



Confirmatory factor analysis (CFA): Personality traits and investment decision-making

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Abstract

Purpose: Find a relationship between personality traits and investment decisions.

Research methodology: The questionnaire was distributed to investors selected based on the judgement method. The sample consisted of 115 investors. Confirmatory factor analyses were used for the testing of the variables.

Findings: There is a relationship between traits and the investment decision-making of investors.

Practical implications: The findings have applications for investors, brokerage firms, and businesses that could benefit from the personality effects of their investment knowledge. Moreover, teaching future investors about the security of investing in the stock market is significant.

Originality/Value: The work sheds light on traits that influence the making of decisions in the stock market.

Keywords: Five-traits, CFA, extraversion, decision making, SEM

Introduction

Evaluating investment decisions is a crucial component of economic progress. Allocating financial resources is referred to as an investment choice. Making an investment decision is crucial for investors who want to put their money to work and increase their return on investment. Based on risk tolerance, investment goals, and expected returns, investors choose particular investment options. Non-financial variables affect financial decisions. Making an investment decision is influenced by a number of things. These elements could include an understanding of finances, money management prowess, the contributions of friends and family, and personality attributes. In this study, the researcher explains how personality factors would affect investors' behaviour and how strongly they would influence their decision to invest. Economic performance is strongly influenced by personality, which also influences our values, choices, and mental processes. Because of a wide range of demographic, psychological, and personality characteristics, every investor has a distinct personality. Every person has a unique personality, which shapes how they perceive and respond to their surroundings and drives their feelings, ideas, behaviours, and motivations. According to Ahmed (2020), personality traits are a blend of cognitive, perceptual, emotionally distinctive, and motivational aspects. According to JALAL, ZEB, and FAYYAZ's recommendation from 2019, personality traits should be based on five principles: comprehensiveness, external correlates, source traits, and numerous levels. Later, the Big Five Factors or Five-Factor Mode were used to refer to the five principles. The "big five" factors—openness, conscientiousness, extraversion, agreeableness, and neuroticism—categorize personality qualities into the OCEAN group. It has been noted that a person's personality influences their way of thinking and behaving. This essay will focus on behavioural financial research that looks at certain aspects of how personality factors affect investors' investing decision

Review of Literature

Rahma Laouiti & *et al.*, (2022) ^[1] In their study titled "A Gender-based approach to the influence of personality traits on Entrepreneurial Intention," the authors explained that, in light of the results, it will be possible to increase female entrepreneurship by adapting teaching methods to take into account student psychological profiles and gender differences. The researcher used data from 531 French students and configurational analysis to produce the conclusion. Toby Cheung & *et al.*, (2022) ^[2] In their academic paper titled "Impact of life satisfaction, job satisfaction, and the Big five personality traits on satisfaction with the indoor environment," they discovered that occupants' job satisfaction has the biggest influence on their satisfaction with the environment as a whole, followed by life satisfaction. In Singapore, post-occupancy questionnaires were done with 1162 respondents in 9 buildings. Correlation analysis and proportional odds ordinal logistic regression were used to analyse the data. Khaira Amalia Fachrudin & *at.*, (2022) ^[4] in their academic study paper titled "Financial Behavior's Mediating Effect on Influence They show the significance of financial behaviour in moderating the impact of socioeconomic variables and neuroticism on financial contentment. Socioeconomic features and neurotic personality traits have been shown to negatively affect financial satisfaction. Characteristics and personality, however, are both inherent to a person. It is obvious that they can increase their financial pleasure by altering their financial behaviour. This study's disadvantage is that it only considers one of the main five personalities. Using partial least squares structural equation modelling (PLS-SEM), this study, which involved 600 Indonesian volunteers, was conducted. Ni Putu Ayu Darmayanti & *et al.*, (2022) ^[5] Financially knowledgeable people are more interested in risky assets because they can better comprehend the fundamentals of financial risk, according to research published in the academic journal *Revisiting Investor Behaviour in Risky Investment Decision Making*. Investors with higher risk tolerance have a propensity to be

more interested in taking on riskier assets, which has an impact on their investment behaviour as well. The 73 scientific publications used in this qualitative investigation, which gathered data, were published between 1979 and 2021. Devi Prihatini & *et al.*, (2022) [6] They investigate whether a trader's capacity to trade digital currencies is strongly correlated with demographic qualities and human psychology in their analytical study work, Demographic factors, psychology traits, and the performance of cryptocurrency attributes. Personality factors have little bearing on the performance of cryptocurrency traders, but according to the research, gender, age, and the amount of trading experience have an impact. And this study demonstrates that women are more likely than men to succeed as cryptocurrency traders. The chi-square test is used in this study to analyse the association between demographic characteristics and performance as well as the relationship between personality traits and performance. The research data was collected from 100 bitcoin traders utilising quota sampling methods, correlational analysis, and a quantitative methodology. Ashutosh Yadhav & *et al.*, (2021) [7] They found that personality is one of the key components considerably influencing behavioural biases and, consequently, the investment decision-making process in their research paper, "Do personality traits predict biasedness while making investment decisions?" The researcher used a 251-person Indian measuring model, structural analysis, and regression analysis to analyse the data and obtain the aforementioned conclusions.

Research methodology

In the Virudhunagar district, 115 investors were the subject of the study. The individual investors' responses to the questionnaire were distributed and gathered. Additionally, SEM and confirmatory factor analysis were employed to determine the influence.

Analysis and Interpretation of Data

The researcher has applied confirmatory factor analysis to confirm all the statements regarding the personality traits with the help of AMOS.

Personality Traits: Application of Confirmatory Factor Analysis

Validity and Reliability

In order to determine the validity and reliability of the confirmatory factor analysis model, the researcher has ascertained the average variance extracted and constructed, or composite reliability. Table 4.3 represents the AVE and CR values for the equitable and fair treatment dimension.

Table 1: Results of AVE and CR of the Dimension

Dimension	Average Variance Extracted (AVE)	Construct or Composite Reliability (CR)
Openness	0.4486	0.763
Consciousness	0.45	0.804
Extraversion	0.4	0.769
Agreeableness	0.47	0.817
Neuroticism	0.51	0.81

Source: Computed Data

For the dimension of Personality Traits, the results of Average Variance Extracted (AVE) and Composite or Construct Reliability (CR) are shown in Table 1. The threshold value is the level of AVE that is larger than 0.5. The dimension is considered valid if the value is near to 0.5 while still meeting the threshold value for CR. the CR value that exceeds the 0.6 cutoff value. It shows that the dimension's internal consistency is sufficient. Therefore, the analysis can use the entire dimension.

CFA for Personality Traits

Computation of degrees of freedom

Number of distinct sample moments:	105
Number of distinct parameters to be estimated:	35
Degrees of freedom (105 - 35):	70

Fit refers to the ability of a model to reproduce the data i.e., usually the variance covariance matrix.

Figure 1 represents the CFA model for the Personality Traits

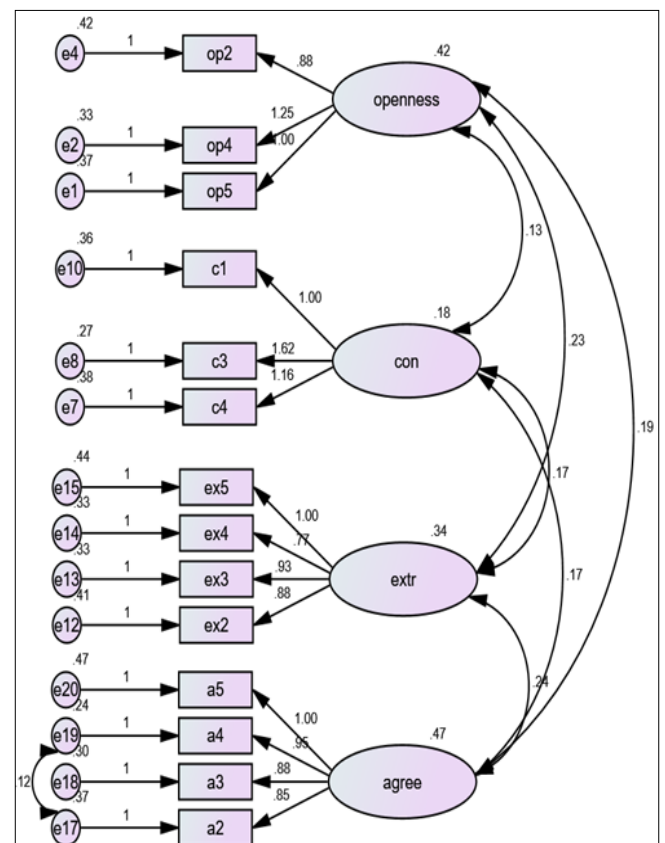


Fig 1: Personality Traits: Confirmatory Factor Analysis

Standardized and Unstandardized Regression Weights

The Standardized and Unstandardized regression weights for the Equitable and fair treatment dimension of Confirmatory factor analysis is presented in Table 2.

Table 2: Standardized and Unstandardized Regression Weights

ITEMS	Unstandardized Regression Weights	Standardized Regression Weights	S.E.	C.R.	P
op5 <--- F1	1.000	.732			
op4 <--- F1	1.250	.818	.182	6.862	***
op2 <--- F1	.884	.663	.143	6.171	***
c4 <--- F2	1.158	.625	.240	4.828	***

c3	<---	F2	1.617	.799	.305	5.296	***
c1	<---	F2	1.000	.579			
ex2	<---	F3	.885	.626	.164	5.399	***
ex3	<---	F3	.931	.683	.162	5.756	***
ex4	<---	F3	.766	.613	.144	5.312	***
ex5	<---	F3	1.000	.659			
a2	<---	F4	.854	.692	.138	6.171	***
a3	<---	F4	.876	.738	.122	7.207	***
a4	<---	F4	.954	.800	.135	7.069	***
a5	<---	F4	1.000	.709			

Source: Computed Data

The standardized, unstandardized regression weights, standard error, critical ratio, and P are presented in Table 4. The P value 0.01 is achieved for all the statements regarding personality traits. It indicates that all the statements are significant.

Model Fit Indices

Table 3 represents the results of model fit test for Confirmatory Factor Analysis

Table 3: Results of CFA Model Fit Indices

Name of Index	Obtained Value	Threshold Value	Result
RMSEA	0.058	RMSEA<0.08	Achieved
GFI	0.900	GFI>0.90	Achieved
CFI	0.949	CFI>0.90	Achieved
TLI	0.934	TLI>0.90	Achieved
CMIN/DF	1.378	Chisquare/df<5.0	Achieved

Source: Computed Data

The CFA results are shown in Table 3. The number is below the recommended limit of 0.08, according to the Root Mean Square Error of Approximation (RMSEA) of 0.058. In contrast to the suggested value of over 0.90, the Goodness of Fit Index (GFI) obtained is 0.90. Table 5 shows that, among the three fit indices, the absolute fit for the CFA model is satisfied by RMSEA and GFI for all three fit indices. Within the acceptability region, or greater than 0.90, the Tucker Lewis Index (TLI) is 0.934 and the Comparative Fit Index (CFI) is 0.949. Additionally, the CMIN/DF number is 1.378, which is below the acceptable level of 5.0. As a result, the researcher has come to the conclusion that the fictitious model is supported by CFA Model as being fit.

Investment Decision Making: Application of Confirmatory Factor Analysis Validity and Reliability

The researcher has defined the average variance extracted and construct or composite dependability in order to assess the validity and reliability of the confirmatory factor analysis model. The AVE and CR values for making investment decisions are shown in Table 4.

Table 4: AVE and CR of the Dimension

Dimension	Average Variance Extracted (AVE)	Construct or Composite Reliability (CR)
Investment Decision Making	0.47	0.878

Source: Computed Data

In Table 4.3, the findings from Average Variance Extracted (AVE) and Composite or Construct Reliability (CR) for the dimension of equity and fairness are shown. The AVE value, which is greater than the threshold value of 0.5, is 0.47. It shows that the dimension is accurate. The CR value is 0.878, which is higher than the 0.6 criterion. It shows that the dimension has a sufficient level of internal consistency.

CFA Investment Decision Making

Computation of degrees of freedom

Number of distinct sample moments:	36
Number of distinct parameters to be estimated:	16
Degrees of freedom (36 - 16):	20

Fit refers to the ability of a model to reproduce the data i.e., usually the variance covariance matrix. Fit indices such as absolute fit indices, relative or incremental fit indices and parsimony fit indices.

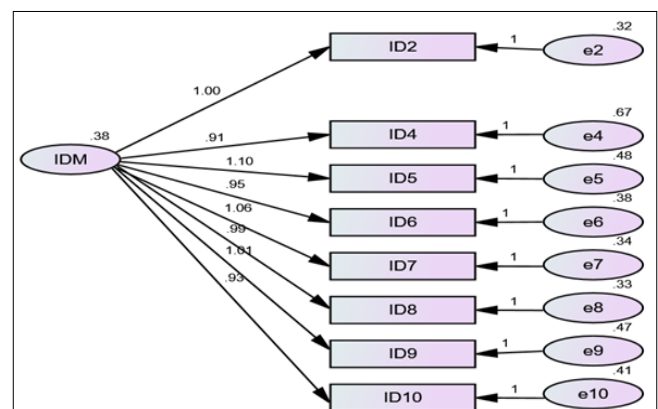


Fig 2: CFA model for the Investment Decision Making

Standardized and Unstandardized Regression Weights

The Standardized and Unstandardized regression weights for the Equitable and fair treatment dimension of Confirmatory factor analysis is presented in Table 5

Table 5: Standardized and Unstandardized Regression Weights

IIEMS	U. S. R. W	S. R. W	S.E.	C.R.	P		
ID2	<---	F1	1.000	.734			
ID4	<---	F1	.906	.564	.159	5.710	***
ID5	<---	F1	1.102	.699	.155	7.109	***
ID6	<---	F1	.948	.686	.136	6.980	***
ID7	<---	F1	1.062	.746	.140	7.589	***
ID10	<---	F1	.935	.667	.138	6.782	***
ID9	<---	F1	1.005	.672	.147	6.831	***
ID8	<---	F1	.988	.724	.134	7.370	***

Source: Computed Data

Table 5 displays the standard error, critical ratio, standardised and unstandardized regression weights, and P. The statement "Ensure honest in their all sphere of activities" reaches the essential ratio value of 64.952 and is significantly different at the level of 0.01. Additionally, the statement "Do the activities with the efforts that actually the activities need" has a critical ratio value of 62.528 and is significantly different at the level of 0.01. All claims about fair and equitable treatment are true and have a P value of 0.01. It suggests that the claims are all important.

Model Fit Indices

Table 6 represents the results of model fit test for Confirmatory Factor Analysis.

Table 6: Model Fit Indices

Name of Index	Obtained Value	Suggested Value	Result
RMSEA	0.058	RMSEA<0.08	Achieved
GFI	0.900	GFI>0.90	Achieved
CFI	0.949	CFI>0.90	Achieved
TLI	0.934	TLI>0.90	Achieved
CMIN/DF	1.378	Chi-square/df<5.0	Achieved

Source: Computed Data

The CFA results are shown in Table 6. Probability (P) value is 0.088, which is higher than the threshold value of 0.05 and results in an absolute model fit. The suggested limit of 0.08 is indicated by the Root Mean Square Error of Approximation (RMSEA) of 0.048. In contrast to the recommended value of over 0.90, the Goodness of Fit Index (GFI) obtained is 0.993. Any fit index is eligible to fit the CFA model in terms of absolute fit. Table 5 shows that all three fit indices—P value, RMSEA, and GFI—fulfill the requirements for an absolute fit for the CFA model.

Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and Normed Fit Index (NFI) are all inside the acceptability region, that is, more than 0.90, and measure incremental or relative fit indices. All four of the fit indices that make up the CFA model's incremental fit are being achieved. Additionally, the CMIN/DF score of 2.026 is below the acceptable level of 5.0. It shows that the CFA model was parsimonious. As a result, the researcher has come to the conclusion that the fictitious model is supported by CFA Model as being fit.

Structural Model: Personality Traits on Investment Decision Making

Simple Path Analysis

In terms of analysis, "how" questions posed the simplest way to determine the overall effect is by simple path analysis. Establishing the degree to which some hypothesized causal variable X affects some outcome Y variable is the aim of path analysis. In other words, path analysis shows how the dependent Variable directly influences the result. Figure 3 is a path diagram/model that illustrates the links between the independent and dependent variables.

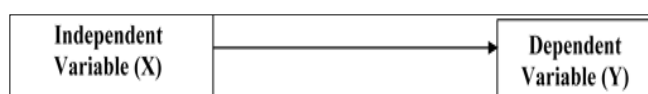
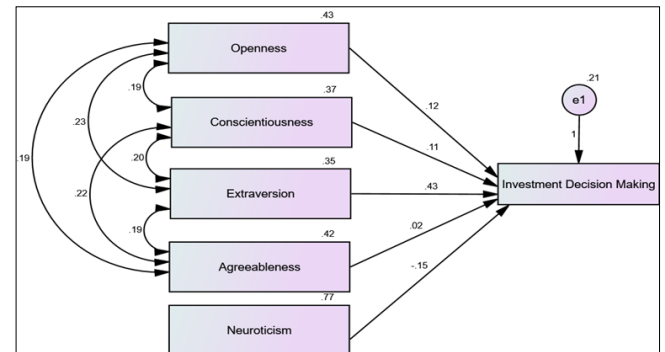


Fig 3: Direct Effect

- Direct effect of X on Y = c'
- Total effect of X on Y = c; c = c' + ab

Taken Variables	Name of the Variable
X (Independent or Exogenous Variable)	Personality Traits
Y (Dependent or Endogenous Variable)	Investment Decision Making

Ho: Hypothesis Testing for Dimension of Big five Personality Traits on Investment Decision Making



Standardized and Unstandardized Regression Weights

The Standardized and Unstandardized regression weights for the Equitable and fair treatment dimension of Confirmatory factor analysis is presented in Table 7.

Table 7: Standardized and Unstandardized Regression Weights

Items	U. S. R. W	S. R. W	S.E.	C.R.	P
IDM <--- Extraversion	.431	.428	.098	4.396	***
IDM <--- Agreeableness	.022	.023	.084	.257	.797
IDM <--- Conscientiousness	.109	.111	.092	1.178	.239
IDM <--- Openness	.118	.130	.083	1.416	.157
IDM <--- Neuroticism	-.153	-.226	.049	-3.139	.002

Table 5 displays the standard error, critical ratio, standardised and unstandardized regression weights, and P. The statement "Ensure honest in their all sphere of activities" reaches the essential ratio value of 64.952 and is significantly different at the level of 0.01. Additionally, the statement "Do the activities with the efforts that actually the activities need" has a critical ratio value of 62.528 and is significantly different at the level of 0.01. All claims about fair and equitable treatment are true and have a P value of 0.01. It shows that all of the claims are important.

Table 7: Effect of Result

Exogenous & Endogenous	U. S. R. W	S.R. W	S.E.	C.R.	P	Result
IDM <--- PT	.664	.445	.125	5.300	***	Significant

Source: Computed Data

Table 9: Direct Effects

	Neuroticism	Openness	Conscientiousness	Agreeableness	Extraversion
IDM	-.226	.130	.111	.023	.428

Source: Computed Data

The direct impact of the simple mediation approach for financial consumer protection is seen in Table 9. 0.0647 is the direct effect value. Because the p value is smaller than 0.01, the direct influence is significant. Therefore, there is a connection between the effectiveness of commercial banks'

operations and their financial consumer protection. The researcher has therefore concluded that commercial banks adhere to the financial consumer protection principles as a result of which their operational performance has improved.

Conclusion

Overall, the study discovered that all Big Five personality types had an impact on stock market investors' decision-making. Extraversion can lead to more active trading and higher risk-taking, extraversion can lead to more diverse and unconventional investment choices, conscientiousness can lead to more thorough research and analysis before making investment decisions, agreeableness can lead to more socially responsible investment choices, and neuroticism can lead to more deliberate and less impulsive choices. It is crucial to remember that choosing an investing strategy requires taking into account a variety of criteria, including financial objectives, risk tolerance, investment possibilities, inflation rate, and trends.

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Conflicts of Interest

The authors declare no conflict of interest.

Reference

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