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The Impact of Specific Personality Traits on Investor Behavior in Stock Market Investment

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ABSTRACT

The traditional theory on finances traditionally hinges on the notion that the investors always make decisions through rational reasoning. In such a case, the decisions made by investors are expected to be logical and, therefore, objective. The reason for this is that almost all models in finance, ranging from the basic CAPM models to complex models, rest on these assumptions, to an extent where they are even presumed to have similar expectations. Nonetheless, the traditional model faces contradiction by behavioral finance which claims that investors can behave irrationally under certain circumstances. The crucial importance of behavioral finance could not have been emphasized more clearly than during the post-millennium period when the dot-com bubble was created and later burst. During this period, there was a clear manifestation of the herd behavior among investors, which meant that they tended to invest funds in stocks ending with ".com." As a result, this frenzy led to the overvaluation of these tech stocks way above their intrinsic value. This scenario is almost identical to what preceded the subprime crisis, when home prices in the US rose sharply to unsustainable heights and were greatly detached from the true value of the properties. In both cases, the markets witnessed bubbles that eventually collapsed, causing a collapse in asset prices and loss of savings for many people. However, the case of irrational market behavior does not represent a modern peculiarity since it has been around in the 16th century Holland. Tulip Mania refers to the period in which bulbs imported from Constantinople experienced high interest among the elite in Holland, which was accompanied by an escalation in buying and selling these products to such an extent that this process became common practice on the European stock markets and the cost of bulbs reached record levels. With time, the price began to decrease due to overproduction compared to consumer demand for tulips, thus forcing many investors to default on their obligations resulting in huge financial losses because of the collapsed bubble. All this served to highlight an important drawback of financial models – their inability to account for the essential softer components influencing the process of making decisions. Psychological factors, for example, have been either overlooked or ignored by most theoretical models until the works of Kahneman and Smith. In particular, they have contributed to bringing to light the ideas of behavioral sciences that investors' decision-making under uncertainty is less than perfect and follows what one may call 'the normal behavior'. This paper attempts to provide a thorough analysis of the interconnection between certain personal traits and investments conducted by individuals. In order to perform the research, there was conducted a survey among approximately 105 investors who trade on the stock exchange. Investors in question were classified according to several categories, such as gender, ages, earnings, number of dependents, occupation, and marital status. The data used for research purposes is comprised of primary sources of information collected directly from the investors under consideration as well as secondary sources of information. Convenience sampling approach was used to choose a sample of investors. In order to evaluate the personality dimensions of respondents, "Big Five personality test" was used. The research

thereafter carries out a meticulous analysis of the relationship that exists between these tested personality traits and the investment behavior that is observed. In this regard, the research will seek to assess personalities of investors with respect to some main criteria like extraversion, agreeableness, conscientiousness, neuroticism, and openness among others and thereafter establish how these relate to their choice of investments in the stock market. The lessons learned from this study are highly useful for different types of financial professionals such as portfolio managers, fund managers, and wealth managers. Knowing about the mentality and behavior of their clients can help these financial advisors to create better portfolios for their clients. While the portfolios created through this knowledge might not be completely optimal from a mathematical standpoint, it will definitely be much easier to follow and cooperate with the client on it. In this regard, this study seems to be relevant given the present state of the economy in the world where all economies are in a post-recession recovery phase. In the end, the careful inclusion of behavioral finance concepts into the disciplined world of fundamentals-based finance promises great rewards for a broad spectrum of beneficiaries, including individuals like portfolio managers and equity analysts, while making a more general contribution to wealth creation in developing countries as they emerge from economic recessions.

***Keywords**: Behavioural Finance, Personality Traits, Investment Patterns, Stock Market Performance, Behavioural Biases, Big Five Personality Test, Prospect Theory.*

Introduction

The classic financial theory generally states that the investor is a purely rational creature that makes its investment decisions based on elaborate theories and sophisticated information data bases. But practice often shows a different story since an investor may be forced to rely on various mental shortcuts called heuristics when faced with uncertain investment options (Ritter, 2003). As Meir Statman, one of the leading behavioral finance experts, once correctly noted, "People in standard finance are rational, whereas people in behavioral finance are normal" (Victor et al., 2000; Statman, 2008).

Behavioral finance was precisely developed with the aim of addressing this issue by incorporating psychological aspects in economics and finance. One of the significant developments was the 1979 paper titled "Prospect Theory: Decision making under risk" by Kahneman and Tversky (1979), who used cognitive psychological methods to explain various instances of deviation from complete rational decision-making (Mills, 1999). Although behavioral finance formally gained prominence only recently, its origin dates back to more than 150 years ago with Charles Mackay's book entitled "Extraordinary Popular Delusions and the Madness of Crowds." In this classic, market panics and schemes were discussed as historical instances. In 1912, G.C. Selden published his work "Psychology of the Stock Market" that became the first book applying behavioral concepts to stocks and securities investment (Selden, 1912). Another important contribution was made by Professor Burrell through a 1951 journal article where he proposed that the influence of psychological factors on investors should be scientifically studied. At this time, classical finance was mainly focused on ideas of market efficiency and capital asset pricing model.

However, during the late 1980s, a number of market anomalies emerged, which could not be satisfactorily explained using existing theories, resulting in greater emphasis on behavioral finance. Before this period, finance theory had been seen as a "normative" theory (how investors ought to behave), while the "softer" aspects of psychology were generally ignored.

Shefrin, a Professor at MIT, in his 2000 book titled 'Beyond Greed and Fear: Understanding Behavioral Finance and Psychology of Investing,' identified the psychological factors responsible for the collapse of the 2000 Information Technology Bubble. He pointed out that it was caused by too much optimism and overconfidence on the part of investors. This phenomenon of irrational exuberance is not unique to the modern world. An instance from the 16th century, when there was 'Tulip Mania' in Holland, saw investors speculating on tulips by buying them on the Amsterdam Stock Exchange with the money made from selling other assets.

Behavioral Finance essentially stands on two foundations: cognitive psychology and limits to arbitrage. Cognitive psychology encompasses aspects that concern the thinking process of people. This includes problem-solving skills, language, memory, among other factors that affect decision-making. On

the other hand, the issue of limits to arbitrage involves instances where arbitrage mechanisms, whereby rational investors exploit pricing discrepancies through buying low and selling high to reap profits, work effectively or not. According to Graham (1973), "price is what you pay and intrinsic value is what you get." When there are fewer arbitrageurs in the market, disparities between prices and intrinsic value will remain.

Keynes argued that human decisions regarding the future, whether personal, political, or economic, cannot depend strictly on the mathematics of expectations because of uncertainty. Instead, Keynes argued that it was the "inborn instinct toward action which keeps the wheel going," making rational decisions where possible, but often "replaced by whim or sentiment or chance."

According to Fabozzi (2008), Meir Statman has provided an overview of the four fundamental assumptions in traditional finance theory:

- The investors are rational.
- The markets are efficient.
- The portfolios need to be designed following the principles of mean-variance optimization.
- The expected return depends on risk only.

In contrast, the **behavioural finance concept** operates on a distinctly different set of assumptions:

- Investors are "normal," not perfectly rational.
- Markets are not always efficient.
- Investors build portfolios based on the principles of behavioral portfolio theory, rather than strict mean-variance optimization.
- Expected returns are explained by a **behavioral asset pricing theory**, where risk is not exclusively measured by beta, and expected returns are influenced by factors beyond just risk.

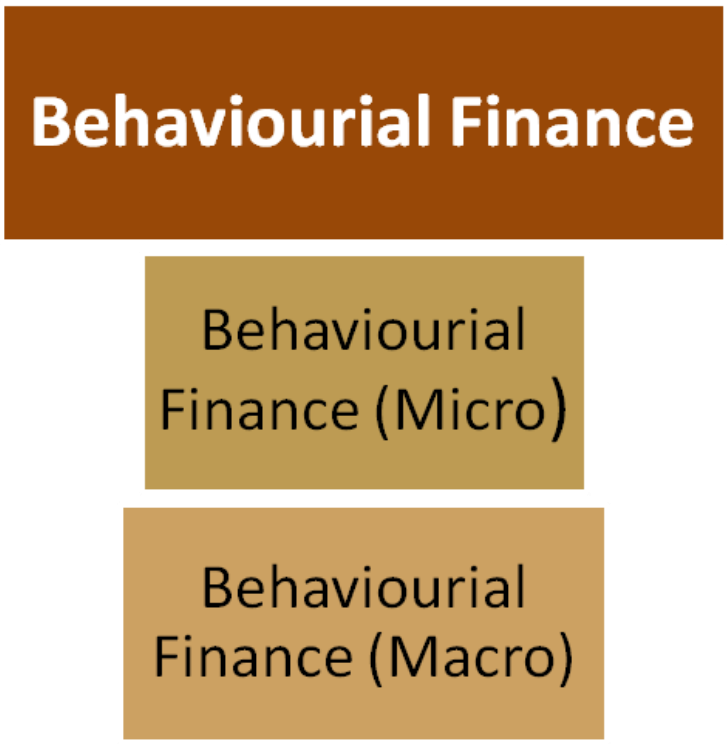

Figure 1.1

Behavioral finance, however, is organized into two main branches (as depicted in Figure 1.1), namely, micro behavioral finance that explores the particular biases that affect individual investors and differentiate them from rational beings, and macro behavioral finance that reveals anomalies in the efficient market hypothesis.

Prospect Theory by Kahneman & Tversky (1979) constitutes the core of behavioral finance and may be viewed as the cornerstone of this discipline. This theory states that decisions made by people in situations involving risks tend to be irrational, especially because of the disparity in behavior towards gains and losses. Investors often experience greater distress from a loss than satisfaction from an equivalent gain. This leads to the **disposition effect**, a common bias where investors are quick to realize profits by selling winning assets but are reluctant to cut losses, holding onto losing investments for extended periods (Shefrin & Statman, 1985; Shefrin, 2002). Further research by Inman and Zeelenberg (2002), Zeelenberg et al. (1996), Zeelenberg and Beattie (1997), and Zeelenberg (1999) has provided evidence that individuals can exhibit varying degrees of risk aversion and risk-seeking behavior depending on the decision context.

Interestingly, a common cognitive bias observed by Zuckerman (1979), Miller and Ross (1975), Fiske and Taylor (1991), Duval and Silvia (2002), Stephen Ross (1987), and Ross et al. (2004) is the tendency for people to **attribute successful outcomes to their own skill** while blaming failures on external factors like bad luck (Figure 1.2). While the field of finance predominantly adopts frameworks and models from economics, it does so with a distinct methodological approach (Ross, 1987). Like all social sciences, the core objective is to understand human behavior, which necessitates both the quantitative analysis of behavioral data and the development of experimental methods (Mills, 1999).

Specifically, behavioral finance strives to describe and understand the intricate roles of cognitive processes, reasoning patterns, and emotional states in shaping financial decisions. It carefully studies the various psychological and sociological factors influencing the decision-making process of an investor. There are many behavioral biases that have been discovered as being the motivating factor behind the deviation by investors from rational behavior. One such theory is the Theory of Cognitive Dissonance developed by Festinger (1957). According to this theory, cognitive dissonance is defined as the state of conflict within an individual resulting from having two opposing attitudes or beliefs(Ricciardi & Simon, 2000).

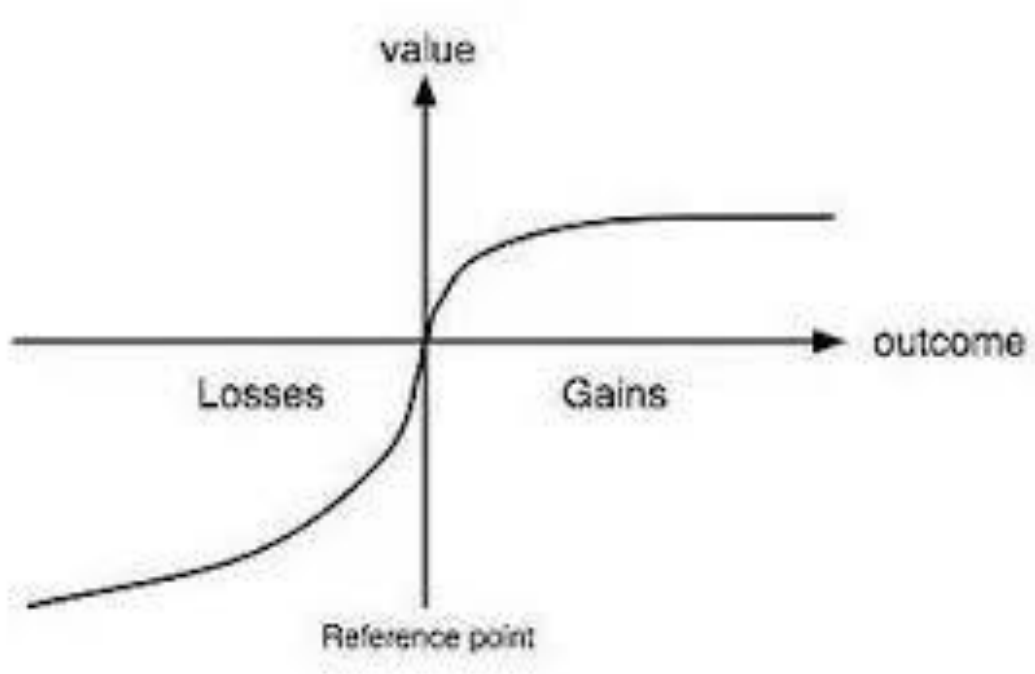

Figure 1.2 Prospect theory

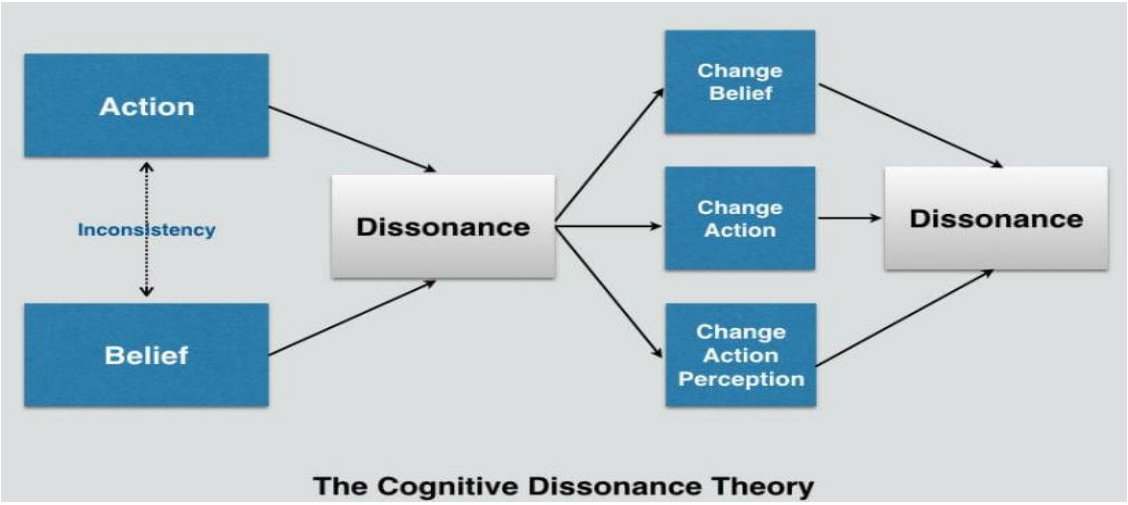

Figure 1.3

A common dilemma for investors is the risk involved when holding on to their losing positions, an action that will undoubtedly reduce their average gains (Figure 1.3). Tversky and Kahneman (1974) discovered that people tend to use heuristics, or mental short cuts, when faced with uncertainty. Although heuristics can help save time, it may also cause judgmental mistakes(Fabozzi, 2008). One such type of heuristic is the assumption that samples are likely to be representative of larger populations, resulting in poor decision-making when faced with uncertain situations. This is called the representativeness heuristic and can further lead to sample size neglect/law of small numbers and eventually result in base rate neglect. An illustration of this would be that people may assume that a short-term trend on the market will continue forever. One common belief is that IPOs are always good long-term investments because there usually tends to be hype around them but it fades away, making the stocks undervalued relative to what they were previously worth(Tversky & Kahneman, 1974).

Another characteristic of human nature is that humans have a natural predisposition towards overestimating their capabilities and potentials (Ricciardi & Simon, 2000). There are many examples of this kind of human behavior, which includes lack of portfolio diversification, excessive investments in known stocks, etc. Men generally display more signs of overconfidence as compared to women (Ritter, 2003). Mahajan (1992) says that overconfidence means overestimating event probability in two types of cases – prediction overconfidence and certainty overconfidence. Prediction overconfidence is when one tends to make inaccurate assumptions about the future outcome. For example, he may expect only a small change in his stock price (a 10 percent increase or decrease), while it might not be the case. Overconfidence in certainty is when the investor is overly confident in their judgment. The classic example here is the tech bubble in the late 1990s, wherein many investors chose to place large parts of their investments in IT companies, resulting in huge losses in the next phase of the market collapse. Some studies have shown how gender-based overconfidence can play an important role in determining stock investments (Barber and Odean, 1999, 2001).

Additionally, people tend to allocate their investment portfolio through mental accounting. One mental account is the safety account (for example, cash and bond investments), while the other is the profit account (stocks and option investments). People tend to be risk averse when allocating funds in their safety account but risk seeking when allocating funds in their profit account. This contrast between safety and profit accounts is shown by the case where, according to Friedman and Savage, people buy insurance and lottery tickets simultaneously(Statman, 1999).

Understanding Personality: The Ascendancy of the Big Five Factors

Recent decades of psychological research increasingly suggest that personality can be described by a core set of five fundamental dimensions, rather than numerous smaller traits. This perspective, often called the Big Five Factor Theory of Personality, has garnered significant evidence over the past 70 years, building on early work by Fiske (1949, 1948) and further developed by

researchers such as Goldberg et al. (1981), McCrae and Costa (1987), and Costa et al. (2001, 2001a). While various personality theories propose different numbers of influential factors, these five traits are also widely known as the "Five Factor Model" (FFM), a term associated with Costa and McCrae (1985, 1985–1987, 1985–1992, 1988, 1992, 1994), McCrae and Costa (2003), and McCrae (1987, 1989), as well as the "Big Five Factor Model" (Ewen, 1998).

Over the last decade, growing evidence has supported the idea that individual personality differences can be described by a hierarchical system, sometimes involving three or even seven major traits. Among these, the Big Five model has achieved particular prominence, widely recognized as one of the most comprehensive, empirically supported, and data-driven findings in the history of personality psychology.

Over a period of more than four decades, various independent researchers progressively identified and clarified these **five extensive personality factors** (Digman, 1990). Their methodology involved examining all documented personality traits and then employing **factor analysis** on hundreds of assessments—including self-reports, questionnaires, peer evaluations, and experimental measures—to uncover the fundamental, underlying elements of personality.

The Big Five personality dimensions include five broad categories that are empirically based to be considered the basis for describing human personality in general terms (Goldberg, 1993). The Big Five Personality Dimensions are known as the "Big Five" in personality psychology. These five factors have sub-factors under each that include many traits. The characteristics contained within these traits include the emotions, cognitions, and behavior of an individual(McCrae & Costa, 1990).

Key Attributes of the Big Five Factor Model

The **Big Five Factor Model** possesses several notable characteristics:

- Its traits are considered **universal** across cultures (McCrae & Costa, 1997).
- The factors represent **dimensions** of personality, meaning individuals fall along a spectrum for each.
- These factors tend to remain relatively **stable until around 45 years of age** (Soldz & Vailliant, 1999).
- They are thought to have provided an **adaptive advantage in prehistoric environments** (Buss, 1996).
- The five traits capture the most **significant qualities relevant to our social interactions**.
- Understanding one's position on these factors can offer valuable **self-insight and aid in therapeutic improvement** (Costa & McCrae, 1992).

Traditionally, the Big Five Personality Factors have evolved out of research aimed at discovering the basic elements of personality. Two main origins contributed to its emergence, namely: language studies that helped create a description of personality traits, and factor analyses of questionnaires that produced an explanation for personality characteristics. There is a well-known list of the five factors consisting of extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience, or simply OCEAN/CANOE (John, 1990; Loehlin, 1992)(Figure1.4).

- **Extraversion:** This factor indicates how comfortable and sociable a person is in social environments. People who score highly on extraversion are usually very social, energetic, talkative, outgoing, and assertive. They enjoy being around other people. On the other hand, those who score poorly on extraversion are considered introverts. Introverts have lower energy and activity compared to extroverts. They are calm, reserved, contemplative, and not so involved in socializing. This does not mean that they are shy or depressed. They just need less external stimulation(Shukla & Pradhan, 2011).
- **Agreeableness:** This is a characteristic that shows an individual’s tendency to be cooperative and to relate with other people well. People who score very high on agreeableness are marked by cooperativeness, friendliness, caring nature, and sincerity.

Figure 1.4 Big-Five Theory

Individuals that score high on Agreeableness value harmonious relationships. Such people are considerate, friendly, generous, empathic, and accommodating because they want the best for others. On the other hand, individuals who score low on agreeableness can be easily distracted, disorganized, and uncooperative.

- **Conscientiousness**: This factor assesses a person's ability to be reliable and disciplined. A very conscientious person will have characteristics such as responsibility, being organized, dependable, and persistent. This personality characteristic shows that a person prefers doing things through careful planning rather than acting impulsively. These people tend to steer clear of any form of problem and are quite successful in life because of proper planning. People with lower scores in this factor tend to get distracted and disorganized.
- **Neuroticism**: This trait is characterized by a tendency to feel negative emotions such as anger, anxiety, and depression. Neurotic people tend to be very sensitive and prone to stress and are known to view life situations as dangerous and even insignificant events as difficult to manage. Their negative emotional reactions may take an unusually long time to fade, leading to their overall bad mood. These emotional problems make it hard for a neurotic person to think clearly, make decisions, and cope with stress. In contrast, those low on neuroticism tend to be emotionally stable and less upset easily.
- **Openness to experience** is a personality trait that includes such characteristics as an appreciation of art, emotional richness, thrill-seeking tendencies, rich imagination, intellectual curiosity, and a love for variety (Costa & McCrae, 1992). The concept primarily concerns a person's wide range of interests and his/her inclination towards new and exciting experiences. Open people are usually distinguished by their curiosity, imagination, and unconventional nature. They highly appreciate the art and perceive beauty and are often imaginative and attuned to their emotions. On the contrary, low openness people demonstrate conventionalism, pragmatism, limited interests, lack of curiosity, and unwillingness to explore the unknown(Pervin & John, 1997).

Research Methodology

The research study is exploratory in nature, and its objective is to analyze the relation between personality attributes and the behaviors of investors. The online survey was performed, whereby the questionnaire was distributed to around 100 investors, who may or may not be engaged in the stock market.

The respondents have been divided into categories according to various demographic variables like gender, age category, financial position, dependents, occupation, and marital status. Primary and secondary data were collected for the research purpose. Convenience sampling technique was used to select the respondents.

The big five test for personality evaluation is commonly used; therefore, it was incorporated in the questionnaire as part of the test to analyze personality factors like extroversion, agreeableness, conscientiousness, neuroticism, and openness. The study intends to establish the relationship between these personality characteristics and certain factors in stock market participation, like the kinds and goals of investing.

A number of techniques will be used to measure the correlation between these variables. The ANOVA test, regression analysis, and frequency analysis are among the statistics tests that will be used on the data obtained from the questionnaire.

Hypotheses

H_{01}: Investor personality traits are not significantly associated with their investment behaviours in the stock market.

H_{02}: The personality traits of individuals do not significantly differ between those who invest in the stock market and those who do not.

Findings and Discussion

A sample consisting of 105 investors was used for the experiment conducted. The composition of the sample used in the experiment consisted of 63% females and 37% males.

A total of 105 investors were considered for the research. In the sample used, there were 63% females and 37% males

Key Findings: Factors Influencing Stock Market Investment

The analysis revealed several significant relationships between demographic profiles, personality traits, and stock market investment behavior.

Demographics and Investment

- **Age Group:** There was a significant correlation between the age group and stock investment ($r=0.221$, $p<0.05$). The descriptive statistics indicated that there were 45% investments in the age group of 18-28 years, while the 29-39 years age group had 44% investments.
- **Gender:** Gender was significantly associated with investments in the stock market ($r=0.197$, $p<0.05$). This is because men made up 63% of all investments, while women made only 37%, indicating that men are more involved in investing in the stock market than risk-averse women.
- **Number of Dependents:** The number of dependents an investor has showed a significant relationship with stock market investment ($r=0.276$, $p<0.01$).
- **Income Level:** There is a strong correlation between the level of income and investments in stocks ($r=0.235$, $p<0.05$). Descriptive analysis showed that higher income investors invested more often. Details can be found in the appendix.
- **Marital Status & Profession:** In contrast, no significant relationship was found between **marital status** and stock market investment ($r=0.154, p=0.117$), nor between **profession** and stock market investment ($r=0.047, p=0.631$).

Personality Dimensions and Investment

All five Big Five personality dimensions showed a significant relationship with stock market investment:

- **Extraversion:** A significant relationship was observed between extraversion and stock market investment ($r=0.281, p<0.01$).

- **Agreeableness:** There was a significant relationship between agreeableness and stock market investment ($r=0.289, p<0.01$).
- **Conscientiousness:** Conscientiousness also showed a significant relationship with stock market investment ($r=0.295, p<0.01$).
- **Neuroticism:** A significant relationship was found between neuroticism and stock market investment ($r=0.269, p<0.01$). (Note: The provided text had a duplicate entry for Neuroticism; using the first listed statistic.)

There is evidence of strong association between investors' demographics and stock market investments and association between investor personalities and stock market behavior.

Generally, we can conclude that both investors' demographics and personal characters play a significant role in shaping the way people perceive and engage in stock market investments. Moderately high correlation coefficients (r between 0.197 and 0.295) reveal a positive trend between some factors and stock market investments: as the age, income, and personality traits vary, the inclination towards stock market investments also varies in parallel. Importantly, p-values of all coefficients (less than 0.05 and 0.01) are crucial because they allow us to assert that those correlations are definitely not coincidental; hence, they are reliable and may be considered as significant. On the contrary, marital status ($p=0.117$) and profession ($p=0.631$) were not found to correlate with stock market investments in any way. These statistics suggest the absence or negligible effect of those factors on investors' behaviors. In general, we can conclude that such factors as age, personality, gender, family situation, and income serve as good indicators of stock market involvement.

In addition to conventional analysis using models, there are various behaviors which influence an investor to invest in the stock market. Behavior finance as a field emphasizes the significance of psychological aspects when it comes to making an investment. Our results particularly indicate that the Big Five Personality Traits, which include extraversion, agreeableness, conscientiousness, neuroticism, and openness, have a very important influence on investing in stocks.

Although some scholars as well as other investors in standard finance may believe that the human mind does not play any influence on the way individuals invest, those who favor behavior finance believe the contrary. As a matter of fact, we support this notion by indicating that both psychological and demographic factors influence an individual to invest.

Future Research

Other potential avenues for future research might include the examination of the applicability of other behavioral models, such as the Bailard, Biehl & Kaiser Five-Way Model. The unique model presents a comprehensive approach to measuring the level of confidence that the investor possesses in relation to all aspects of their life and whether they display any sense of assurance or insecurity in their decision-making processes. In addition, it can provide researchers with additional information about other important investor traits like whether the investor is cautious or impulsive.

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