Influence of Big Five Personality Traits on the Investment Decisions of Investors-Empirical Approach

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Abstract. Financial planning is essential for managing rising living costs and achieving the desired standard of living. Investments thus play an important role in a person's life. People base their investment decisions on their suitability, risk tolerance, and expected return. Consumers, on the other hand, do not always make logical financial decisions. The current study attempted to investigate how consumer sociodemographic characteristics influence variation in the Big Five personality traits (neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience). The current study collected data from Chennai investors through a survey using a five-point Likert scale. The purpose of this study is to examine the behavioural aspects of investors by identifying personality traits and building a model to determine the level of impact of the mentioned parameters. The dynamic nature of individuals necessarily requires an assessment of how psychological factors impact decision-making. The model fit was evaluated using reliability and validity tools. A person may not be classified solely by one personality trait. An attempt was made to quantify the influence of various personality traits on investment decisions. This finding's implications and recommendations are discussed. The study investigates the impact of financial literacy on investment decisions, as well as the mediating effect of personality traits based on the big-five model. The study contributes to a better understanding of investor behaviour by examining the role of the big five personality traits in mediating the relationship between financial literacy and investment decisions.

Keywords: Financial Literacy · Personality · Neuroticism · Extraversion · Agreeableness · Conscientiousness · Openness to Experience · Investment Decisions

1 Introduction

According to modern finance theory, which was developed on the basis of utility theory, it is stated that individual possess complete or have full-fledged knowledge of all potential outcomes and it allows people to evaluate their preferences among multiple expected alternatives (Ackert, 2014) [1]. In reality, behavioural factors prevalently affect people's decisions, leading them to act irrationally.

Researchers and academics were particularly interested in this discrepancy in the line of work of investment studies since these actions were directly at odds with the anticipated utility hypothesis.

After carefully weighing all of the options, decision-making requires choosing one among them. The process of making decisions in the equity market is more complicated and incorporates both technical and personal considerations. As stated in the definition of personality, "disparities in attitudes and ideas, many of which are ingrained from birth, which cause differences in behaviour". Under uncertain conditions, personality plays a significant role in decision-making. Personality determines the type of information decision-makers obtain in the face of ambiguity, which influences their ultimate decision (Fréchette, Schotter, & Trevino, 2017) [2]. Personality encompasses an individual's socio-psychological features; hence, there is a link between personality and the proclivity to behave in specific ways and make decisions. In short, investors' judgements are influenced by their personalities (Krishnan & Beena, 2009) [3].

Researchers studied the psychology of people and how it relates to financial and investment decision-making in an effort to understand the phenomena of investments (Kapoor and Prosad, 2017) [4]. They were further assisted by this strategy in explaining the various agent decisions. Researchers and academics began utilising personality psychology to elucidate the procedures and contrasts in how individuals make financial investment decisions. Where financial literacy impacts financial inclusion, it is also established as a moderator and a mediator too. Developing and developed countries are giving more importance to the importance of financial literacy because financial literacy and is considered as an important determinant of financial satisfaction and helps individuals in planning their spending and savings. The measures of financial literacy used in the studies that cover financial literacy are often basic.

Many of the studies used self-assessment questions or 5–10 exam-type questions. Few authors like Byrne (2007) [5] use only four questions to measure a the investment knowledge, Volpe et al. (1996) [7] used ten questions, to study investment knowledge in the Australia & New Zealand Bank self-assessment survey.

Personality is the biological and cultural blueprinting of man, a unique combination of the genetics and the environment. In the terms of evolution, personality is a pattern of unique combination between a biology, psychology, sociology through unprecedented overlap of natural and social selection to form the world of individuals [1]. The research article aims to analyze the impact of the "big five personality traits" on the decision of investment of individuals. This is an empirical approach and a new research area that has appeared and replaced the strategic behavior for investment decisions of investors. In measuring financial literacy level of individuals, the scale by van Rooij et al. (2011) [8] was employed. This scale divides financial literacy into two components: Basic and advanced financial literacy and consists of 16 questions having one true an swer. A financial literacy index is calculated from the true answers of participants [9]. In the current circumstances, capital plays a huge role in the life of every individual. For that to be invested, different investment avenues need to be explored in the competitive era of investors. This investigation is known to be financial behavior and identifies the psychological factors in capitalist decision-making. In this context, the discussion of the "five-factor model" or the five behavioural traits will be discussed along with the

link between personality and the investment decision of investors. Behavioural finance recommends that people and their cognitive and affective characteristics which lead to divergence from strategic behavior. This area of behavioural finance is dependent on the usage of corporal psychology in financing.

This investigation aims to examine the link between the personality of different investors and their strategic investment decisions. To evaluate the "big five personality traits" like "Extroversion, Neuroticism, agreeableness, openness, and Conscientiousness" to encounter investment behaviours to assess whether the above elements make an effect on investment decisions.

2 Review of Related Studies

Five Factor Model

As per the views of Agrawal and Hockerts (2021) [6], in the past, personality trait theories have long tried to exert the number of traits that exactly exist. The earlier theories have recommended different numbers. Various researchers agreed that Cattlle's theory was extremely complicated and the theory of Eysenck was extremely restricted in scope. As an outcome, the "big five personality traits" appeared and are applied to explain the wider traits that serve as creating blocks for personality. Various researchers further supported the assumption that there are five principal personality traits. Evidence of the model has been increasing for several years in psychology, and later exerted by other researchers. These personality traits summarise, most of the contrast is in personality over individuals. These are, sometimes mentioned as domains originally achieved from the classification of the adjectives that are generally applied to explain individuals. Many authors suggest the use of the Myers-Briggs Type Indicator and the associated Keirsey's instrument to address money management styles [4]. A statistical approach that is implemented is to recognize a set of correlated dimensions. The theory of the five big personalities, or the 'big five taxonomy' is a model of personality traits that are categorized into five factors. The theory has shown to be effective when predicting behavior, and the theory is commonly used in academic psychological personality research [8].

The five personality traits are described below:

a) Extraversion

Extroversion is a personality trait, featured by sociability, assertiveness, excitability, and a high level of psychological expressiveness (Van Scotter and Roglio, 2020) [12]. An individual, having a higher extraversion is preferably more sociable, optimistic, active, communicative, and fun, loving. While, on the contrary, individuals, having low extroversion are preferable to be reserved and quiet.

b) Agreeableness

Agreeableness is another personality trait that includes attributes like trust, kindness, altruism, affection, and other external prosocial behaviours. Individuals who were higher

in agreeableness, are preferably more collaborative, while individuals that are low in this characteristic trait, are preferably more competitive and even manipulative. Individuals with higher of traits also help those who need assistance and feel empathy and are more concerned.

c) Neuroticism

Another characteristic trait is neuroticism, which is featured by sadness, psychological, instability, and moodiness (Daugaard, 2020). People having high neuroticism characteristic tends to encounter mood swings, irritability, anxiety, and distress. Contrary to this, individuals, who have low neuroticism feature tend to be emotionally balanced, rarely feel sadness, and are very relaxed and deal with stress efficiently.

d) Openness

Openness is also mentioned as openness to encounters, which emphasizes perception and imagination the most out of the rest personality traits. Individuals having high openness preferably have a wider range of interests. They are very curious about the world and other individuals and try to learn new things and enjoy the occurrence. Moreover, these kinds of individuals are bolder and more creative. Contrary to this, individuals, having low openness do not like change, resist new perceptions, and are very restrictive to their imagination.

e) Conscientiousness

Among every personality trait, conscientiousness is mentioned as a high degree of thoughtfulness, better impulse control, and behaviours directed to a goal. Highly conscious individuals are more organized and mindful, think before talking, and consider the way their behavior will impact others. Individuals having a low score in the personality trait, are less structured and unorganized.

2.1 The Link Between Personality Traits and Investment Decisions

As per the views of De Bortoli *et al.* (2019) [13], investments are done with a proclaimed investigation in behavioural finance aiming at increasing wealth. Investors are required to take rational decisions to increase their returns depending on creating three major theoretical streams, namely – data accessible by taking perception likelihood theory, regret-free from sentiments, and aversion and self-control. The decision of individuals regarding the level of the amount to save and invest for the near future relies on the trade-off between current and future consumption. Various researchers in the past had modeled this trade-off as an issue of optimizing utility over a life.

Within the structure, optimal saving and path of consumption rely on how much individuals value consumption at contrasting times in the distinct future. Thus, from a financial perspective, it is essential to understand the psychological antecedents of investors' intentions and preferences [10].

Various researchers in the past had scrutinized the psychological elements that affect investment decisions. Those studies explain the criteria for the decision to invest from three areas such as corporate information, risk, and repayment. Those studies also take into consideration the impact of personality traits, financial literacy, defense mechanism, and even emotional intelligence on investment decisions (Feher and Vernon, 2021) [10]. Contrary to this, the effective market hypothesis suggests that it is not possible to win the market as the effectiveness of the stock market leads current share prices to incorporate and mirror all the relevant data. This hypothesis is the base for orthodox financial theory. Later, in the 1980s, behavioural researchers discovered the theory of behavioural finance, which describes the understanding of rational patterns of different investors, including the psychological procedures, and the area to which the process of decision-making is impacted by them.

There were different investigators using different dimensions to cope with the measurements of personality traits like internal and external personality, investor types, and so on. Researchers concentrated on the connection between the personality traits of investors, behavioural bias, and decisions. The information was gathered from 500 investors who tend to invest through LSE securities. The study discovered that the connection between investment choices with a personality trait and behavioural biases is statistically good. The individuals choose to invest in specific investment options as per their needs and certain aims keeping in the head. Every investor should always not follow the majority. They should attempt to look for investments prior to making any decision in the market. Also, they should create a habit of making regular investments at any stage of life.

The researchers discovered the increasing role of extroversion personality traits on investment decisions. Extroversion is one of those personality traits from the big five factors that states the features of extrovert individuals were lively, sociable, and friendly. Another researcher also discovered that there is a positive connection between extroversion and hindsight bias in investment decision-making. Contrary to this, extroversion and risk hostility had consequential connections because people who were extroverts are generally risk takers and confidently take investment decisions. On the other hand, extroverted investors have a high level of risk tolerance for their investment options. The extroversion investors have maximum risk takers and are probable to take investment decisions.

Hassan *et al.* (2020) [11] implemented research to analyze the psychology of individuals on return and investment decisions and behaviours. In the study, it was manifested that there is a highly positive and remarkable connection between neuroticism and investment decisions. Researchers further concluded that the decision of the investor will depend on the personality and manifested the other connection between neuroticism and cognitive biases, which indicates that this bias impacts the neuroticism investor's decision of investment. These past research papers concluded that in case personality traits and the factors of the behavior of an investor will be known, it would be well managed to guide the investors by different financial investors in making strategic decisions due to the behavioural traits and also assisting to ignore financial blunders in investment decisions.

Another research was conceptualized based on the famous factor analysis, which is broadly used to evaluate the "big five personality traits" of a financial investor, by the research investigation on "big five personality traits": 2 major traits – "extrovert and openness" were examined on the investment patterns of the stock market, using factor analysis were proven to be insignificant. Research, implemented in 2015, named – "Impact of financial literacy of the population of the Russian Federation on behavior on the financial market: Empirical evaluation" scrutinized the effect of "financial literacy" on the stock market. The paper applied data from 1006 participants and the tool to gather the information from the respondents was a survey. The findings of the investigation recommended that the investors who were financially illiterate would collaborate proactively in the stock market. Investors must determine how, when, where, and how much capital will be spent on investment opportunities to made the investment decision whether it was individual or management of an engaged organ ization (Bhalla, 1982) [2].

Another research investigated if the personality trait of different investors impacts their trading market behavior in the stock market or not. The findings of that study recommended that the behavior of trading and the performance of investors were impacted by "personality traits". The outcomes manifested the trading amount has a positive impact on the frequency of trading as per the "theory of planned behavior", people and their behavior rely on behavioural intentions. Further, those intentions rely on inner and external elements. On the contrary, the theory of prospect recommends that people are basically risk avoidant and make decisions that mirror their attitude regarding risk. Prospect
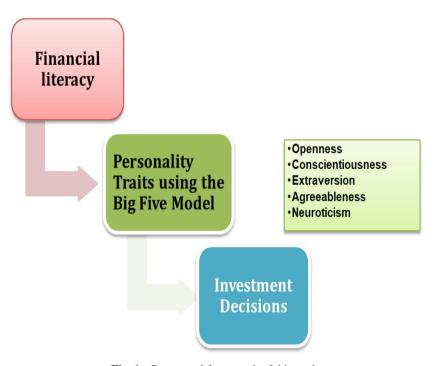

Fig. 1. Conceptual framework of this study

theory concentrates on the cognitive attitude of people and their want to ignore the risk for achieving any specific outcomes and aims. However, behavioral finance paradigm has highlighted the psychological aspects of individual financial behavior. It assumes that everyone is not rational, that the deviations from rational behavior are systematic not random and that the probabilities are subjective rather than stochastic. Therefore, the emphasis has shifted into the psychological or attitudinal motives for financial behavior, attempting to encompass any subjectivity [5] (Fig. 1).

3 Methodology

The research methodology is basically a systematic method to settle and research issues through information gathering using different approaches, giving inspiration, and drawing conclusions. In this regard, the use of primary qualitative data has been considered for analysing the impact of personality traits on the investment decisions of different individuals and investors. The investigation uses information that was gathered from Chennai investors. An overall of 350 questionnaires was distributed to the respondents, using the sampling of convenience while 300 questionnaires were given back with proper answers. For creating the questionnaire, the use of Google Forms was done to avoid the limitations of the geographical extent and collect data through online sources from the respondents.

For the validity of a specific research process, sampling and information collection is a significant step. All the data of variables in this investigation were measured by applying scales accepted from different past investigations. The measures for knowledge, expertise, attitude and behavior were accepted from past investigations. In addition to this, the measure for personality traits was also taken from the "big five personality traits", the use of statistical measures was done to analyze the data and produce results. Statistical analysis is a scientific approach that assists to collect and evaluate a wider amount of data to recognize common patterns and different traits to change them into meaningful data and insights. The data that have been collected were arranged and organized in a structured manner and uploaded in PLS-SEM to produce results.

4 Data Analysis

4.1 Pre-testing

Pre-test helps a researcher to determine in case the respondents answer and understand all the questions as well as in case they can perform the activities of having the adequate data that the questions need. Pre-test also helps in giving the most direct proof for the validity of the questionnaire information for most of the variables. Before providing the questionnaire, a pilot investigation was implemented to ascertain the validity and reliability of the construct applied in the investigation. The values of "Cronbach Alpha", for all the research variables, were 0.83 which indicates an acceptable level of the internal variables.

4.2 Demographic Data Analysis

The Table 1 shows the demographic profile of the survey participants. The demographic profile of the survey respondents is extremely important to help understand the reliability and validity of the information collected from them. From Table 1, it is evident that the maximum number of respondents belonged to the age bracket of 46 to 55 years, which is 35%, having a frequency of 105. Contrary to this, 7% of respondents were from the age group of 56 to 65 years which is 22. From the age bracket, it is evident that all the responses collected from the respondents have some validity as they have proper knowledge and experience in the stock market and investment opportunities. Apart from that, 60% of the respondents are female which is 180. On the contrary, the frequency of respondents to be male is 120, which is 40%.

Apart from that, 30% of the respondents are full-time employed, while 32% are self-employed. Contrary to the Table 1, the Table 2 manifests the composite reliability, factor loading, and average variance explained. The results manifested in Table 2 show that for most of the variables, factor loading is "more than 0.6". Moreover, the values of "composite reliability" and AVE are more than "0.70 and 0.50". Thus, it can be mentioned that the variables satisfy the needs of "construct validity". According to the many authors construct validity is regarding how well an investigation measures the notion it was formulated to analyze. In this regard, two orders had been selected. First, construct validity is the foundation of clinical utility. That is, to the extent that real-world decisions are based on psychological measurements, the quality of those decisions depends on the construct validity of the measurements on which they are based. Second, practitioners increasingly are asked to justify use of specific assessment procedures to

Table 1. Demographic Profile

Basis		Frequency	Percent
Age Group	18 Years to 25 Years	66	22%
	26 Years to 35 Years	46	21%
	36 Years to 45 Years	61	20%
	46 Years to 55 Years	105	35%
	56 Years to 65 Years	22	7%
Gender	Female	180	60%
	Male	120	40%
Employment	Full time	110	37%
	Part Time	25	8%
	Self Employed	95	32%
	Unemployed	31	10%
	Student	33	11%
	Retired	6	2%

Table 2. Measurement Model

Second Order	First Order	Items	Factor	CR	AVE
Financial Literacy	Attitude	4	0.653–0.901	0.862	0.614
	Behavior	3	0.897–0.973	0.956	0.88
	Knowledge	4	0.690–0.893	0.868	0.624
	Skills	3	0.752–0.900	0.874	0.697
Five -Factor Model	Agreeableness	3	0.883–0.935	0.938	0.834
	Conscientiousness	2	0.754–0.896	0.812	0.685
	Extraversion	5	0.559–0.946	0.866	0.573
	Openness	4	0.797–0.935	0.771	0.541
	Neuroticism	3	0.573–0.931	0.922	0.747
Investment Decisions	Neutral information	4	0.860–0.935	0.771	0.541
	Personal Financial Needs	3	0.8520–0.938	0.837	0.563
	Self/Firm Image	2	0.983–0.985	0.942	0.902
	Accounting Information	4	0.734–0911	0.943	0.846
	Advocate Information	4	0.717–0.815	0.984	0.968

third-party payers [3]. In the second order, financial literacy, investment decisions, and five factors were considered, while in the first order, different variables were taken.

The Table 3 is about "discriminant validity". This table gives HTMT ratio for evaluating discriminate validity. HTMT ratio was applied to evaluate the "discriminant validity" of the variable constructs. From Table 3, it can be manifested that the HTMT ratio needs to be less than 1 for acceptance. Discriminant validity is generally a subclass of construct validity. It manifests how efficiently an investigation measures the notion and especially estimates whether the constructs theoretically should not be connected to each other which are unrelated. The use of HTMT as a research criterion includes differentiating it with a pre-stated threshold. In case the value of the HTMT is more than the threshold, it can be concluded that there is an insufficiency of discriminate validity.

The Table 4 shows the analysis of the direct effect path. The path structure has two kinds of effects. First is direct and secondary is indirect. As soon as the exogenous variable of research has an arrow directed towards the DV, then it is concluded to be a direct effect. The analysis results manifested in Table 4 recommend that agreeableness, openness to encounters, and extroversion are extremely and positively impacted by financial literacy. On the contrary, neuroticism is, consequently, impacted by financial literacy, while conscientiousness was not remarkably, impacted by financial literacy.

Table 3. Discriminant Validity Applying HTMT Ratio

	AI	ADV	AGREE	ATT	BEHAVE	CONSC	EXTRA	KNOW	NEURO	NETRUAL	OPEN	PFN	SI	SKILL
Advocate1 Information	0.696													
Agreeableness	0.324	0.219												
Attitudes	0.691	0.683	0.156											
Behaviour	0.943	0.69	0.83	0.712										
Conscientiousness	0.571	0.361	0.953	0.347	0.126									
Extroversion	0.248	0.447	0.547	0.312	0.33	0.537								
Knowledge	0.882	0.811	0.2	0.825	0.961	0.378	0.284							
Neuroticism	0.3	0.413	0.8433	0.609	0.425	0.771	0.675	0.572						
Neutral Information	0.677	0.919	0.064	0.775	0.914	0.195	0.256	0.892	0.489					
Openness	0.224	0.201	0.076	0.253	0.214	0.373	0.204	0.24	0.291	0.17				
Personal Financial	0.605	0.951	0.082	0.857	0.652	0.187	0.296	0.854	0.559	0.776	0.142			
Needs Self-Image	0.947	0.629	0.197	0.796	0.787	0.346	0.349	0.755	0.484	0.570	0.090	0.753		
Skills	0.840	0.901	0.188	0.591	0.981	0.300	0.330	0.818	0.449	0.956	0.173	0.696	0.635	

In the same way, agreeableness has a hugely positive effect on investment decisions while neuroticism and openness have a huge consequential effect on investment choices. Whilst, conscientiousness and execution have been discovered positive yet statistically insignificant in reference to investment options.

The Table 5 shows the "indirect effect path analysis" and the results manifest that openness is attributed to financial literacy and the relationship between investment decisions. Moreover, the outcomes further manifest that the moderating roles of extroversion, agreeableness, neuroticism, and conscientiousness are not significant after that, Table 6 for predictive relevance has been provided. It shows the predictive relevance of the research variables in a structured manner as soon as PLS-SEM shows predictive relevance, it well estimates the information points of different indicators (Simha and Parboteeah, 2020) [9].

5   Conclusion

The study tried to analyze the effect of personality traits on the decision-making procedure for different investors. The findings of the investigation manifested that with

Table 4. Direct Effect Path Analysis for Hypothesis-Testing

	Estimates	Std. Error	T-Stats	Prob.
Financial Literacy → Agreeableness	0.089	0.064	1.388	0.083
Financial Literacy → Conscientiousness	0.108	0.086	1.253	0.105
Financial Literacy → Extroversion	0.390	0.056	6.966	0.000
Financial Literacy → Neuroticism	−0.426	0.040	10.701	0.000
Financial Literacy → Openness	0.254	0.059	4.299	0.000
Financial Literacy → Investment Decisions	0.928	0.027	33.741	0.000
Agreeableness → Investment Decisions	0.086	0.041	2.122	0.017
Conscientiousness → Investment Decisions	0.018	0.043	0.430	0.334
Extraversion → Investment Decisions	0.022	0.031	0.690	0.245
Neuroticism → Investment Decisions	−0.054	0.039	1.367	0.086
Openness → Investment Decisions	−0.144	0.026	5.589	0.000
Agreeableness → Investment Decisions	0.086	0.041	2.122	0.017

Table 5. Indirect Effect Path Analysis for Hypothesis-Testing

	Estimates	Std. Error	T-Stats	Prob.
Investment Decisions → Financial Literacy → Conscientiousness	0.008	0.007	1.08	0.14
Investment Decisions → Financial Literacy → Extroversion	0.002	0.006	0.34	0.367
Investment Decisions → Financial Literacy → Neuroticism	0.023	0.017	1.359	0.087
Investment Decisions → Financial Literacy → Openness	−0.037	0.009	4.08	0

Table 6. Predictive Relevance

	R-squared	Adjusted R Square	Q Square
Agreeableness	0.008	0.004	0.005
Conscientiousness	0.012	0.007	0.006
Extroversion	0.152	0.148	0.030
Openness	0.065	0.061	0.025
Neuroticism	0.182	0.178	0.091
Investment Decisions	0.895	0.893	0.462

neuroticism, openness, and extroversion, investors increase the probability to have additional financial risk. Also, the study manifest that the financial investors who process, a few of the personality traits have impacted by the risk tolerance of investors, finance in the decision, making, performance, planning, and even satisfaction. The investigation, further Shun, that extroversion does not give a huge effect on the level of risk tolerance of the investors and their behaviour. The outcomes of immediate relationships indicate that financial awareness maintains a positive and fundamental influence on appropriateness, extraversion, vulnerability, and investment activities. But despite that economic literacy has a negative and considerable impact on conscientiousness.

The impact of neuroticism and exposure on investment activities is consequential and negative, although the effect of conscientiousness and outgoingness on investment activities is unimportant. An individual's personality traits are an effect of different components such as the environment of support, the principle of the investors, the ideology of the investor, and general conditioning components applicable to the different community groups a shareholder understands. The result of the examination is a positive signal to the different agencies in the capital management industry. Despite these findings, there are some limitations to this research, the investigation only concentrated on the investors of a few territories rather than from the country context. Also, the sample size was also rich limited. Future studies can also be implemented by discovering the significance of this kind of personality trait with the behavior and decision and comparing the values of two different nations along with the role of financial literacy.

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