measured on a five-point Likert scale, with 1 indicating 'not at all risky' and 5 indicating 'extremely risky'.

The table below provides the mean and standard deviation values of the level risk perception of the investment avenues.

Table 5.54: Descriptive Statistics of the Level of Risk Perception of Investment Avenues

Investment Avenues	Mean	S.D.
Bank savings account	1.56	0.890
Bank recurring deposit	1.82	0.899
Bank fixed deposit	1.52	0.845
Post office savings scheme	1.51	0.790
Public provident fund	2.04	1.033
National savings certificate	2.29	1.012
Microfinance (Self-help groups)	2.65	0.96
Debentures	2.94	1.028
Company fixed deposits	2.93	1.030
Government securities	1.90	1.021
Corporate bonds	3.01	0.971
Mutual funds	3.21	1.065
Equity shares	3.48	1.129
Gold/Silver	2.35	0.957
Exchange-traded funds (ETFs)	3.04	1.025
Real Estate	3.45	1.129

Source: Calculated by Author Based on the Data Collected

The respondents perceived real estate as the riskiest investment option (M=3.45), followed by equity shares (M=3.48) and mutual funds (M=3.21). The post office savings scheme was considered the lowest risk-bearing (M=1.51) avenue by the respondents.

The following table 5.55 shows the frequency of the level of risk perception of each investment avenue.

Table 5.55: Perception of the Risk Level of Respondents on Investment Avenues

Investment Avenues	Level of Risk Associated									
	Not at all risky		Slightly risky		Somewhat risky		Moderately risky		Extremely risky	
	No.	%	No.	%	No.	%	No.	%	No.	%
Bank savings account	655	67.1	141	14.4	137	14.0	43	4.4	-	-
Bank recurring deposit	444	45.5	316	32.4	163	16.7	53	5.4	-	-
Bank fixed deposit	644	66.0	201	20.6	91	9.3	35	3.6	5	0.5
Post office savings scheme	634	65.0	219	22.4	98	10.0	22	2.3	3	0.3
Public provident fund	387	39.7	272	27.9	218	22.3	91	9.3	8	0.8
National savings certificate	246	25.2	328	33.6	292	29.9	89	9.1	21	2.2
Microfinance (SHGs)	96	9.8	363	37.2	330	33.8	157	16.1	30	3.1
Debentures	60	6.1	288	29.5	361	37.0	187	19.2	80	8.2
Company fixed deposits	57	5.8	322	33.0	286	29.3	252	25.8	59	6.0
Government securities	441	45.2	291	29.8	172	17.6	47	4.8	25	2.6
Corporate bonds	35	3.6	284	29.1	356	36.5	236	24.2	65	6.7
Mutual funds	44	4.5	219	22.4	318	32.6	275	28.2	120	12.3
Equity shares	39	4.0	154	15.8	308	31.6	246	25.2	229	23.5

Gold/Silver	196	20.1	359	36.8	326	33.4	73	7.5	22	2.3
Exchange-traded funds (ETFs)	46	4.7	270	27.7	350	35.9	223	22.8	87	8.9
Real Estate	31	3.2	187	19.2	291	29.8	246	25.2	221	22.6

Note: Total Respondents = 976

Source: Calculated by Author Based on the Data Collected

Level of Preference for Investment Avenues

The preference level for the investment avenues by the respondents was assessed. The level of awareness was measured on a five-point Likert scale, with 1 indicating 'do not prefer' and 5 indicating 'extremely prefer'. The table below provides the mean and standard deviation values of the preference level for the investment avenues.

Table 5.56: Descriptive Statistics of the Level of Preference for Investment Avenues

Investment Avenues	Mean	S.D.
Bank savings account	3.95	1.050
Bank recurring deposit	3.17	1.201
Bank fixed deposit	3.68	1.239
Post office savings scheme	3.32	1.298
Public provident fund	3.02	1.337
National savings certificate	2.69	1.233
Microfinance (Self-help groups)	2.24	1.113
Debentures	2.27	1.176
Company fixed deposits	2.47	1.179
Government securities	3.02	1.197
Corporate bonds	2.27	1.079
Mutual funds	3.01	1.251
Equity shares	2.68	1.250
Gold/Silver	3.30	1.259
Exchange-traded funds (ETFs)	2.19	1.131

Real Estate	2.27	1.271

Source: Calculated by Author Based on the Data Collected

Most respondents prefer their money being invested in a savings bank account (M=3.95) and fixed deposits (M=3.68) followed by a post office savings scheme (M=3.32). The least preference was given to exchange-traded funds (M=2.19) and microfinance (M=2.24), as these were the avenues that respondents were least aware of.

The following table shows the frequency of the level of awareness of each investment avenue.

Table 5.57: Level of Preference for Investment Avenues of Respondents

Investment Avenues	**Level of Preference**									
	Do not prefer		**Slightly prefer**		**Somewhat prefer**		**Moderately prefer**		**Extremely prefer**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Bank savings account	8	0.8	106	10.9	197	20.2	281	28.8	384	39.4
Bank recurring deposit	88	9.0	218	22.3	257	26.3	262	26.8	151	15.5
Bank fixed deposit	65	6.7	122	12.5	202	20.7	262	26.8	325	33.3
Post office savings scheme	108	11.1	170	17.4	226	23.2	250	25.6	222	22.7
Public provident fund	151	15.5	226	23.2	231	23.7	186	19.1	182	18.6
National savings certificate	201	20.6	250	25.6	270	27.7	165	16.9	90	9.2
Microfinance (SHGs)	312	32.0	288	29.5	237	24.3	107	11.0	32	3.3
Debentures	335	34.3	248	25.4	226	23.2	129	13.2	38	3.9

Company fixed deposits	246	25.2	280	28.7	260	26.6	130	13.3	60	6.1
Government securities	103	10.6	252	25.8	266	27.3	229	23.5	126	12.9
Corporate bonds	275	28.2	324	33.2	245	25.1	100	10.2	32	3.3
Mutual funds	133	13.6	220	22.5	260	26.6	226	23.2	137	14.0
Equity shares	200	20.5	284	29.1	196	20.1	216	22.1	80	8.2
Gold/Silver	105	10.8	159	16.3	241	24.7	276	28.3	195	20.0
Exchange-traded funds (ETFs)	353	36.2	251	25.7	236	24.2	106	10.9	30	3.1
Real Estate	212	21.7	234	24.0	241	24.7	195	20.0	94	9.6

Note: Total Respondents = 976

Source: Calculated by Author Based on the Data Collected

Current Investments of Respondents

The respondents were required to state the avenues which they currently hold. The following table shows the number of respondents who have invested and have not invested in each investment option.

Table 5.58: Distribution of Respondents for Each Avenue Invested

Investment Avenues	Invested		Not Invested	
	No of Respondents	Percentage	No of Respondents	Percentage
Bank savings account	693	71.00	283	29.00
Bank recurring deposit	262	26.84	714	73.16
Bank fixed deposit	558	57.17	418	42.83
Post office savings scheme	313	32.07	663	67.93
Public provident fund	172	17.62	804	82.38
National savings	75	7.68	901	92.32

certificate				
Microfinance (SHGs)	31	3.18	945	96.82
Debentures	34	3.48	942	96.52
Company fixed deposits	33	3.38	943	96.62
Government securities	78	7.99	898	92.01
Corporate bonds	29	2.97	947	97.03
Mutual funds	260	26.64	716	73.36
Equity shares	141	14.45	835	85.55
Gold/Silver	350	35.86	626	64.14
Exchange-traded funds (ETFs)	33	3.38	943	96.62
Real Estate	135	13.83	841	86.17

Note: Total Respondents = 976

Source: Calculated by Author Based on the Data Collected

The investment avenues were ranked based on the number of respondents who have invested in a particular avenue. The investment avenue with the highest number of respondents is ranked one, and the lowest is ranked sixteen. The table below shows the avenues arranged per rank.

Table 5.59: Rank Distribution of Current Investments of the Respondents

Investments Avenues	Invested (%)	Rank
Bank savings account	71.00	I
Bank fixed deposit	57.17	II
Gold/Silver	35.86	III
Post office savings scheme	32.07	IV
Bank recurring deposit	26.84	V
Mutual funds	26.64	VI
Public provident fund	17.62	VII
Equity shares	14.45	VIII
Real Estate	13.83	IX
Government securities	7.99	X
National savings certificate	7.68	XI

Debentures	3.48	XII
Company fixed deposits	3.38	XIII
Exchange-traded funds (ETFs)	3.38	XIII
Microfinance (SHGs)	3.18	XIV
Corporate bonds	2.97	XV

Source: Calculated by Author Based on the Data Collected

Most respondents had their savings invested in a savings bank account, followed by a fixed deposit account, gold/silver, post office savings scheme and recurring deposit account occupying the top five ranks of current investments of respondents. The actual investments of the investors very well reflect their preference for the avenues presented in Table 5.50.

Future Investment Proportion of Respondents

The current investment holdings of respondents may or may not reflect the future proportion of the intended investment. The table below shows the proportion of their savings that they would like to invest in the future.

Table 5.60: Future Investment Proportion of Savings of Respondents

The Proportion of Intended Investment	Number of Respondents	Percentage
Less than 10%	257	26.33
10% to 20%	288	29.51
21% to 30%	224	22.95
31% to 40%	104	10.66
41% to 50%	65	6.66
More than 50%	38	3.89
Total	**976**	**100**

Source: Calculated by Author Based on the Data Collected

Most respondents would prefer to invest 10% to 20% of their savings in investment avenues, and more than 50% of the respondents prefer to have 30% or lesser of the savings as investments.

Impact of Financial Risk-Taking Propensity on Creating a Hypothetical Portfolio and the Role of Financial Literacy as the Moderator

The hypothesis dealing with the impact of financial risk-taking propensity on creating a hypothetical portfolio with the moderating role of financial literacy was assessed using the generalised ordinal regression. Generalised ordinal logistic regression was carried out using SPSS software with financial risk-taking propensity as the independent variable, portfolio type as the dependent ordinal variable and financial literacy as the moderator. The results of the ordinal regression using a generalised linear model can be interpreted based on the following criteria.

a) Model fit

   While ordinal regression is carried out, a comparison is made between the baseline model with no independent variable(s), i.e. the model with intercept only and the final model with the independent variable(s). The null hypothesis states that there is no comparison between the baseline model and the final model, which needs to be rejected. If the p-value < 0.05, there is a difference between the baseline model and the final model, and the data fits the model well.

b) Parameter estimates

   The parameter estimates are the regression estimates between the independent variable and the categories of the dependent variable. The estimates are interpreted based on the direction of the relationship. A positive estimate indicates that for every unit increase in the independent variable, there is a predicted increase of a certain amount that the dependent variable will fall in the higher category. A negative estimate indicates that for every unit increase in the independent variable, there is a predicted decrease of a certain amount that the dependent variable will fall in the higher category. In other words, when the estimates are positive, the probability that the dependent variable will belong to a higher category increases due to the increase in scores of the independent variable. When estimates are negative, this probability decreases.

c) Likelihood ratio chi-square test and Wald chi-square test

The likelihood ratio and Wald chi-square tests are tests of significance associated with the predictor variables. The regression estimates are statistically significant if the p-values are less than 0.05.

d) Odds ratio

The odds ratio helps better understand the magnitude of the impact of the regression estimates. This ratio indicates the changing odds of a case being in the next dependent category. If the odds ratio is greater than 1, it suggests an increased probability that the dependent variable will fall in a higher level when the values of the independent variable increase. An odds ratio of less than one indicates a decreasing probability of the dependent variable falling to a higher level with an increase in the value of the independent variable. If the odds ratio is equal to zero indicates no change in the dependent variable falling in a higher category.

Variable Description

In the present study, the dependent variable is portfolio type which is ranked based on the risk and diversification level of the maximum proportion of the portfolio. The sixteen investment avenues were divided into five groups based on the risk of capital invested- low-risk, moderate or medium risk and high-risk investments, and the level of diversification. The portfolios were grouped in reference to the study of Barasinka et al. (2012) and considering the expert opinion of two portfolio managers. The table below describes the five portfolio categories.

Table 5.61: Description of Types of Hypothetical Portfolios

Portfolio Type	Description
Portfolio Type 1	Low-risk underdivisified
Portfolio Type 2	Moderately low risk, quite diversified
Portfolio Type 3	Medium risk under/quite diversified
Portfolio Type 4	Moderately high risk quite diversified
Portfolio Type 5	Extremely high risk under/quite diversified

Source: Literature and Expert Opinion

The low-risk investment avenues comprised savings bank accounts, bank recurring deposits, bank fixed deposits, post office savings schemes, public provident funds, national savings certificates and government securities. Microfinance, debentures, company fixed deposits, gold/silver and real estate, formed the moderate risk avenue category. The high-risk category avenues included equity shares, mutual funds, corporate bonds and exchange-traded funds. Portfolios were additionally categorised as underdiversified, quite diversified and fully diversified. The portfolios containing assets with either entire or the majority proportion belonging to the low-risk category were termed low-risk underdiversified portfolios. The portfolios with a major proportion of investment combined across low and medium-risk assets were grouped as moderately low-risk, quite diversified portfolios. Medium-risk under/quite diversified portfolios comprised either the entire or the majority proportion belonging to the medium-risk category. The portfolios with a major proportion of investment combined across medium and high-risk assets were categorized as moderately high-risk, quite diversified portfolios. Finally, the portfolios with either the entire or the majority proportion belonging to the high-risk category investments formed the extremely high risk under/quite diversified portfolios. The independent variable is self-reported risk-taking propensity which is a seven-point Likert scale variable. Financial literacy, the moderator in the study, is a categorical variable. The basic and advanced financial literacy scores added together forms the overall financial literacy score of the respondent. The respondents were categorised into three levels based on overall financial literacy scores (Chen and Volpe 1998).

Table 5.62: Financial Literacy Categorisation of Respondents

Criteria	**Financial Literacy Level**
< 60 % of the maximum score	Low
60 % to 79 % of the maximum score	Medium
80% or > of the maximum score	High

Note: Maximum Score = 5

Source: Literature

Moderator Variable

A moderator variable is a variable that interacts with the independent variable and thereby moderates the relationship between independent (X) and dependent variables (X).

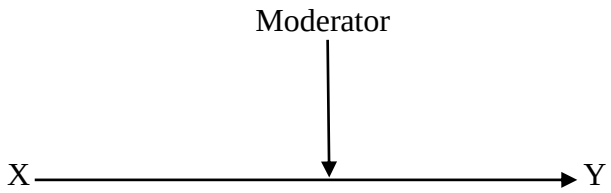

Figure 5.13: Illustration of Moderator in a Model

To consider a variable as a moderator, the following three conditions must be fulfilled. a) The moderator should have a significant impact on the independent variable (X), b) The moderator should have a significant impact on the dependent variable (Y), c) The interaction term (Independent variable x moderator variable) should have a significant impact on the dependent variable (Y)

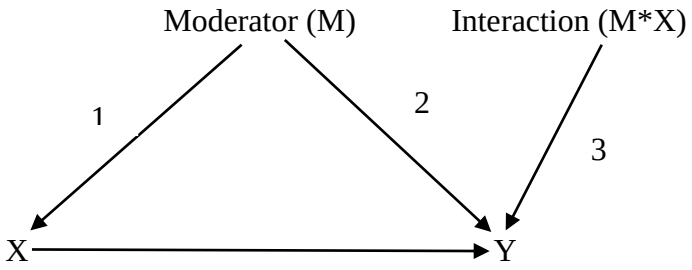

Figure 5.14: Illustration of the Conditions for Moderation

Financial literacy was tested for moderation conditions before including in the regression model. a) Condition 1: Financial literacy should significantly impact financial risk-taking propensity. This condition was tested using the likelihood ratio chi-square test. The test results were statistically significant (χ^2= 1315.022, df= 44, p= 0.000) b) Condition 2: Financial literacy should significantly impact the hypothetical portfolio. c) Condition 3: The impact of the interaction effect between financial literacy and financial risk-taking propensity on the hypothetical portfolio creation should be significant. Conditions 2 and 3 were fulfilled, as displayed in the table below.

Table 5.63: Test of Moderation Conditions of Financial Literacy

	Likelihood Ratio Chi-Square	df	Sig.
Financial literacy level (FLL)	71.634	2	0.000
Risk-taking propensity (RTP)	36.302	1	0.000
Interaction (FLL * RTP)	18.665	1	0.000

Dependent variable: Portfolio type

Model: (Threshold), FLL, RTP, Interaction (FLL * RTP)

Chi-square values significant at $p < 0.001$***

Source: Calculated by Author Based on the Data Collected

Generalised Ordinal Logistic Regression Results

The ordinal logistic regression model was formed with financial risk-taking propensity as the independent variable and portfolio type as the dependent variable. Financial literacy was included as an independent variable as well as an interaction term with the financial risk-taking propensity to test both the main effects and the interaction effects. The regression results using the generalised linear model revealed that the data fitted the model well compared to the baseline model. The p-value for the fitted model was significant at a 1 per cent level of significance (χ^2= 847.726, df=4, p=0.000). Therefore the first criterion of model fit was fulfilled. The likelihood ratio chi-square test revealed that financial risk-taking propensity was a significant predictor of the type of hypothetical portfolio created by the respondents. Financial literacy was a significant predictor of portfolio type as an independent and interaction variable with financial risk-taking propensity. Thus all the predictor variables in the model were significantly predicting the outcome variable.

The regression estimates of financial risk-taking propensity, financial literacy, and interaction effect of financial risk-taking propensity with financial literacy as predictors of the hypothetical portfolio were statistically significant. The regression results are displayed in Table 5.57 with regression estimates, the Wald significance test and the odds ratio. For every unit change in the financial risk-taking propensity, there is a predicted B = 1.436 increase that the respondent will fall into a higher risk category of portfolio type. Financial literacy level as an independent predictor has

three categories low, medium and high. The category FLL 3 (High) is the default reference category in the model. When the respondent has a low level of financial literacy, there is a B = -3.297 predicted decrease in log odds of the respondent creating a more diversified portfolio. The predicted log odds increased from B = -3.297 to B = -2.095 for respondents with a medium level of financial literacy. In other words, as the level of financial literacy increases, the possibility of creating a low-risk underdiversified portfolio also decreases.

Table 5.64: Ordinal Logistic Regression Results Using a Generalised Linear Model

Parameter	B	Std. Error	Hypothesis Test			Exp(B)
			Wald Chi-Square	df	Sig.	
portfoliotype=1	2.772	0.780	12.626	1	0.000	15.984
portfoliotype=2	6.031	0.776	60.337	1	0.000	416.006
portfoliotype=3	7.232	0.793	83.124	1	0.000	1382.450
portfoliotype=4	9.950	0.838	141.160	1	0.000	20955.246
FLL 1 (Low)	-3.297	0.310	113.100	1	0.000	0.037
FLL 2 (Med)	-2.095	0.220	90.896	1	0.000	0.123
FLL 3 (High)	0	-	-	-	-	1
RTP	1.436	0.150	91.736	1	0.000	4.205
Interaction (FLL * RTP)	0.464	0.101	21.192	1	0.000	1.591

Note: FLL: Financial literacy level; RTP: Risk-taking propensity; Chi-square values significant at $p < 0.001$***

Source: Calculated by Author Based on the Data Collected

The interaction of financial literacy with financial risk-taking propensity shows a predicted increase of B= 0.464 in the log odds of a respondent falling in a higher category of portfolio type. The Exp (B) column contains the information on the odds ratio, which shows the multiplicative change in the likelihood of being in a higher category of the dependent variable for per unit increase in the independent variable. The odds ratio for financial risk-taking propensity indicates that for every one unit

change in the financial risk-taking propensity of an individual, there is a 4.205 increased probability that a respondent will choose a higher portfolio type. The odds ratio interaction of financial literacy level with financial risk-taking propensity indicates a 1.591 increase in the probability that a respondent will create a higher portfolio category. The table below summarises the hypothesis of the second part of the model.

Table 5.65: Summary of Hypotheses on Portfolio Creation

Direction	B	Wald Chi-square	Df	P	Decision
H4: Portfolio Type <--- RTP	1.436	91.736	1	0.000***	Accepted
H5: Portfolio Type <--- RTP*FLL	0.464	21.192	1	0.000***	Accepted

Note: B: regression estimate; Df: degrees of freedom; P: significance value; $p < 0.05$ = *; $p < 0.01$ = **; $p < 0.001$ = ***

Source: Calculated by Author Based on the Data Collected

Results of Hypotheses on Financial Risk-Taking and Hypothetical Portfolio Creation

Financial risk-taking propensity had a statistically significant impact (β= 1.436, p<0.001) on the type of portfolio created by the respondents. When the propensity to take risks increased, respondents created portfolios with a higher share of risky assets. This result supports hypothesis H4 concerning the association of financial risk-taking propensity with hypothetical portfolio creation.

Results of Hypothesis on the Moderating Effects of Financial Literacy

The result on the moderating role of financial literacy indicates that, even though the higher level of financial risk-taking propensity contributes to an increase in the creation of high-risk portfolios, the level of financial literacy moderates this relationship of a respondent being on extreme levels of risk-taking. In other words, the level of financial literacy significantly moderates (β= 0.464, p<0.001) the relationship between risk-taking and the creation of portfolios by reducing the

probability of respondents creating a high-risk portfolio. Hypothesis H5 on the moderating effect of financial literacy was accepted.

5.4 SUMMARY OF RESULTS

The study's conceptual model (refer to Chapter 3, Figure 3.8) was tested in three phases due to the nature or type of variables. The first phase considered the impact of three psychological factors (optimism, self-control and mood) and the big five personality traits (OCEAN) on financial risk-taking propensity. The independent variables and the dependent variable in the first phase first are Likert scale variables. The hypothesis H1a, H1b, H1c, H1d, H2a, H2b, H2c, H2d, and H2e was tested through structural equation modelling in a single model. The results showed that the three psychological factors significantly impacted the propensity to take financial risks. Of the five personality traits, openness to experience, extraversion, and neuroticism were significantly associated with financial risk-taking, whereas conscientiousness and agreeableness did not have a significant impact.

The second phase of the model was concerned with the impact of demographic variables on financial risk-taking propensity. Seven demographic variables: gender, age, marital status, educational qualification, occupation, and zone, are categorical. The dependent variable financial risk-taking propensity, is a Likert scale variable. Hypotheses H3a, H3b, H3c, H3d, H3e, H3f, and H3g, concerning the demographic variables, were tested using independent sample t-test (when the independent variable has two categories) and one-way ANOVA (when the independent variable has more than two categories). All demographic variables showed a significant association with financial risk-taking propensity.

The third phase of the model was related to the impact of financial risk-taking propensity on hypothetical portfolio creation and the moderating role of financial literacy. The independent variable financial risk-taking propensity is a Likert scale variable; the dependent variable, the hypothetical portfolio, is ordinal; and the moderator variable, financial literacy, is categorical. Hypothesis H4 and H5 concerning the impact of financial risk-taking propensity and the moderating effect of financial literacy on the creation of hypothetical portfolios were tested using ordinal

logistic regression by employing a generalized linear model. Results of ordinal regression showed a significant impact of both direct and indirect effects of financial risk-taking propensity, and both hypotheses stood supported.

5.5 CHAPTER SUMMARY

The chapter presented the results of the preliminary study and the validity of the study instrument. The final study reports the results related to hypotheses testing and included tests of validity, reliability, normality and common method bias before implementing structural equation modelling using IBM SPSS. The measurement model and the structural model with path analysis for the first part of the model were tested using IBM AMOS SEM. The subsequent sections dealt with the impact of demographic variables and the moderation effects of the proposed relationships. The chapter discussed the results obtained and concluded with a summary of the important findings and acceptance or rejection of the proposed research hypotheses.

CHAPTER 6

DISCUSSION, IMPLICATIONS AND CONCLUSION

6.1 CHAPTER OVERVIEW

This chapter summarises the research study's findings on the impact of select factors on financial risk-taking propensity and the creation of a hypothetical portfolio. The results are discussed following the accomplishment of the study's research objectives. A review of the findings of the quantitative study is discussed in light of the prior research findings. The chapter also provides the managerial and theoretical implications of the study as well as the limitations and future directions of the study. The closure for the research study is given in the form of a conclusion.

6.2 INTRODUCTION

India is an emerging and one of the fastest-growing economies globally. The forecasted growth rate for India was 7.5 per cent for the calendar year 2021 and was expected to rise to 10.1 per cent in 2022, surpassing China (World Economic Situation and Prospects 2021). But the sudden COVID-19 pandemic at the end of 2019 affected almost all sectors of the economy worldwide and India to a great extent. India's GDP growth rate contracted by 7.3 per cent in the year 2020 -21, showing the adverse impact of the situation (SEBI 2021). Yet surprisingly, the number of Demat accounts opened under the National Security Depository Limited (NSDL) and Central Depository Services (India) Limited (CDSL) together has crossed a milestone of 6.21 crores as of June 2021 (CDSL 2021; NDSL 2021). The number of Demat accounts opened surged even amidst a personal and economic financial crisis faced by most of the population. A decrease in the interest rate of traditional investments forced many individuals to resort to other means of gaining returns to cope with the changing scenarios. The entire country was confined to their homes for a considerable period of time thereby limiting human contact. Thus, left alone, most individuals experimented with alternative investment options, majorly the stock market. Yet, the number of investors is far less for a country with the highest population. The increased interest in investing in the stock market can be attributed to many factors, including cognitive factors.

Psychological and personality factors are among the most important factors in financial decision-making. Financial risk-taking and portfolio creation in hypothetical situations

closely relate to actual behaviour because of the similarity in the thought process. And what migitates the gap between risk appetite and portfolio diversification is financial education (NCAER 2011; SEBI 2015). All these aspects are considered in the current study to give a deeper understanding of the nature of the impact on individuals' investment decision-making.

6.3 DISCUSSION OF RESULTS

The researcher aimed to achieve six research objectives in the study context. The following are the research objectives of the present study and the discussions on how the study has met them from the literature survey, results and important findings.

RO1: The psychological factors/biases influencing the general financial risk-taking propensity of individuals in investment decisions

The first research objective was achieved through the survey of literature on the psychological factors and biases in the area of behavioural finance that have an impact on an individual's financial and investment decisions. The literature review provided insights into several psychological factors/ biases that individual investors exhibited. Most factors/biases were in the context of stock market investment behaviour. The study has found empirical and experimental evidence for thirty-three factors/ biases explained in Chapter 2, literature review. The thirty-three factors/ biases identified by the researcher are: affect heuristic, affinity bias, ambiguity aversion, anchoring and adjustment bias, availability bias, cognitive dissonance, confirmation bias, conjunction fallacy, conservatism bias, disposition effect, endowment effect, framing bias, gambler's fallacy, herding, hindsight bias, hot/cold hand fallacy, home bias, hyperbolic discounting, illusion of control, loss aversion, mental accounting, myopic loss aversion, outcome bias, overconfidence bias, overreaction and underreaction, pessimism bias, recency bias, regret aversion bias, representativeness bias, self-attribution, self-control bias, status quo bias and unrealistic optimism. Each factor/ bias is described, and literature support of major and recent studies has been provided. Some of the researchers have used alternative terms for the factors/biases in their research study, and this has been taken into consideration while providing the descriptions and

literature support. The literature review has shown that an individual, as considered by standard financial theories, is not a rational being. Every individual is affected by one or other psychological factors or biases. The reason is simply that an individual is not always rational but has bounded rationality (Simon 1955; Barberis and Thaler 2003). A large number of factors/ biases documented by researchers show the complexity of human emotions and their impact on decision-making. While assessing the impact of cognitive factors on financial decisions, it is best not to consider an individual as rational or irrational but rather as normal, which is the base of behavioural finance.

RO2: The influence of select psychological factors, namely optimism, self-control and mood, on the financial risk-taking propensity of individuals

Optimism significantly predicted financial risk-taking propensity. The positive relationship supports the expectancy-value theory. When individuals display higher levels of optimism, there is an increased expectancy of a positive outcome. The increased expectancy, in turn, leads to a greater value being placed on the propensity to take financial risks, which would lead to the expected positive outcome. The higher the level of optimism, the greater the propensity to take risks and vice versa. The finding that optimism can alter the tendency to take risks aligns with earlier studies (Weinstein 1980; Prosad et al. 2015). But it contradicts the results of Chira et al. (2008), who found an association between lower levels of optimism and making risky financial decisions. Optimism is a positive trait that individuals should possess to some extent to make decisions without overthinking about the negative outcomes while not completely ignoring the possibility of those negative outcomes. Only when there is inflated optimism an individual may not consider the rationality of the decision (Puri and Robinson 2007).

Self-control had a significant negative association with financial risk-taking propensity. As found in prior studies, self-control depletion leads to the acceptance of higher financial risks (Freeman and Muraven 2010; Stromback et al. 2017). While looking at self-control from the dual-self model perspective, out of the short-term impulsive self (present self) and long-term patient self (future self), the side that wins takes the decision. This winning side can differ based on the individual, the decision type, the external environment and many other factors. The lower the ability to control oneself,

the higher the indulgence in risky behaviours. Lower levels of self-control provide more significant weightage to the present self than the future self. But this can be paradoxically viewed as beneficial in the context of financial risk-taking: the reason being saving and investment is a result of this increased risk-taking and lesser spending at present. Even then, excessive risk-taking due to low levels of self-control by borrowing money from others to make quick profits by choosing the wrong investments can prove disastrous. Self-control problems can come in the way of an individual's financial independence, especially if the individual falls into the trap of borrowing money and making high-risk profile financial decisions (Gathergood 2012).

In the case of mood, positive affect impacted risk-taking propensity negatively, whereas negative affect impacted positively. This finding contradicts some prior studies concerning the affect infusion model (Ackert et al. 2003; Chou et al. 2007) but supports the mood maintenance hypothesis (Isen and Patrick 1983; Isen 1984), whereby individuals in a positive mood state tend to be risk-averse to maintain the current happy mood state. On the other hand, individuals with negative mood states tend to embrace higher risks with the hope of earning an increased return and improving their current negative mood. Out of the two factors, the negative mood state was more significantly associated with risk-taking than positive affect, showing that the negative mood overpowered the positive mood state of individuals. The finding supports the study of Hockey et al. (2000) on the negative mood state impact on risk-taking in hypothetical situations. The study revealed that among the three psychological factors, self-control emerged as a highly significant factor for predicting the financial risk-taking propensity of individuals, followed by optimism. Mood was the lowest predictor among the three variables. Even if the degree of impact was different, all three psychological factors had a significant impact on the financial risk-taking propensity of individuals.

RO3: Impact of personality traits of individuals on their financial risk-taking propensity

The assessment of the relationship between the big five personality traits and financial risk-taking propensity revealed that three out of five traits could predict the risk-taking behaviour of individuals significantly. Openness to experience, extraversion and

neuroticism were significantly related to risk-taking, while conscientiousness and agreeableness did not impact substantially.

Openness to experience had a significant positive relationship with financial risk tolerance. This result is in line with the study of Amiri *et al.* (2013). When individuals are open to the experience, they seek new opportunities and challenges (Kleine *et al.* 2020). By taking higher risks, such individuals look for newer experiences to broaden their horizons of understanding.

The trait of conscientiousness did not significantly impact the financial risk tolerance levels of individuals. Conscientiousness simply means being self-disciplined and organised. This trait did not contribute to predicting financial risk-taking behaviour accurately, which is in line with the previous research findings (Amiri *et al*. 2013; Dhiman and Raheja 2018).

The financial risk tolerance of individuals increased with the level of extraversion. Individuals with higher extraversion displayed an outgoing personality and had a greater tolerance for accepting financial risk, as found in the current study and the previous studies (Oehler *et al*. 2018; Oehler and Wedlich 2018; Rabbani *et al*. 2019; Kaur and Goel 2022).

Agreeableness was not a significant predictor of financial risk tolerance which contradicts previous research findings (Amiri *et al*. 2013; Pak and Mahmood, 2015; Dhiman and Raheja 2018; Rabbani *et al*. 2019). Agreeableness is a trait that would be more appropriate in a social decision-making environment, as being warm and considerate is a social quality. It may have little or no effect in addressing individual-level decisions, such as financial risk tolerance, as shown in this study.

Neuroticism was found to impact risk-taking in the present research positively. Highly neurotic individuals had greater levels of appetite for bearing financial risks. The finding of the present study is consistent with the study results of Amiri *et al*. (2013) but is contrary to the results found by Oehler *et al*. (2018) and Oehler and Wedlich (2018). Rabbani *et al*. (2019) concluded that individuals with emotional stability, that is, less neurotic individuals were better at financial risk tolerance. While Pak and Mahmood (2015) and Pinjisakikool (2017) also found a negative association between neuroticism and financial risk tolerance, the present study showed a positive association. As the data was collected during the pandemic, low control of emotional

states could have triggered higher levels of risk-taking in the hope of coping with the rising economic crisis. This result also closely relates to the earlier finding that discussed the positive impact of a negative mood state on risk-taking.

Among the five personality traits, neuroticism emerged as the most significant factor. It can be observed that the respondents of the study displayed an overall negative state of emotions as a result of the prevailing conditions. The result helps us understand the bearing of external surrounding conditions on the human psyche and decision-making. However one cannot conclude that only negative personal factors gave rise to a higher risk-taking propensity. Openness to experience was the second most important personality trait predicting risk-taking, suggesting that individuals had the urge to explore more in the domain of financial investments. From the demographic profile, it can be noted that (Refer to Chapter 5, Table 5.3) more than 60 per cent of the respondents were below 37 years of age, suggesting a majority were young adults. This fact showcases that the risk-taking propensity of the younger generation can be associated with their desire to be more open to experiences. The last but significant personality trait predicting risk-taking was extraversion. Extraverted people constantly interact with people around them and often feel more capable of taking risks (Czerwonka 2019). The current study supports the claim of increased risk-taking due to increased extraversion. The present study and earlier studies show that personality traits widely differ across countries and cultures and also within. In addition, the personality characteristics of a given individual may vary across the lifespan.

RO4: The impact of demographic factors on the financial risk-taking propensity of individuals

Demographic factors play a huge role in most decisions taken by an individual. The current study has found that demographic factors affect the financial risk-taking propensity of individuals. An examination of the descriptive statistics revealed that the study's respondents displayed a moderate level of risk appetite as a total sample. The study had a balanced sample of males and females. Males were greater risk-takers in the present sample, confirming the findings of prior studies on risk-taking (Barber and Odean 2001; Yao *et al.* 2011; Charness and Gneezy 2012; Lemaster and Strough 2014;

Ansari *et al*. 2023). Past studies have found that the younger generation is more likely to take financial risks than the older generation (Hanna *et al.* 1998; Al-Tamimi and Kalli 2009; Yao *et al.* 2011). While assessing the risk propensity based on the age of the respondents the present study also found evidence that respondents aged 28 to 37 were more inclined to take risks than other groups. The age group represents individuals in their prime earning years (Poterba 2001), relatively far from retirement and have greater opportunities to explore investment strategies and avenues. Moreover, the risk appetite was negatively associated with the age group of individuals. As individuals approach their retirement, the probability of taking financial risks is reduced to a great extent because safeguarding the principal amount takes a greater priority than increasing returns. Based on their marital status, the single respondents were ready to accept higher levels of financial risks than those who were married, and this result supports the study of Yao and Hanna (2005). The educational qualification of an individual had a significant role in assessing financial risk-taking propensity. There were significant differences in the level of risk-taking based on differences in educational levels, and those with post-graduation had a greater inclination towards risk-taking supporting the claims made by prior studies (Singh 2012; Bashir *et al.* 2014). The occupation of the respondents was a significant predictor of financial risk-taking propensity. The group of self-employed respondents had the highest risk appetite. Most self-employed are well-worst at accepting risk due to the nature of the occupation. As self-employed own a business, their broadened understanding of business risks can contribute to greater risk-taking in other areas of decision-making as well. Income level analysis of risk-taking propensity displayed that those respondents with an income level of Rs.400001 to Rs.60000 were more willing to take risks. The zone to which the respondents belong significantly predicted the risk-taking propensity. The respondents from the western zone had the highest inclination to take financial risks. The results show that all demographic factors significantly predict financial risk-taking propensity.

RO5 and RO6: Relationship between financial risk-taking propensity and hypothetical portfolio creation and role of financial literacy as a moderator

The level of financial risk-taking propensity was a significant predictor of the type of portfolio created by the respondent. As the level of risk-taking increased, the chance of a respondent creating a portfolio with high-risk assets increased. The probability that the individuals would prefer a portfolio with greater risk assets, such as bonds, stocks, and mutual funds, increased due to an increased appetite for risk.

Even though risk-taking propensity was a significant predictor of the type of hypothetical portfolio created, the results are not meaningful without considering the role of financial literacy in the related analysis. Financial literacy significantly helps to take a planned risk based on the need and objective of investment rather than just the propensity to take high risks. Lower levels of financial literacy were associated with choosing portfolios with low-risk traditional assets. High levels of financial literacy translated into an increased probability of including more sophisticated avenues in the portfolio displaying that the results are consistent with few studies (Sood and Medury, 2012; Aren and Zengin, 2016; Cupák *et al*., 2022; Chen *et al*., 2023). Yet the overall association of financial literacy was negative indicating that when individuals are financially literate, they prefer balanced portfolios rather than risky portfolios with lesser diversification. This finding supports the study by Khan et al. (2019) who pointed out that with an increase in financial literacy, individuals are more aware of the dangers associated with including a greater proportion of risky assets and thus would be more concerned with balanced portfolios based on their risk appetite. The association of risk appetite and financial literacy with investment decision has been established in the previous literature in varying contexts and find significance in the present study as well. The main contribution of this research was to shed light on the regulating role of financial literacy between risk appetite and portfolio selection. The results successfully prove that financial literacy not only directly impacts portfolio decisions but also significantly interacts with risk appetite thereby lowering the probability of creating high-risk or unbalanced portfolios. In other words, financial literacy helps in understanding the risks of allocating a major proportion of investment to risk assets and the concept of “don’t put all your eggs in one basket”. Financial education aims to

evaluate risky decisions that make way for wealth-generating activities. When investors are made to understand the impact of their today's investment or allocation of savings on the distribution of their future wealth, the investors are more likely to create well-balanced diversified portfolios that are neither too risky nor too traditional (Bollen and Posavac, 2018; Chen *et al.*, 2023). Thus, to say that financial literacy is not only necessary for avoiding excessive risk-taking concerning financial investment but also for procuring required finances (Mihalčová *et al.*, 2014). Greater financial knowledge translates into a favourable attitude toward investments (Sang *et al*. 2018). The right amount of risk appetite, along with sufficient financial knowledge, helps in creating portfolios with better diversification and high returns. In other words, the knowledge about the various avenues of investments and the risk-return factors associated with each investment avenue contributes to an efficient allocation of money and thereby helps in wealth creation

While looking deeper into the insights provided by the study, it can be noted that the majority of the respondents responded that they were exposed to financial knowledge in the past majority of them . Still, only a few respondents (9.8 per cent) could answer all ten financial literacy questions correctly. It can also be observed that even though the majority of the study respondents have graduation or post-graduation educational background, the overall financial literacy of the sample is medium. The study by Agarwalla et al. (2015) also found that the financial literacy levels among young Indian individuals were not greater than average despite the sample comprising graduates and postgraduates. Even after close to a decade of finding evidence of average levels of financial literacy by Agarwalla et al. (2015) among highly educated individuals, the present study sees no differences in findings. This result stresses that mere college education does not contribute to high levels of financial knowledge in India.

Apart from measuring financial literacy objectively, the study also tried to capture self-reported levels of awareness, levels of risk perception, and levels of preferences pertaining to investment avenues. Creating a portfolio requires individuals to have adequate knowledge of the various financial products available for investment. The analysis of the awareness levels concerning the sixteen investment avenues of the study revealed that respondents have greater awareness levels concerning traditional

investments than non-traditional ones. This awareness level can also be reflected in the hypothetical portfolios where those with adequate financial knowledge created more diversified portfolios by balancing traditional and non-traditional investments. The analysis of risk perception of the investments of the respondents displayed a fairly good understanding of risk levels associated with an investment. Real estate, equity shares, and mutual funds were perceived to be assets with high risk by the respondents. Those respondents with low financial literacy and risk-taking propensity created portfolios that did not include these high-risk, high-return assets. The preference level analysis of the investment avenues showed a higher inclination towards traditional investments such as bank deposits. Among the risky assets, a greater preference was towards gold/silver, and this more or less aligns with the cultural aspects of the country and the preference for precious metals (SEBI 2015). The current investments that the respondents hold provide additional support to the claim on the preference for precious metals. Gold/silver stands third in ranking among the current investments of the respondents. Apart from gold/silver among the risky assets class, mutual funds were the most preferred avenues, and the same was reflected in the current investments ranking, where mutual funds stood at 6^{th} rank among the 16 avenues. The investor survey report by SEBI 2015 found that even though India is among the top 20 saver nations, most households have accumulated their savings in bank deposits, physical assets and currencies. The same investment trend is seen in the present study after more than half a decade of these findings by SEBI.

6.4 IMPLICATIONS OF THE STUDY

The present study has contributed to the growing body of knowledge on behavioural finance through empirical investigation. The study's implications have been laid down in terms of its theoretical and practical contributions.

Theoretical Implications

The present research attempts to make a small but significant empirical and theoretical contribution to the existing body of knowledge on behavioural finance and the role of various factors affecting the financial risk-taking propensity of individuals. In the

present situation of recovering from a pandemic, the understanding of the role played by psychological factors and the level of risk-taking in the financial decision-making context becomes even more essential in explaining irrational behaviour or normal human behaviour in uncertain situations. The literature finds that several psychological factors and biases affect the financial behaviour of individuals. Most of these factors apply narrowly only to stock market investments and can not be applied to general financial behaviour and risk-taking. The present study considers psychological aspects such as optimism, self-control, mood, and personality traits that apply to financial risk-taking behaviour irrespective of the type of investment and thereby add empirically to the theories in psychology and finance and their interrelation. The study better explains the 'why' part of financial behaviour to a sizable extent, given how deeply rooted each cognitive factor is in the psychology literature.

While looking at investment behaviour, individuals can be either savers or savers and investors. The savers invest only in traditional investments and do not participate in the securities market. The study considers individuals from both categories without distinction, thus providing a more general outlook of financial behaviour. Thus it provides an expanded view of behavioural finance theory application to financial behaviour distinct from studies concentrating only on the securities market.

In past studies, the risk-taking factor has been proven to be a significant predictor of most financial decisions in individual and household samples. The result of the present study shows that risk-taking very well fits in a hypothetical situation as well, which represents a close proxy to actual behaviour. Further, unlike most studies that have analyzed the direct impact of financial literacy on various financial decisions and outcomes, the present study has looked into the direct and indirect effects of financial literacy thereby expanding the boundaries of past literature.

Practical Implications

The findings of the study have implications for formal educational bodies, financial service providers or intermediaries, financial regulatory bodies as well as individual investors. Indian Individual investors in the current study have only a medium level of

financial literacy despite the majority belonging to the younger generation, having higher levels of education, and having constant exposure to technology. This raises the question of the relevance of course contents taught in formal educational institutes that are necessary to make important life decisions such as financial decisions. It is of great importance that individuals are taught about managing finances as a part of formal education and not just a part of choosing a particular stream such as business and finance. The study results call for an improvement on the part of the formal education sector in building life skills.

In a fast-growing and technology-oriented world, financial service providers must thoroughly know the customers. Understanding individual differences helps not only in tapping the market potential but also in gaining trust and confidence from the customers. This study helps provide insights into the behaviour of individuals about their general propensity to take financial risks in the Indian context. The responsibility of creating an optimum portfolio with the right combination of risk-free and risky assets was earlier in the hands of the individual. But with the rapidly growing complexity of life and lack of advanced financial knowledge, this responsibility is shouldered by various wealth management firms. Most investors choose their financial service providers based on their service quality. Financial intermediaries therefore should work hand in hand with investors to build trust and confidence on the part of the investors. Given sufficient information about demographic factors, psychological biases that individuals exhibit, their personality traits and risk appetite and how the hypothetical portfolios are created, these wealth management firms will be in a better position to customize their financial services to suit individual needs. These results would benefit financial product design, improvement of existing financial products (redesigning) and product customization. It would also provide insight to the financial advisors in analyzing their clients' economic and investment choices in a more informed way. The study results have pointed out that the younger generation is willing to take greater financial risks but lacks sufficient investment knowledge. These insights can help intermediaries channel the financial risk-taking propensity of young adults into a wealth-generating medium by creating tailored portfolios.

One would argue that financial investment decisions may be outsourced to financial intermediaries and may not require individuals to have specific financial knowledge. The Indian investor survey report by SEBI (2015) disclosed that despite a majority of the investors choosing the services of financial intermediaries most investors trusted themselves and their decision-making skills when it came to whom they trusted the most to make investment decisions. Even though taking investment advisory services of experts in the field is more beneficial to create optimal portfolios rather than based on one's understanding, a high level of financial literacy can provide a greater sense of satisfaction in decision-making over managing the portfolio created by these experts. The understanding on the part of individuals that mere educational qualification does not make a person financially literate calls for self-development in building financial management skills. The younger generation forming the majority of the Indian population must actively engage in grasping financial knowledge as ultimately the responsibility of managing finances lies with oneself. In addition, awareness of various cognitive biases would help individuals decode their decision-making process. The empirical results benefit individuals in assessing their behaviour and help them make more informed decisions. Individuals can also make better sense of the kind of biases that are related to personal financial risk-taking. Given the knowledge that one cannot always make rational decisions can bring about a sense of relief, especially to naïve investors.

Financial regulatory bodies that are aimed at investor protection and financial education such as SEBI and RBI (Reserve Bank of India) need to bring about more effective investor awareness programs in India that would have ripple effects on the efficient allocation of individual savings and indirectly contribute to the country's economic growth. Even though several financial educational materials are available freely in digital form on these government financial institution websites, steps need to be taken to ensure that information reaches the general public by minimising linguistic barriers given the language diversity of the country. Investment policymakers can shed light on such research findings in public awareness campaigns, as ordinary people may find it challenging to understand such concepts. With most of the Indian population belonging to the middle-class income group and having very little disposable income, information

on appropriate risk-taking by eliminating psychological biases can help channel the savings better. The appropriate knowledge can help individuals in a smooth transition from a mere saving class to an investing class which would boost the country's economic growth. The study incorporates a broad sample taking into consideration the cultural and linguistic patterns within the country, and this provides better scope for the generalisability of results within the Indian context.

6.5 LIMITATIONS OF THE STUDY AND FUTURE RESEARCH DIRECTIONS

Every study has limitations due to several factors the researcher cannot always control. Eliminating all problems in a research study is almost impossible, and these limitations build the scope for future work or directions for research. The following are the limitations of the present study.

- Though the study has attempted to report the most tested biases in the behavioural finance literature, the list is not exhaustive. Many of the biases are used synonymously by the authors, and therefore, the most appropriate term is taken into account for reviewing the literature. The databases use different keywords that the researcher may have missed.
- The study uses self-reported measures to obtain data from respondents about psychological constructs. But the actual behaviour of respondents may vary from what the respondents report.
- Financial risk-taking propensity may vary from one investment to another in particular. There could be chances of the same individual being risk-averse for one investment and risk seeker for another.
- The generalizability of results might be limited as the results in the Indian context may not hold good for another country.
- Using an English language questionnaire restricted the participation of individuals who did not have a good command of the language.

Firstly, while looking at the future directions of the research work, the study finds its importance among academicians who would like to explore the impact of psychological

factors, personality traits and demographic factors in various other decision-making contexts, especially concerning risk-taking in non-traditional investments, specifically cryptocurrencies. Secondly, the three psychological factors are deep and wide and can be individually explored. Optimism in financial decision-making can be further analysed by linking it to the locus of control aspect. Analysing optimism based on internal or external locus of control can give a deeper meaning to an individual's risk-taking behaviour. Thirdly, the current study provides a peek into financial decision-making during the pandemic; therefore, carrying out a similar study would provide an understanding of the possible moderating impacts of emergencies. Lastly, a qualitative study may be conducted to get a deeper understanding of the psychological factors affecting the financial behaviour of individuals as there is a global recession creeping in that may cause a huge economic impact on many countries.

6.6 CONCLUSION

The population of India ranks first globally, and the median age of the Indian population is 28.7 (Central Intelligence Agency 2021). Financial Management decisions of such a huge population of young adults would have a huge bearing on the country's economic development. The current empirical study has attempted to assess the financial behaviour of Indian individuals. The assessment of select psychological factors and personality traits in determining financial risk-taking propensity has revealed the importance of cognitive factors in financial decision-making. Even when a group of individuals are exposed to the same situations and environment, cognitive differences affect how information is processed and decisions are made. The role played by demographic factors is also significant in most economic decisions, and the present study has found its influence on financial risk-taking too. The appetite for risk-taking in a particular context dictates the shape of the outcome or decision related to the context. The study has rightly pointed out this phenomenon concerning the financial behaviour context. The risk-taking or risk-averseness of an individual with matters concerned with investment greatly affects how an investment portfolio is created. However, this association is not as straightforward as it may seem, as financial literacy moderates the relationship between the propensity to take risks and the choice of the type of investment products. Better financial literacy levels contribute to reducing

irrationality in investment-related decisions. A person doesn't have to hold a graduate and postgraduate degree or, for that matter, formal education to learn about financial concepts. Possessing knowledge of the various available investment products, the risk-return principle and a basic understanding of the compounding effect of money can put an individual ahead of those who lack such information for wealth creation. To sum up, the present study combines psychological and personality factors along with non-cognitive factors such as demographic profile and financial literacy in understanding the risk-taking propensity and portfolio choices of individuals thereby adding to the behavioural finance literature from an emerging economy perspective.

APPENDIX

QUESTIONNAIRE

Dear Sir/Madam,

Greetings from the National Institute of Technology Karnataka, Surathkal

I, Crystal Glenda Rodrigues, Doctoral Student from School of Management (SOM), National Institute of Technology Karnataka, Surathkal, am pursuing my research on factors influencing the financial risk-taking propensity of individuals and creation of a hypothetical portfolio. I intend to understand the impact of factors such as demographics, psychological factors, and personality traits on the level of the financial risk-taking propensity of individuals. Your view on this matter is fundamental to arrive at realistic findings. Therefore, I kindly request you to respond to all the questions given below after reading them carefully and become a contributor to the process of knowledge creation and dissemination. All information provided by you would be treated with strict confidentiality and would be used for intended academic purposes only.

Thank you in advance for your participation

Part A: Psychological Factors, Personality Traits, and Risk-Taking Propensity

(Kindly Tick in the appropriate column for each statement)

SD – Strongly Disagree, **D** – Disagree, **N** – Neutral, **A** – Agree, **SA**- Strongly Agree	**SD**	**D**	**N**	**A**	**SA**
I usually expect the best to happen even when I am not sure about certain situations					
If something can go wrong for me, it will					
I always think positively about my future					
I usually don't expect things to happen the way I want					
I usually do not expect good things to happen to me					
Overall, I expect more good things to happen to me than bad					
I find it difficult to break bad habits					
I get distracted easily					
I say wrong things at the wrong time					
I do not complete my work on time because I get involved in activities of pleasure and fun during work time					
I sometimes do things which would make me regret about it later					

I am not able to stop myself from doing something even when I know it is wrong					
I often act without thinking and evaluating carefully all options available in a given situation					
I have a very good power of imagination					
I often try out new and different types of food					
I have little interest in knowing more about the universe or nature					
I have a lot of interest to gain knowledge about various things					
I often enjoy understanding a subject or idea deeply					
I keep my belongings neat and clean					
It is very easy for me to do any work quickly so that I finish it on time					
I waste a lot of time before starting to do the required work					
Sometimes I am not a very dependable person					
I find it very difficult to be an organized person					
I really enjoy talking to people					
I often feel as if I am full of energy					
I am a cheerful and lively person					
I am a very active person					
I often get into arguments with my family and co-workers					
Some people think I am selfish and full of ego					
Some people think of me as unemotional and cunning					
I generally try to be kind and understanding					
I often feel inferior to others					
When I am under a stressful situation, I feel broken easily					
I often feel tensed and extremely nervous					
Sometimes I feel completely worthless					
When things go wrong, I easily get discouraged and feel like giving up					
I think it is more important to have safe investments and guaranteed returns than to take a risk to have a chance to get the highest possible returns					
I would never consider investments in shares because I find this too risky					

If I think an investment will be profitable, I am prepared to borrow money to make this investment					
I want to be certain that my investments are safe					
I get more and more convinced that I should take greater financial risks to improve my financial position					
I am prepared to take the risk to lose money when there is also a chance to gain money					
Please indicate to what extent you generally feel this way about each word mentioned below **NA** - Not at all, **AL -** A Little, **M** - Moderately, **QB** - Quite a bit**,** **EX** - Extremely	**NA**	**AL**	**M**	**QB**	**EX**
Generally/Most of the days I am - Interested (wanting to learn more about something)					
Generally/Most of the days I am - Distressed (Feeling extreme unhappiness or pain)					
Generally/Most of the days I am - Excited (High state of energy and eagerness)					
Generally/Most of the days I am - Upset (Feeling unpleasant)					
Generally/Most of the days I am - Strong (not easy to break or damage, mentally)					
Generally/Most of the days I am - Guilty (feeling bad because you believe you have done something bad or wrong)					
Generally/Most of the days I am - Scared (terrified of something or someone)					
Generally/Most of the days I am - Hostile (showing or having unfriendly feeling)					
Generally/Most of the days I am - Enthusiastic (a strong feeling of active interest in something)					
Generally/Most of the days I am - Proud (very happy and pleased because of something you have done, something you own, someone you know or are related to)					
Generally/Most of the days I am- Irritable (becoming angry or annoyed easily)					
Generally/Most of the days I am - Alert (able to think clearly and to notice things)					
Generally/Most of the days I am - Ashamed (feeling inferior or unworthy)					

Generally/Most of the days I am - Inspired (having a particular cause or influence)					
Generally/Most of the days I am - Nervous (having or showing the feelings of being afraid about what might happen)					
Generally/Most of the days I am - Determined (having a strong feeling that you are going to do something and that you not allow anyone or anything to stop you)					
Generally/Most of the days I am - Attentive (thinking about or watching something carefully)					
Generally/Most of the days I am - Jittery (unable to relax due to a sense of panic or extreme nervousness)					
Generally/Most of the days I am - Active (doing things that require participation and energy)					
Generally/Most of the days I am - Afraid (filled with fear)					

Part B: Financial Literacy

1. Have you studied financial concepts during your education or taken financial programs in the past?

Yes [ ] No [ ]

2. Do you have any work experience in the field of Banking, Finance, or Investments?

Yes [ ] No [ ]

3. If Yes, kindly mention the number of years of experience.

Experience (in years): _____

(*Kindly tick the right answers for the questions given below***)**

1. Imagine you have Rs.100 in a savings account and the interest rate is 10% per year. After 5 years, how much money will you have in this account?					
A	More than Rs.150		C	Exactly Rs. 150	
B	Less than Rs. 150		D	Do not know	
2. Imagine the interest rate applied to your savings account is 6% per year and the inflation rate (i.e. rate at which there is a general increase in prices of products and services) is 10% per year. After one year, how much will you be able to buy with the money from this account?					
A	More than today		C	Exactly the same	
B	Less than today		D	do not know	
3. Imagine you take a loan of Rs. 10000 to be paid after one year and the total loan amount with interest is Rs. 10600. The interest rate that you pay for this loan is:					

A	0.3%		C	6%	
B	0.6%		D	Do not know	
4. Imagine you saw the same television at two different stores at the initial price of Rs. 10000. Store A offers a discount of Rs.1500, while store B offers a discount of 10%. Which is the best alternative?					
A	Buy at store A (discount of Rs.1500)		C	Do not know	
B	Buy at store B (Discount of 10%)				
5. Imagine five friends receive a donation of Rs. 1000 and they must split the money equally between them. How much each will get?					
A	Rs. 100		C	Rs. 5000	
B	Rs. 200		D	Do not know	
6. Considering a long time (e.g. 10 years), which asset described below normally gives the highest rate of return?					
A	Savings account		C	Public securities	
B	Stocks		D	Do not know	
7. Normally which asset shows the highest Oscillations (fluctuations or changes) over time?					
A	Savings account		C	Public securities	
B	Stocks		D	Do not know	
8. When an investor diversifies his/her investments, the money invested is divided among different assets. Therefore, the risk of losing money in this case:					
A	Increases		C	Decreases	
B	Remains the same		D	Do not know	
9. A loan lasting 15 years typically requires higher monthly payments than a 30-year loan, but the total interest paid at the end of the 15-year loan will be less. This statement is:					
A	True		C	Do not know	
B	False				
10. An investment with a high rate of return will have high risk. This statement is:					
A	True		C	Do not know	
B	False				

Part C: Choice of Investment Avenues

1. Please Indicate your level of awareness about each of the investment avenues mentioned below

1 - Not at all aware, **2** - Slightly aware, **3** - Somewhat aware **4** - Moderately aware, **5** - Extremely aware	**1**	**2**	**3**	**4**	**5**
Bank - Savings Account					

Bank - Recurring Deposit					
Bank - Fixed Deposit					
Post Office Savings Scheme					
Public Provident Fund					
National Savings Certificate					
Microfinance (Self Help Groups)					
Debentures					
Company fixed deposits					
Government Securities					
Corporate bonds					
Mutual Funds					
Equity Shares					
Gold/Silver					
Exchange-Traded Funds (ETFs)					
Real Estate					

2. Please Indicate the way you feel concerning the level of risk associated with each of the investment avenues given below (For those investments which you are not aware of, you may take a guess)

1 - Not at all risky, **2** - Slightly risky, **3** - Somewhat risky **4** - Moderately risky, **5** - Extremely risky	**1**	**2**	**3**	**4**	**5**
Bank - Savings Account					
Bank - Recurring Deposit					
Bank - Fixed Deposit					
Post Office Savings Scheme					
Public Provident Fund					
National Savings Certificate					
Microfinance (Self Help Groups)					
Debentures					
Company fixed deposits					
Government Securities					
Corporate bonds					
Mutual Funds					
Equity Shares					
Gold/Silver					
Exchange-Traded Funds (ETFs)					
Real Estate					

3. Please Indicate your level of preference for each of the investment avenues listed below.

1 - Do not prefer, **2** - Slightly prefer, **3** - Somewhat prefer **4** - Moderately prefer, **5** - Extremely prefer	**1**	**2**	**3**	**4**	**5**
Bank - Savings Account					
Bank - Recurring Deposit					
Bank - Fixed Deposit					
Post Office Savings Scheme					
Public Provident Fund					
National Savings Certificate					
Microfinance (Self Help Groups)					
Debentures					
Company fixed deposits					
Government Securities					
Corporate bonds					
Mutual Funds					
Equity Shares					
Gold/Silver					
Exchange-Traded Funds (ETFs)					
Real Estate					

4. In which of the following investment options have you invested your savings? (Put a Tick against the investment option in which you have invested)

Bank - Savings Account		Company fixed deposits	
Bank - Recurring Deposit		Government Securities	
Bank - Fixed Deposit		Corporate bonds	
Post Office Savings Scheme		Mutual Funds	
Public Provident Fund		Equity Shares	
National Savings Certificate		Gold/Silver	
Microfinance (Self Help Groups)		Exchange-Traded Funds (ETFs)	
Debentures		Real Estate	

5. How much proportion of your savings are you planning to invest in various financial products in the next 12 months?

a) Less than 10% [ ] b) 10% to 20% [ ] c) 20% to 30% [ ]

d) 30% to 40% [ ] e) 40% to 50% [ ] d) More than 50% [ ]

6. For the Investment avenues given below, Please Indicate the percentage of your total savings that you would want to invest in each of the investment categories. (Note: 1. The total percentage of all the investment options should be 100% when added and should not exceed or be less than 100%. 2. You can put Zero for those investments in which you do not want to invest)

Investment Avenues	**Percentage of Investment**
Bank - Savings Account	
Bank - Recurring Deposit	
Bank - Fixed Deposit	
Post Office Savings Scheme	
Public Provident Fund	
National Savings Certificate	
Microfinance (Self Help Groups)	
Debentures	
Company fixed deposits	
Government Securities	
Corporate bonds	
Mutual Funds	
Equity Shares	
Gold/Silver	
Exchange-Traded Funds (ETFs)	
Real Estate	
Total	**100**

Part D: Demographic Profile

Gender	Male [ ] Female [ ] Others [ ]
Age Group	18 - 27 Years [ ] 28 – 37 Years [ ] 38 – 47 Years [ ] 48 – 57 Years [ ] Above 57 Years [ ]
Marital Status	Single [ ] Married [ ]
Educational Qualification (Completed)	Below 10^{th} / SSLC [ ] 10^{th} / SSLC [ ] 12^{th} / PUC [ ] Diploma [ ] Graduate [ ] Post – Graduate [ ] Doctorate [ ] Post - Doctorate [ ]
Occupation	Student [ ] Student with part time job [ ] Private Sector Employee [ ] Government Sector Employee [ ] Self-Employed [ ] Retired [ ] Not employed currently [ ]
Monthly Income (Individual)	NIL [ ] Less than Rs.20000 [ ] Rs.20001 – Rs.40000 [ ] Rs.40001 – Rs.60000 [ ] Rs.60001 – Rs.80000 [ ] Rs.80001 – Rs.100000 [ ] Above Rs.100000 [ ]

Which Administrative Zone of India do you belong to?	Eastern (Bihar, Jharkhand, Odisha, West Bengal) [ ] Western (Maharashtra, Gujarat, Goa, Dadra & Nagar Haveli, Daman & Diu) [ ] Northern (Haryana, Punjab, Himachal Pradesh, Rajasthan, Delhi, Chandigarh, Jammu & Kashmir, Ladakh) [ ] Southern (Andhra Pradesh, Telangana, Karnataka, Kerala, Tamil Nadu, Andaman and Nicobar Islands, Lakshadweep, Puducherry) [ ] Northeastern (Sikkim, Arunachal Pradesh, Assam, Nagaland, Manipur, Mizoram, Tripura, Meghalaya) [ ] Central (Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh) [ ]

Thank You for Your Valuable Time and Response

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List of Publications based on Ph.D. Work

Sl. No.	Title of the paper	Authors	Name of the Journal/ Conference/Symposium, Vol., No., Pages	Month & Year of Publication	Category
1.	Does mood take the front seat in determining the financial risk-taking propensity of individuals? Evidence from India	Crystal Glenda Rodrigues Gopalakrishna B. V.	SSRN Electronic Journal (GCIMB 2021 Conference Proceedings)	June 2022	3
2.	Financial risk tolerance of individuals from the lens of big five personality traits – a multigenerational perspective	Crystal Glenda Rodrigues Gopalakrishna B. V.	Studies in Economics and Finance	April 2023	1
3.	Optimism and Self-Control: Complementary Predictors of Financial Risk-Taking Propensity Among Working Adults	Crystal Glenda Rodrigues Gopalakrishna B. V.	Indian Journal of Finance	July 2023	1
4.	Financial literacy–a regulator of intended investment behaviour: analysing the hypothetical portfolio composition	Crystal Glenda Rodrigues Gopalakrishna B. V.	Managerial Finance	December 2023	1

*Category 1: Journal paper, full paper reviewed
2: Journal paper, Abstract reviewed
3. Conference/Symposium paper, full paper reviewed
4. Conference/Symposium paper, abstract reviewed
5. Others (including papers in workshops, NITK Research Bulletins, Short notes etc.)
(If the paper has been accepted for publication but yet to be published, the supporting documents must be attached)

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Experience Profile

- Doctoral Student in the School of Humanities and Social Sciences at the National Institute of Technology Karnataka, Surathkal.
- Areas of research interests include behavioural finance, financial decisions, financial literacy, financial risk-taking, economic psychology and personality and positive psychology in finance.
- Subjects handled for B.Tech and M.Tech – Marketing Management, Principles of Management, Professional Ethics and Human Values, Financial Management and Accounting.

  PERIOD: July 2017 – April 2023

- Assistant Professor in the Department of Commerce, St. Agnes College (Autonomous), Mangalore.

  PERIOD: June 2014 – March 2017

Educational Qualification

Qualification	University/ Institution	Year	%
UGC NET (General)	UGC	2018	NA
UGC NET (OBC)	UGC	2015	NA
M.Com. (Financial Manangement)	Mangalore University	2012 – 2014	CGPA 7.36

B.Com. (Human Resource Management)	St. Agnes College (Autonomous)	2009 – 2012	CGPA 8.43
12th Board	St. Agnes Pre-University College	2009	93.17
10th Board	St. Agnes Girl's High School	2007	84.96

Conferences, Workshops and FDPs Attended

- Presented paper online at the Global Conference on Innovations in Management and Business at NIT Warangal on 27th and 28th July 2021
- Attended online 4th Summer School on Behavioural Finance Indian Institute of Information Technology, Allahabad, from 14th to 18th June 2021
- Attended online Workshop on SEM using AMOS by ResearchSmiths from 30th October to 1st November 2020
- Attended online Workshop on 'Structural Equation Modeling (SEM) using AMOS at St.Joseph's College (Autonomous), Bengaluru, from 5th to 8th August 2020
- Attended Workshop on Structural Equation Modelling (SEM): Basic and Advanced Analysis at NIT Trichy from 2nd to 6th December 2019
- Presented paper at 3rd Annual Conference in Banking and Finance Fintech and Banking-The Road Ahead for the Indian Banking and Financial System at International Management Institute (IMI), Bhubaneshwar, on 16th and 17th August 2019
- Attended Workshop on Case Study Approach on Research Paper Writing Skills at Manipal Academy of Higher Education on 8th and 10th May 2019
- Attended Workshop on Management Research in the Indian Context: Opportunities and Challenges at IIM Ahmedabad from 4th to 6th January 2019
- Attended National Level Workshop on Statistical Analysis for Business Research at Pondicherry University from 10th to 17th December 2018
- Attended Workshop on Document Typesetting and Preparation using LaTex at NITK, Surathkal, on 31st October 2018

- Attended Faculty Development Program on Financial Modelling in Excel at AIMIT Campus, Mangalore, on 15th and 16th December 2017
- Attended National Workshop on Research Methodology in Social Sciences at Goa University from 5th to 11th December 2017
- Attended Faculty Development Program on Structural Equation Modelling using RStudio – for Research and Publications at T.A. Pai Management Institute Manipal, Karnataka, on October 7 and 8, 2017

Publications

- Rodrigues, C. G., and Gopalakrishna, B. V. (2023). "Financial literacy - a regulator of intended investment behavior: analyzing the hypothetical portfolio composition", Managerial Finance.
- Rodrigues, C. G., and Gopalakrishna, B. V. (2023). "Optimism and Self-Control: Complementary Predictors of Financial Risk-Taking Propensity Among Working Adults", Indian Journal of Finance, 17(7), 8-24.
- Rodrigues, C. G, and B.V., Gopalakrishna. "Financial risk-taking propensity of Indian individuals from the lens of Big-Five personality traits", Studies in Economics and Finance.
- Rodrigues, C. G, and B.V., Gopalakrishna (2022) "Does mood take the front seat in determining the financial risk-taking propensity of individuals? Evidence from India", Conference proceedings of Global Conference on Innovations in Management and Business, SSRN Electronic Journal. Doi: 10.2139/ssrn.4124232
- Micro Finance in India: Contemporary Issues and Challenges (2016) - The Conference Proceedings of National Conference on Micro Finance: Growth Engine for Rural Economy, ISBN: 978-81-927561-6-5
- Perception of Women on Feminine Portrayal in Media (2015) - The Conference Proceedings of National Conference on Gender Issues on Campus & in Society, ISBN: 978-81-927561