The Mediating Role of Covid-19 Environment on Portfolio Allocation Decision: A Case Study in Malaysia

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DECLARATION

I thus certify that the thesis “The Mediating Role of Covid19 Environment on Portfolio Allocation Decision: A Case Study in Malaysia.” was written by me and that the study is original. In the effort, information taken from various sources has been identified. I certify that my work has not been submitted for any other degree at Tun Abdul Razak University or any other institution.

Signature	:	
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ABSTRACT

Abstract of the project paper submitted to the Senate of Universiti Tun Abdul Razak in partial fulfilment of the requirements for the Master of Business Administration.

THE MEDIATING ROLE OF COVID-19 ENVIRONMENT ON PORTFOLIO ALLOCATION DECISION: A CASE STUDY IN MALAYSIA.

By

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Economic and financial theories presume that individuals make decision based on bounded rationality, by taking into all the available information. Economist believe in classic models of rational market behaviour in decision making-process and so do not consider irrational behaviour. Uncertainty, makes individual to arrive at irrational decision. The ability to make decisions is mostly responsible for investing profits and losses. At times, even the most prominent and well-verse investors collapse in investment. As a result, this demonstrates that classic theories of rational market behaviour are missing something.

The impact of the Big Five Behavioural Finance features is investigated in this article (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism-OCEAN) on individual investors decision making process on portfolio allocation; Stock, Mutual Funds, Insurance, and Cash Equivalent, under the uncertainty due to COVID-19 pandemic and the goal is to prove that such fundamental concerns exist. One of the most important predictors of the market movement has been the investors

sentiment. The influences of OCEAN, whether it exhibit positive or negative impact on the portfolio allocation decision-making during COVID-19 pandemic was studied. The result shows that Openness and Agreeableness has a statistically significant positive relationship with investors' decision on portfolio allocation and COVID-19 does have impact on the cause-and effect relationship between OCEAN and decision-making process.

Primary data was collected by distributing a structured questionnaire among 300 individual investors. The fundamental goal of the study would be to see if behavioural finance influences investors' decisions in times of trouble, such as the COVID-19 epidemic, using behavioural finance theory as a guide. This study will be closer to the reality and gives a more significant insight to the decision-making on portfolio allocation and psychology traits used to explain why the decision was made.

Keywords: Personality traits, individual investors, financial traits, epidemic, and pandemic.

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LIST OF ABBREVIATIONS

1)	*OCEAN*	*- Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism*
2)	*COVID-19*	*- Coronavirus Disease 2019*
3)	*WHO*	*- The World Health Organization*
4)	*MSX*	*- Malaysian Stock Exchange*
5)	*ICMR*	*- Institute for Capital Market Research*
6)	*MPT*	*- Modern Portfolio Theory*
7)	*EMH*	*- Efficient Market Hypothesis*
8)	*SAR-CoV-2*	*- Severe acute respiratory syndrome coronavirus 2*
9)	*MERS*	*- Middle East respiratory syndrome*
10)	*MCO*	*- Movement Control Order*
11)	*SEM*	*- Structural Equation Modelling*
12)	*SCMRD*	*- Symbiosis Centre for Management & Human Resource Development*
13)	*EFA*	*- Exploratory Factor Analysis*
14)	*CFA*	*- Confirmatory Factor Analysis*
15)	*KMO*	*- The Kaiser-Meyer Olkin Measure*
16)	*SIP*	*- Systematic Investment Plan*
17)	*SPSS*	*- Statistic Software Package for Social Science*
18)	*KMO*	*- Kaiser-Meyer-Olkin*
19)	*DV*	*- Dependent Variable*
20)	*IV*	*- Independent Variable*

CHAPTER 1 – INTRODUCTION

"Being a behavioural investor is less about adhering to some textbook notion of rationality and more about understanding and bending the idiosyncrasies of human nature to our advantages." – (Crosby, 2016)

1.1 Background of the Study

COVID-19 pandemic had hit hard on the global economy, leaving everyone an insecure feeling, not knowing where the economy is heading to. The outbreak of COVID-19 on the 30th January 2020 significantly disrupted human life in every aspect. It has dramatically impacted the financial market too.

The infection rate of COVID-19 compared to any other epidemic is so substantial and the outbreak is highly contagious. It spread so quickly that government across the world has to take the most challenging decision of lockdowns. Like all other countries, Malaysia too has undergone a nation total lockdown twice, in March 2020 and January 2021. The pandemic is having a rapid impact on Malaysia's economy (Hasanat, 2020).

The World Health Organization (WHO) has reported a spike in confirmed cases and mortality rates attributes to COVID-19 in Malaysia, prompting panic in Malaysian society, resulting in the closing of borders between Malaysia states and a major decline in demand for entrance economic activity. One of the most affected sectors is the Malaysian Stock Exchange (MSX).

Due to the extension of lockdowns and restricted economic activity, Malaysia, like all other countries around the world, has experienced a prolonged period of slowdown; thousands of small and medium businesses have closed, millions of people have lost their jobs, and government projects have been halted. COVID-19's impact has been compared to that of the 2008 Financial Crisis, and it is regarded as a source of systematic risk. As a result, the influence on financial transactions must be investigated.

Traditional investing models assume that investors always act rationally and that their primary goal is to maximise their return while minimising their risk. A rational investor is one who constantly changes his beliefs in a timely and suitable manner in response to new knowledge and makes normatively acceptable decisions (Thaler, 2005). However, numerous studies have demonstrated that people become perplexed while making financial decisions in the face of uncertainty. Markets aren't always efficient, and people aren't always logical. The classical finance models strive to comprehend financial markets using models that, all investors are "rational".

Financial Crisis of 2008 which led to global recession, had made a lot of economist to think whether the theories they swear by all this while is actually true. (1) Is it true that people are truly rational? (2) Are they impacted by negative emotions such as fear and greed, which can lead to poor decisions? has been raised. "Evidence demonstrates repeating patterns of irrationality, inconsistency, and ineptitude in the ways human beings arrive at decisions and choices when faced with ambiguity," writes (Bernstein, 1998). Given the negative impact of a pandemic

on Malaysia's economy and financial market, this study examines how behavioural finance attributes influence individual investors' portfolio allocation during times of uncertainty, such as COVID-19 epidemic.

Behavioural finance explains why individuals do not always make rational decision as what they are expected to behave and why financial market do not behave, the way it should be. According to recent studies, average investors make judgements based on emotion rather than logic. The majority of investors buy based on excessive speculation and sell based on panic. According to psychological studies, the joy of earning is less than the anguish of losing money in an investment. As a result, behavioural finance qualities have a significant impact on individuals' investment decisions.

To the best of authors' knowledge, Wong et. al (2014) and Zubair Tauri et. al (2015) were the first two publications published on investing and behavioural finance. Personality qualities were explored as a modulator between investors' emotions and investing results by Wong et. al (2014). It was a descriptive analysis research. The researcher gathered information by distributing 1403 questionnaires in 35 different municipalities in China. In this research, Wong et. al (2014) revealed that positive emotions have positive relationship with investment return and vice versa. He also shown that neuroticism's moderating influence is significant.

Using a questionnaire survey of 333 individual investors, Zubair Tauri et al., (2015) studied the big five personality framework as a moderator between information acquisition and trading frequency in the China future market. Extraversion and

conscientiousness, according to Zubair Tauri (2015), positively impact the link between information acquisition and trading.

Unfortunately, the majority of current behavioural finance research contributes to market personality traits by focusing on investors risk and return expectations. Moreover, these studies were conducted in other parts of the world and in the absence of the global health disaster. To the authors' best of knowledge, there are very limited investigation on this topic that has been conducted, especially during the COVID-19 pandemic and this field of research remains relatively under-examined.

The following six aspects are addressed in this paper: For starters, there aren't enough studies looking at the effects of behavioural finance on retail investors decisions during a pandemic. Thus, the contribution of this work is an empirical study in the Malaysian states of Pinang, Perak, Selangor, Kuala Lumpur, and Negeri Sembilan on the impact of behavioural finance features on individual portfolio allocation decisions, mediated by COVID-19 pandemic.

Second, this research adds value to this empirical analysis by concentrating on the big 5 behavioural traits' influence on portfolio allocation during the pandemic: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

Thirdly, the types of investment that Malaysian investors prefer, and how does the Big Five behavioural finance traits, influences the investors to choose one

investment over another and determine how they make their investment portfolios during pandemic.

Fourthly, on the classical rational market behaviour model. Individual investors are chosen for this study since they have very limited knowledge on behavioural finance in decision making. The results were analysed to see if “irrational” decisions are made under uncertainty situation like pandemic is influenced by the behavioural finance traits.

Finally, on the economic point of view, this paper may help any managing investment departments, such as, Institute for Capital Market Research (ICMR), Government Managing Finance, policy makers etc, to understand on humans’ behavioural finance traits on portfolios allocation decision during a global crisis. This will aid them in minimising and neutralising the investment implications of future pandemics.

1.2 Problem Statement

In today’s world, investment is a part of life. The current generation belief in “money work for you”. Choosing and allocating in the right investment allows the wealth to grow and generate additional income. Many economic and financial theories assume that individuals make rational decisions based on all available information. When faced with ambiguity, however, there is evidence of repeating patterns of irrationality in the way humans make decisions and choices. Behavioural finance, a market study that incorporates psychology, sheds light on

why people purchase and sell stocks, as well as why they don't buy or sell at all. The most important challenge that an investor has is making investment decisions. The majority of an investor's profits or losses can be attributable to his decision-making abilities.

The fact that even the most prominent and well-educated investors were impacted by the speculative bubble burst in the 2008 subprime crisis demonstrated that traditional conceptions of rational market behaviour were fundamentally flawed. As a result, it's critical to look into how an individual's personality qualities influence investment decision-making in the current worldwide epidemic, which no one could have predicted.

The goal of this study is to establish the existence of such basic concerns in the investing decision-making process, which are driven by the Big 5 Behavioural Finance traits in the COVID-19 environment. Following a review of the previous literature on behavioural finance and behavioural biases, it was determined that there are some research gaps that need to be addressed, such as the fact that the majority of these studies are concentrated in foreign countries, whereas there are very few investigations in Asian countries, particularly in Malaysia, and in the face of a global health pandemic. A large body of behavioural finance literature examines investors in industrialised countries. The majority of behavioural finance research is based on secondary data from investment agencies in developed markets, while studies based on primary data are few and far between.

A questionnaire will be formulated and distributed among individual aged above 18 in Malaysia, concentrating in 5 states; Penang, Perak, Selangor, Kuala Lumpur, and Negeri Sembilan, and their investment decisions and effect of the Big 5 Behavioural traits on it will be studied. The focus will be on individual investors as they are more likely to have limited knowledge about application of traditional theories in decision-making and hence are prone to making psychological mistakes.

The primary analysis of the study would be to figure out where the investors lie on the personality spectrum and how that influences their investment decisions.

1.3 Research Objectives

The main objective of the study is:

I. To analyse Openness trait effect on retail investors' portfolio allocation decision during COVID-19 pandemic in Malaysia.
II. To analyse Conscientiousness trait effect on retail investors' portfolio allocation decision during COVID-19 pandemic in Malaysia.
III. To analyse Extraversion trait effect on retail investors' portfolio allocation decision during COVID-19 pandemic in Malaysia.
IV. To analyse Agreeableness trait effect on retail investors' portfolio allocation decision during COVID-19 pandemic in Malaysia.
V. To analyse Neuroticism trait effect on retail investors' portfolio allocation decision during COVID-19 pandemic in Malaysia.

VI. To examine if COVID-19 acts as a mediator in the relationship between the dependent and independent variables.

1.4 Research Questions

I. To what extend Openness trait affects the retail investors portfolio allocation decisions during COVID-19 pandemic in Malaysia?

II. To what extend Conscientiousness trait affects the retail investors portfolio allocation decisions during COVID-19 pandemic in Malaysia?

III. To what extend Extraversion trait affects the retail investors portfolio allocation decisions during COVID-19 pandemic in Malaysia?

IV. To what extend Agreeableness trait affects the retail investors portfolio allocation decisions during COVID-19 pandemic in Malaysia?

V. To what extend Neuroticism trait affects the retail investors portfolio allocation decisions during COVID-19 pandemic in Malaysia?

VI. Does COVID-19 explain for the variation in the independent variables and dependent variable in a substantial way?

1.5 Significance of the Study

1.5.1 To the Study (Researcher)

In the study of investing decision-making, behavioural finance is gaining popularity. It combines insights from economics, finance, and psychology. Researches always try to discover the impact of behavioural finance biases, traits or personalities in investment decision, to have a better diagnosis on the investment portfolio

avenues. Earlier researchers were more into believing that investment behaviour is based on classical rational market model. However, over the years, the economist belief that investment decisions are made based on irrational market model which involve behavioural finance traits.

This research gives the author a fantastic opportunity to learn more about the investment avenues, as well as behavioural finance theories, both theoretically and practically. Furthermore, this study will be helpful for future researchers to investigate further in this field from a different angle, involving different behaviour biases. In addition, it will be helpful for researchers who are going to compare the effect of decision-making process after COVID -19 pandemic.

1.5.2 To the Public

Investors are not always sensible in their investment decisions, according to financial behaviour studies. As a result, they are impacted by biases, which has an impact on financial market inconsistency. Therefore, a better understanding and investigation on the effects of behavioural finance traits on investment decision will be useful for investment advisor, as well as, it will be a valuable reference for financial-investing behaviour for investors to review and understand before making appropriate investment selections.

Furthermore, the research has an indirect impact on millions of people's lifestyles by influencing their investment decisions, and it may lead to a job in academia, where they can conduct research and educate the future generation.

1.5.3 To the Policy Maker

Financial markets are too big to fail. A good financial market creates a well balance wealth and growth, as well as provides a link between savings and investment to achieve short-term and long-term financial needs. Both house hold and corporate governance can achieve their financial needs through an efficient mobilization and allocation of surplus. Indirectly, this will boost the country's economy.

Therefore, this study will help government agencies and policy makers to have a better understanding on retail investors pattern during a global health crisis to design new investment avenues, based on the population.

1.5.4 To the Field of Behavioural finance

In comparison to other financial theories, behavioural finance concepts are relatively recent. Behavioural finance is commonly used in developed financial markets to investigate the behaviours that influence investment decisions; but as previously stated, behavioural finance has a limited number of applications in less developed financial markets.

This research is being conducted in the hopes of confirming the appropriateness of behavioural finance for 3 types of investments; Low Risk investment, Moderate Risk investment, and High-Risk investment.

1.6 Limitation of Study

There are several limitations to this study findings**.** The limitations are as following:

1. This study is for 3 months, which is considered a short period of time to collect a reasonable sample size for statistic measurement.

2. To keep the scope of study to a minimum, only five states respondents in Malaysia's feedback has being studied. These states were chosen mostly because they are demographically familiar to the researcher, making data collection easier. It's unclear whether investors in other Malaysian states would make the same conclusions about portfolio allocation.

3. In behavioural finance, there are many factors that can be influencing investors' decision, but in this study only the 5 Big behaviour finance was studied.

4. The study was concentrated only on the retail investors. Corporate investors are ignored.

1.7 The Organization of the Study

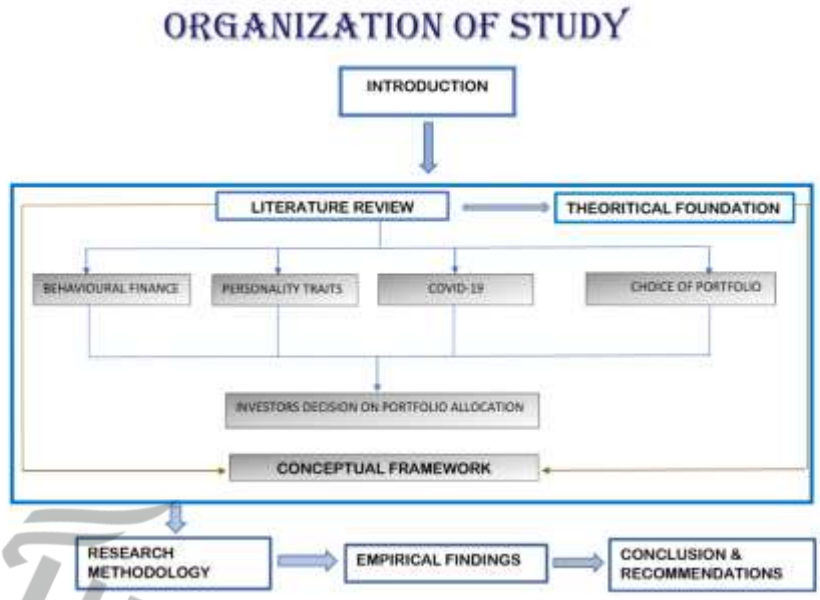


FIGURE 1. 1 : THE STUDY STRUCTURE. SOURCE: AUTHOR

This study is bisected into five (5) chapters, as following:

i. **Chapter 1:** The study's background, research problem, research objectives, research questions, significance, and organisation are all described in the introduction section.

ii. **Chapter 2:** Overview of the Literature Review, and Theoretical Foundation that covers the theories and overview of Behavioural Finance, Human Theories, and Investment Avenues, review of the previous Empirical Research, Proposed Conceptual Framework, Hypothesis Development and the Summary of Chapter 2.

iii. **Chapter 3:** Overview that illustrates the Research Methodology. Research Design, Sampling Design, Data Collection Method, Operationalisation and Measurement, Data Analysis Techniques, Questionnaire Structure, Pilot Test Result, and the Summary of Chapter 3.

iv. **Chapter 4:** Overview of Research Analysis, Research Findings, Hypothesis Testing and Structure of Research Finding presentation.

v. **Chapter 5:** Research Summary, Conclusion, and Recommendation for future researchers.

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

"I think one of the major results of the psychology of decision making is that people's attitudes and feelings about losses and gains are really not symmetric. So, we really feel more pain when we lose $10,000 than we feel pleasure when we get $10,000", (Kahneman D. a., 1973)*.*

The goal of this chapter is to review the past research studies related to investment behaviour, behavioural finance, COVID-19 pandemic, investment choices, and financial traits literatures. To gain a better knowledge of the nature of investing, behavioural finance, finance biases, COVID-19 epidemic, finance theories, and other important material, sections of scholarly published journals, papers, books, articles, and works are extracted.

To begin, some prior literature on behavioural finance, personality traits, impact of COVID-19 pandemic, and choice of portfolio on investment decisions literature on behavioural traits that leads to investment decisions are reviewed. Second, key behavioural finance theories (MPT, EMH, Prospect Theory, and the Five Basic Personality Theory), as well as overview of behavioural finance, decision-making-process, COVID-19 effects on Malaysia economy, and choice of portfolios, are covered to provide a comprehensive overview of the topic and its implications for portfolio allocation decision. Finally, a research model based on the hypothesis is provided for use throughout the study. With the help of the previous studied model and theoretical foundation, researcher was able to formulate a new proposed framework for this study. The following diagram (figure 2.1) depicts the outline for literature review:

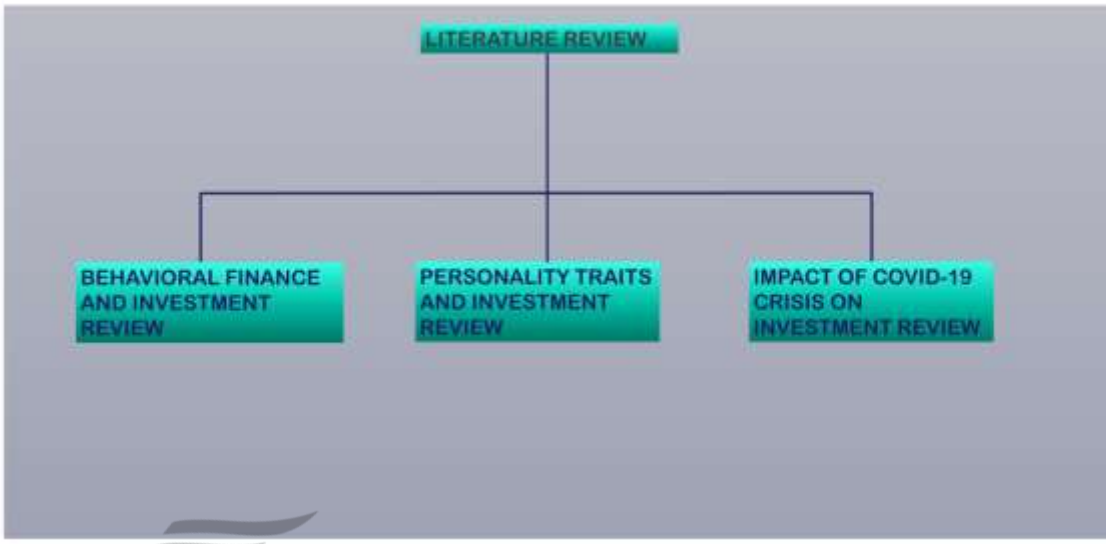


FIGURE 2. 1: LITERATURE REVIEW OUTLINE. SOURCE: AUTHOR

2.1.1 Behavioural Finance and Investment Review

When relevant prior literature was reviewed, factor influencing individuals' decision-making on portfolio allocation were classified into two categories, mainly," investors are rational" and economic factors, such as investment objectives, risk and return, and asset familiarity. Over the few decades, the central assumption in all investing studies has been the rationality of investors. Investors are presumed to be rational and they are unbiased in their future predictions.

When determining which portfolio to invest in, a rational investor took into account investment objective indicators such as risk and return, as well as the standard deviation of a firm's returns compared to the market return. This belief was shaken up by the Financial Crisis 2008.

The global financial crisis of 2008 has thrown the entire planet into disarray. It causes a significant reduction in liquidity in the global financial system. Banks were unable to issue mortgage, and interest rates rose, causing borrowers to turn down new loans and existing borrowers to be unable to repay their debts, resulting in an interbank credit freeze. Banks were unable to offer loans to anyone, including enterprises, who were in good financial standing. As a result, firms were obliged to cut costs and invest less, resulting in widespread downsizing. Millions of individuals lost their jobs, houses, and money as a result of the financial crisis.

Many economists were unable to assess the impact of the Financial Crisis 2008 on financial institutions even after the crisis had begun. Many financial institutions applied for bailouts from the government. Major corporations, such as GM & Chrysler, filed for bankruptcy and were obliged to accept government ownership as part of a bailout package.

Financial Crisis 2008, had made many economists to realize that, the theory they swear by all these years was actually not true. “Are people really rational?” was posed as a question. Or are they more likely to be influenced by personality factors that may lead to poor choices?”

Behavioural finance isn’t new; it’s been there since the 1980s, but it only gained traction after the financial crisis of 2008. The foundation of behavioural finance can be traced back to Selden’s 1912 book,” Psychology of the Stock

Market.” The relationship between investment and human psychology is explored in this 97-year-old book. G.C Selden, the author, looks at how to make investment decisions while remaining emotionally neutral, as well as how deep-seated emotions like greed, fear, and panic affect the financial market. According to the research, the stock market is made up to 75% psychological factors and 25% financial factors. The author believes that market price movements are heavily influenced by one’s mental attitude.

Followed by (Festinger L. , 1957) study of Cognitive Dissonance, which has generated hundreds and hundreds of studies about the determinants of attitudes and beliefs, values, consequences of decisions, and other psychological factors. Risk aversion and utility function are described by (Pratt, 1964). The author in this research, studied on the demand of insurance considering the measurement and magnitude of risk aversion as well as socio-demographic variables associated with aversion.

The publication of Daniel Kahneman and Amos Tversky’s Prospect Theory: A study of Decision Making Under Risk in 1979, however, marked the formal birth of behavioural finance. In the 1980s, a new paradigm called Behavioural Finance emerged, which “studies how people actually behave in financial situation.” It is a study of how psychology influences financial decisions, organizations, and financial markets in particular” (Nofsinger, 2001).

In 1980, Kahneman and Tversky collaborated with a third person, Richard Thaler, the so-called founding father, to produce a paper on investors’ proclivity

for mental accounting. They investigate how people make financial decisions, employing psychological techniques to bridge the gap between economic theory and reality. Their study, however, is only the tip of the iceberg when it comes to behavioural finance.

Behavioural finance was born out of the need to overcome the limitations of classical finance theory. According to traditional theory model, investors are often behave “rational” but this was proven wrong when the market plunged in unprecedented way during the Financial Crisis 2008.The market’s peaks and troughs during the crisis prompt the question, “ Is it realistic to believe investors are completely rational, and how can there be bubbles if efficient markets exist?”

As a result, behavioural finance aims to shed light on these two major issues. Behavioural finance proposes psychological influences and qualities as a factor influencing an investor’s decision and can help to explain a variety of financial market irregularities. Behavioural finance assume that investors behave “irrationally” because they are persuaded by both the internal and external influences. As a result, behavioural finance attempts to combine classical finance theories with cognitive psychology in order to develop a more comprehensive account of human behaviour in the decision-making process (Thaler, 2005).

Other studies have since sought to explain more market abnormalities, offering evidence that contradicts the premise of the market efficiency. Investors adopt

a logical and rational mindset in order to make realistic decisions (Nozick,1993), the Efficient Market Hypothesis holds that information is presented in the stock price when the market efficient, and so on (Fama, Efficient Capital Markets: A Review of Theory and Empirical Work., 1970). The rational expectations theory has been widely accepted as well as efficient market hypothesis are lacking their significance due to certain reasons and escalating demand of behavioural finance theories, (Ritter,2003), and a numerous other study.

For more than 40 years, the Efficient Market Hypothesis (EMH) has been the central finance paradigm, assuming that investors are rational and the financial market is efficient. According to the EMH theory, stock prices reflect all available information, and investors invest based on this information. The term: Efficient Capital Markets: A review of Theory and Empirical Work" was used to describe the notion of EMH (Fama, Efficient Capital Markets: A Review of Theory and Empirical Work., 1970). According to (Fama, Efficient Capital Markets: A Review of Theory and Empirical Work., 1970), an efficient market is one in which asset pieces completely reflect all available information and is "universally shared" among investors. Therefore, the price movements always occur efficiently and stocks are traded at their current fair market value. Hence, the theory belief that it is impossible to buy undervalue stocks and sell overvalued stock for an extra profit. As a result, the EMH theory says that financial markets are efficient and that investors make rational decisions.

The EHM concept gained traction, and a slew of studies focused on why the hypothesis should stand up in the face of overwhelming theoretical and empirical evidence. There were various pro and con reasons for EMH theory. The EMH theory was weakened when Michael Jensen, an EMH theory supporter, declared that “there is no proposition in economics that has more solid empirical evidence supporting it than the Efficient Market Hypothesis” (Jensen, 1978). Shortly after this statement, the EMH theory was called into question.

(Grossman, 1980) stated that an efficient market cannot exist because no knowledge is “free”. There would be no incentive for investors to devote resources to gather available information if there was no cost connected with it. Security prices will not properly reflect the information available. As a result, investors are more inclined to act on what they think to be relevant data. EMH theory was thrown into disarray as a result of this.

Investors are unlikely to trade randomly, and investors are not always rational in their decision-making process, according to Kahneman and Tversky’s study and theory. As a result, a new theory called “Behavioural Finance” has emerged. Following that, a slew of behavioural finance studies was conducted.

(Sewell M. , 2007), states that science deals with theory and experiments focused on practical. To demonstrate that impact of behavioural finance, he looked at how emotion effects investor decisions. (Shefrin, 2000) investigated how psychology influences financial decision-making and the stock market.

Individual behaviour and market phenomena are combined in behavioural finance (Fromlet, 2001). (Ricciardi, 2000) investigated the emotional biases of investors and the extent to which they influence their decision-making process. (Tversky A. a., 1974) studied on human behaviour traits and proved that people do act irrational in decision-making process.

Except for cognitive dissonance, investors suffered from biases such as representative, herding, overconfident, anchoring, gambler fallacy, fear of regret, mental accounting, hindsight, according to a study titled “Role of Behavioural finance in Portfolio Investment Decisions: Evidence from India” (Subash, 2012). Younger investors were seen to be affected significantly by anchoring, gambler’s fallacy and hindsight biases more than the experienced investors.

As a result, behavioural Finance can be characterised as a field that investigates financial market irregularities using psychological biases. Various studies had furnished handful insights on behavioural finance factors and effects on investors’ decision on portfolio investment allocation as well as investing in a risky security.

2.1.2 Personality Traits and Investment Review

Numerous researches have been undertaken to show that personality traits have an impact on investing decisions, risk taking, economic preferences, and debt-related decisions.

(Priyadharshini D. S., 2020), investigated on the psychological characteristics influencing investment choices, in a study “Influences of Big 5 Personality Traits on the Investment Decision of Retail Investors.” This study revealed, investors are influenced by conscientiousness trait 64%, openness 59%, agreeableness 56%, neuroticism 34%, and no extraversion effects influences investors investment decision.

A.Seetharaman, Indu Niranjan, Nitin Patwa and Amit Kejriwa, (2017), indicated that Asset Familiarity and Investment Objectives have the strongest impact on investors behavioural, influencing the choice of portfolio allocation. (Rajeha, 2017), analysed the relation between the investors’ behavioural traits, behavioural biases, and investment decision. The study revealed, the relation between behavioural traits and behavioural biases to be statistically significant.

(Cliff Mayfield, 2008), stated extraverted investors engage in short-term investment and investors who are open, wanting to engage in long-term investment. (Chitra, 2011), squabble that the influences of behavioural traits on investment decisions is more, as averse to the demographic variables.

(Lin, 2011) investigated the impact of demographic factors and psychological effects on the psychological behaviour bias of stock investors. Conscientiousness, extraversion, neuroticism, and openness were found to have a substantial impact on investor behaviour in this study.

2.1.3 Impact of Pandemic COVID-19 Crisis on Investment Review

During COVID-19, (Fanyi Wang, 2021) investigated the impact of investment behaviour on financial markets in the UK. The association between risk perception and general risk to tolerance over COVID-19 uncertainty was investigated by the author. They discovered that COVID-19 has a moderating effect on the connection between the variables. The findings suggest that financial risk tolerance is taken into account as an attitudinal factor while making financial decisions.

The findings show that the rate of profitability is mostly determined by the evaluation of financial risk, and that changes in the rate of profitability affect the financial tolerance risk. However, the global economy is currently undergoing a slowdown as a result of the COVID-19 epidemic. As a result, the impact of COVID-19 on the risk perception and the general risk tolerance can be calculated, resulting in investor insecurity. The study's conclusion is that contentment has a favourable impact on overall risk tolerance and financial risk.

Another study by (Arpita Gurbaxani, 2021), looked at how the COVID-19 epidemic has influenced investment and financial decisions in small towns in developing countries like India. Individual income is affecting significantly by the country's attempts to limit the spread of COVID-19. According to the study, such policies have a negative impact on people's saving and investing habits. Investors were more risk averse, preferring a safe, low-risk investment with a moderate return.

According to a study done in Shanghai by (Sobia Naseem, 2021), investors psychology was negatively related to three selected stock market under psychological resilience and pandemic pressure. Individuals were more concerned about their lives and less about leisure and wealth. The finding proves that, people tend to develop avoidant behaviour and strictly follow the social norms due to the pandemic severe effects (Cao et al.2020; Lai et al.,2020; Safraz et.al.,2020b). As a result, it affected the economic condition and financial position of individual and global investors.

The purpose of this study is to see how COVID-19 epidemic has affected investors sentiments, behavioural biases, and investing decisions on Pakistan Stock Exchange. The author, (Parveen, 2021), concluded that the pandemic created fear and uncertainty among the market participants and behavioural heuristics and biases negatively influenced investors decisions on Pakistan Stock Exchange. This research was proven by using structural equation model.

A numerous study has been conducted in 2020 and 2021, on the behavioural finance and portfolio allocation decision by individual investors before and during COVID-19. For example; (Himanshu, Ritika, Mushir, & Suryavanshi., 2020) studied on the risk and return expectations of individual investors on reallocating their portfolios. The study was conducted in Delhi and Mumbai. Their findings concluded that during COVID-19, risk-free investment avenues were more popular. Insurance investments were the top preferred investment. Most of the investors stated to relocate their portfolios towards a conservative portfolio.

Another study by (Puvannambehay & Tunggal., 2021), investigated the performance of equity unit trust funds and fixed income unit trust funds during COVID-19. Her findings revealed that average systematic risk for a fixed income is lower than the systematic risk for an equity fund.

According to a recent study, “What Drives Excess Trading During the COVID-19 Epidemic?” (Chin., 2021), underlying psychological and sociological characteristics such as openness and agreeableness have a substantial impact on trading frequency during the pandemic. Gender, age, marital status, education level, and income level are all mediator characteristics that have a substantial positive link with trading frequency.

2.2 Theoretical Foundation

2.2.1 Behavioural finance Overview

Behavioural finance is a branch of finance that explores how psychological variables influence people’s decisions about what to purchase, sell, or hold in the financial market, and how this affects market results. Human nature is complicated, and science is attempting to explain why it is reasonable to suppose that markets are inefficient and investors are irrational.

From a theoretical standpoint, the emergence of behavioural finance theory fills the void left by classical ideas such as “rational” investors and “efficient markets”. The science stated that if both assumptions were removed, numerous financial events would be easier to comprehend. Different financial

models emerged over time, some of which assumed that people failed to update their opinions on time, while others assumed that people update their thoughts rationally yet made questionable decisions. As a result, behavioural finance aims to complement the classical model by combining it with human cognitive psychology in order to produce a more complete finance model for analysing investment decision.

From the standpoint of a practitioner, behavioural finance identifies numerous human behaviours that are unreasonable and, as a result, lead to poor decision. Human are capable of a variety of behavioural abnormalities, which can lead to poor decisions and, as a result, fail them in their efforts to maximise wealth. As a result, even a brilliant investor might have these weaknesses; the difference is that they recognise the relevance of psychological qualities in decision-making and do not combine emotions with decisions.

To bridge this gap, behavioural finance creates a new paradigm by introducing behavioural aspect in decision-making process. Standard or classical finance refers to the current recognised theories in academic finance, which are related with the Modern Portfolio Theory (MPT) and the Efficient Market Hypothesis (EMH).

2.2.2 Modern Portfolio Theory (MPT)

The MPT was invented by (Markowitz, 1952), and it is based on this idea that a portfolio's expected return, standard deviation, and correlation with other stocks held inside the portfolio are calculated.

An efficient portfolio can be built for any collection of stocks based on these three concepts: anticipated return, standard deviation, and correlation. Efficient portfolios are made up of stocks that have the highest expected return while posing the least amount of risk for the given expected return.

MPT model assumes that investors take rational decisions to maximize their wealth. In MPT model, Markowitz equipped investors with quantitative approach and formulas including the mean, deviation, co-movements of stock represented in correlation. Markowitz emphasize that investors should choose the investment that has the minimum standard deviation (Petter N. Kolm, 2014). His target was to determine the weight of investment in a portfolio that will generate the lowest risk for a given return (Markowitz, 1952).

MPT emphasizes on 3 group of numbers. The first group expresses the expected return; the second group shows calculation of variance; and the third group shows the correlation between the stocks. Investors can assume the future expected returns of a stock and choose an efficient portfolio by interpreting the numbers in the group 1. The variance calculation allows investors to forecast the future returns and the correlation allows them to estimate the errors in the estimation. It sounds like a good model, but in practical (Wilford, 2012) states that the returns of MPT calculation does not look logical at times and does not pass the common sense test.

2.2.3 Efficient Market Hypothesis

EMH is a classical finance theory that states, all available information is clear, transparent, and reflected in a stock price, and that the current market price is a fair value. As a result, the argument arises that active traders cannot consistently provide better returns that outperform the market over time. In contrast, they argue that rather than seeking to 'outperform' the market, investors should just own the 'entire market'. Despite the fact that this theory has gained widespread acceptance throughout time, the subject of 'rationality' in the decision-making process has remained unanswered.

EMH's theoretical foundation is built on three primary points. First, all investors are rational; second, markets are efficient, leaving little possibility for more profit because the stock is appropriately valued; and third, the market is free of irrational influences.

(Fama, Random Walks in Stock Market Prices., 1965) classified EMH into separate types: (1) the "weak" version efficiency, in which all past market prices, returns, and other relevant information are assumed to be integrated in pricing, making it impossible to generate realistic risk-adjusted profits based on historical data. (2) Because the information is disclosed publicly, the "semi-strong" form suggests that it is impossible for investors to generate more profit based on the accessible information. (3) The "strong" version of EMH assumes that the stock's market price reflects historical data, public information, and private information. As a result, even insider information would not assist an

investor in generating high returns. Technical and basic analysis are rendered meaningless by these types.

2.2.4 Prospect Theory

(Kahneman D. a., 1979) invented prospect theory in 1979, and it is a behavioural economic theory. Daniel Kahneman received the Nobel Memorial Prize in Economic Sciences in 2002 for his ground breaking integration of psychological insights into economic theory.

Prospect theory fence in two distinct phases; (i) an editing or framing phase and (ii) the subsequent evaluation phase. Kahneman and Tversky, revealed individuals behave and value gains and losses differently. This theory emphasises perceived rewards over perceived losses, and it explains human irrationality when estimating risk in the face of uncertainty. Humans are inconsistent in their risk-aversion; they are risk-averse in wins but risk-takers in losses, according to the study. The “certainty effect” describes how people give more weight to events that are thought to be more certain than those that are just plausible (Kahneman D. a., 1979).

The framing effects have an impact on individual judgements as well. Framing is the practise of presenting the same problems to decisions makers with alternative wordings to examine how it affects their decisions, which the classical rational model does not hold. When the identical challenges were presented in a different way, it showed a systematic reversal of preferences (Tversky A. a., 1981).

Unlike the Modern Portfolio Theory, Prospect Theory considers both profits and losses while maximising wealth. Individuals make various decisions in the same final wealth levels based on this ground, which is an important component of the framing process since people prefer to interpret outcomes as gains and losses rather than final wealth states. This is shown in figure 2.2.

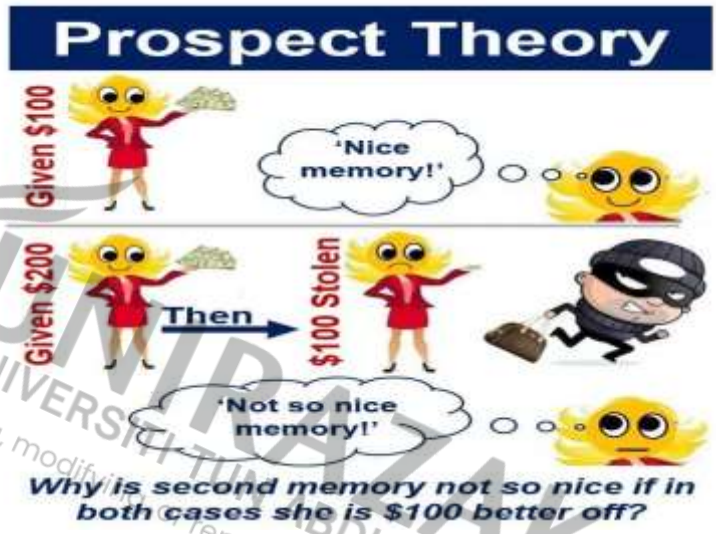


FIGURE 2. 2: PERCEPTION OF OUTCOMES BY PEOPLE SOURCE: MARKET BUSINESS NEWS

Evaluation phase is graphically presented by the S-shaped value function. Figure 2.3 below presents on how people respond to gains and losses.

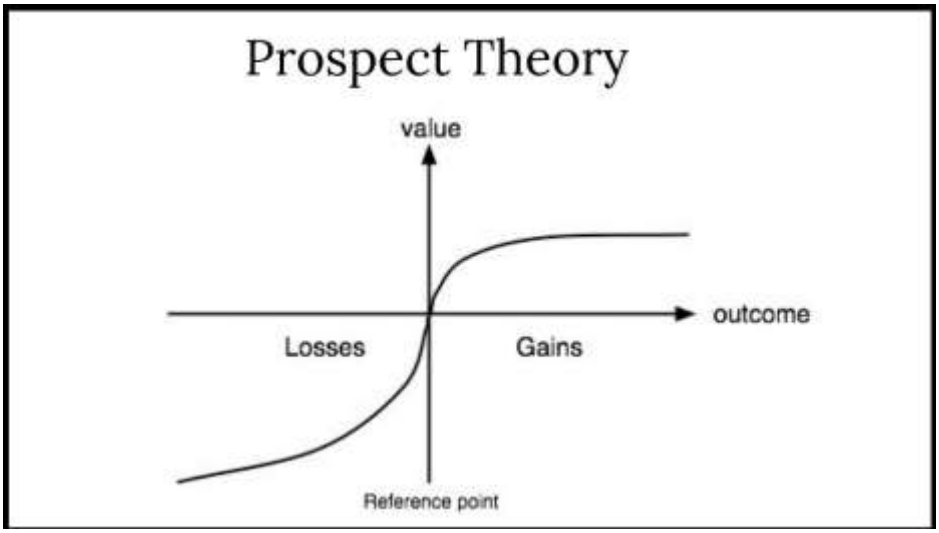


FIGURE 2. 3: VALUE FUNCTION OF PROSPECT THEORY. SOURCE: KAHNEMAN AND TVERSKY (1979)

In the Prospect Theory, the evaluation phase shows the gains and losses around the reference point, which is significant for comparing present and previous wealth. People hate losses more than they love gains. Thus, the Prospect Theory goes on to explain why is that people are not always risk-averse, and when facing with bad outcomes, people become risk seeking and try to receive a better outcome. People choose a portfolio in the financial context by computing for each allocation and selecting the portfolio with the best potential profit. According to Prospect Theory, when deciding between two allocations, people calculate the profits and losses and choose the one with the greatest potential profit.

Weighting Function is another important element in Prospect Theory. People tend to overreact to small probability occurrences while underreacting to large probability events, according to this function. As a result, this theory describes a variety of mental states that can influence a person's decision-making process. However, some economist argued that, this theory is oversimplified.

The core idea of this theory, the value and weighting functions, reference point, and framing does not reflect a firm strategic decision.

As a result, behavioural finance emerged as a viable alternative to traditional financial theories. Below are some common behavioural finance definitions.

“Behavioural finance is the study of the influences of psychology on the behaviour of financial practitioners and the resulting effect on the market,” according to (Sewell M. , 2007).

“Behavioural economics combines the twin sciences of psychology and economic to explain why and how people make seemingly irrational or illogical decisions when they spend, invest, save, and borrow money,” according to (Belsky, 1999).

“A fast-emerging area that deals with the influences of psychology on the behavioural financial practitioners,” (Shefrin, 2000) describes behavioural finance.

Instead of dismissing stock market anomalies as “chance results consistent with the market efficiency hypothesis,” behavioural finance can be characterised as a subject of finance that combines psychological biases with finance to explain them (Fama, Market Effiency, long-term returns, and behavioural finance., 1998).

Many authors and scholars have been given their own interpretation of behaviour finance definition. Therefore, to have a clearer understanding of behavioural finance is to establish strong definition for psychology, sociology, and finance.

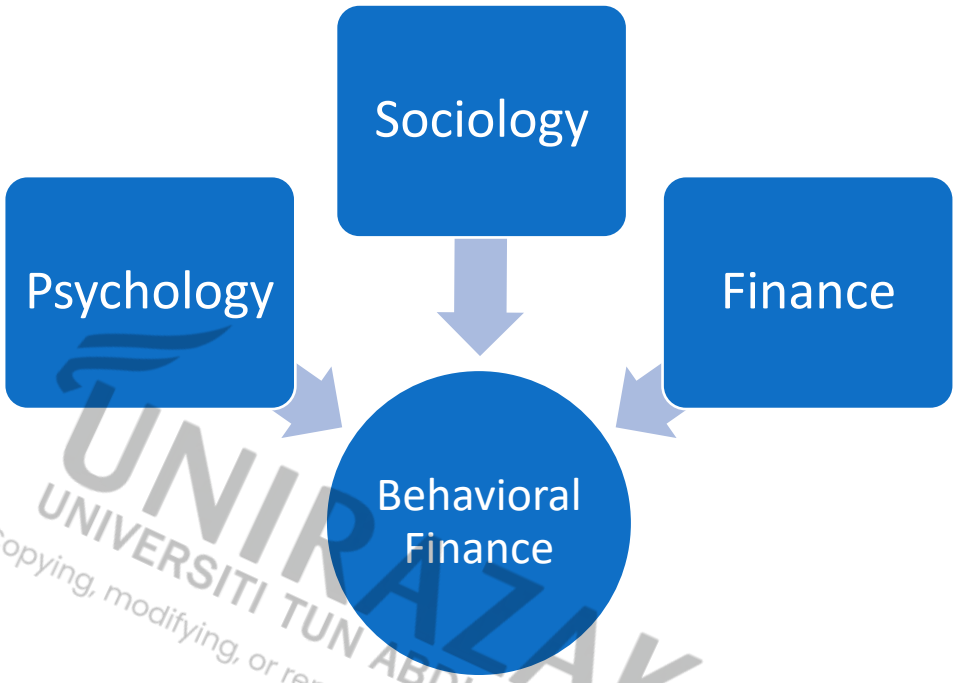


FIGURE 2. 4: BEHAVIOURAL FINANCE EVOLUTION. SOURCE: SCHINDLER (2007)

The main part that integrate behavioural finance are shown in figure 2.4. When investigating the notion of behavioural finance, traditional finance remains the focal point; nevertheless, behavioural aspects of psychology and sociology are crucial stimuli within this field of study. To understand the entire notion of behavioural finance, one must first understand the basic definitions of psychology, sociology, and finance (discussed in table 1)

Finance	Finance is a business discipline that focuses on money management and decision-making. Budgeting, saving, borrowing, lending, investing, and predicting are all financial activities.
Psychology	Psychology is a scientific investigation of human people and their behaviour in respect to a specific field of endeavour.
Sociology	Sociology is a systematic study of social life, changes in society, and the social causes and consequences of human behaviour. This field is concerned with how people react in various situations.

TABLE 1: INTERDISCIPLINARY OF BEHAVIOURAL FINANCE DEFINITIONS. SOURCE: AUTHOR

Behavioural finance tries to explain the pattern of investor decision-making, including the emotional process and the extent to which emotions impact decision from a human perspective.

2.2.5 Behavioural Finance Evolution

Table 2 below represent the development of behavioural finance.

Researcher	Year	Theory/Model
Herbert Simon	1955	Studied on constrained rationality
(Festinger L. R., 1956)	1956	Studied cognitive dissonance theory
Tversky & Kahneman	1973, 1974	Heuristic biases were first to be introduced (availability, representativeness, anchoring and adjustment)
Kahneman & Tversky	1979	Loss aversion bias was introduced
Tversky & Kahneman	1981	Framing bias was introduced
Richard Thaler	1985	Mental accounting was introduced
De Bondt &Thaler	1985	Theory of overreaction was introduced
Meir Statman	1999	Behavioural asset pricing theory and behavioural portfolio theory was introduced
Andrei Shleifer	2000	Investigated the relationship of behavioural finance with EMH to prove that markets are inefficient
Grinblatt & Keloharju	2001	Investigated the influence of behavioural factors in determining investment behaviour
Barberis & Thaler	2003	A behavioural finance survey was used to conduct the research.
Fernandes, J., Pena, J.I & Benjamin, T.	2009	They divided behavioural biases into two categories:
		"Cognitive Biases" and "Emotional Biases"

TABLE 2: DEVELOPMENT OF BEHAVIOURAL FINANCE. SOURCE: AUTHOR

Despite the fact that behavioural finance has been around for hundreds of years, two outstanding psychologist, Amos Tversky and Daniel Kahneman, proposed three heuristics for making decisions under uncertainty in 1974: representativeness, availability, anchoring, and adjustment. They pioneered the concept of prospect theory for analysing risky decisions-making, and this ground breaking work is now considered the foundation of behavioural finance.

This discovery offered light on how people evaluate gains and losses, paving the door for a new path in the field of behavioural finance. Humans don't behave as if they've been schooled; rather, their judgments and decisions deviate noticeably from idealised economic models. Figure 2.5 illustrate the evolution process of finance theory.

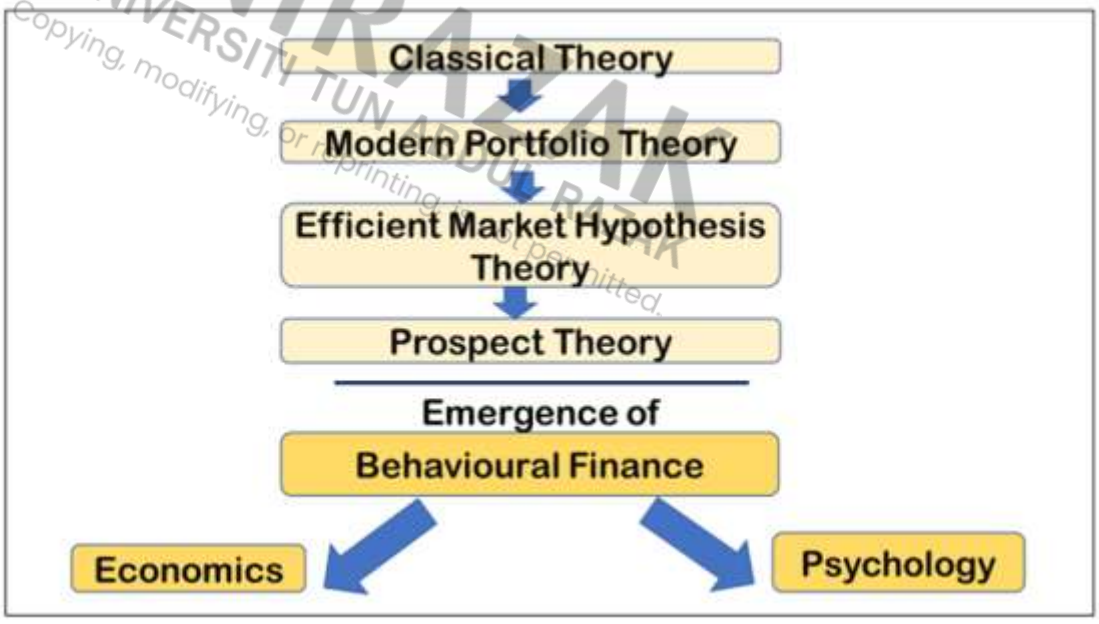


Figure 2. 5 : The Evolution Finance Theory. Source: Author

2.2.6 Five Basic Personality Traits Theory

D.W. Fiske proposed the five basic personality traits idea in 1949, and it was expanded by other researchers such as Norman (1967), Smith (1967), Goldberg (1981), and McCrae & Costa (1987). It was a study to see how the major five personality qualities of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism influence a person's behaviour and character. As a result, this model implies that individual differences can be categorised along these five dimensions.

Under this theory, personality differences are measured by scale ranging from “completely disagree” to “strongly agree”. The responses can be used to compute a profile in each of the 5 traits. Each individual’s traits communicate to a combination of the five traits characteristic. Thus, each person maybe established on a scale at which point individual tendency will be more evident than the remainder of something. This act does not imply that the added characteristic is not present. Thus, responses can be classified in accordance with the predominance of typical feature as high, moderate, or low for each personality dimension.

2.2.7 Behavioural Finance and Decision Making

Identifying a decision, acquiring information, and considering all other alternatives are all steps in the process of making a decision. It is a complicated and deliberate multi-level steps involving various technical, situational and personal factors. Figure 2.6 illustrates the general decision-

making process and it does not make any exceptions in decision-making process in financial markets.

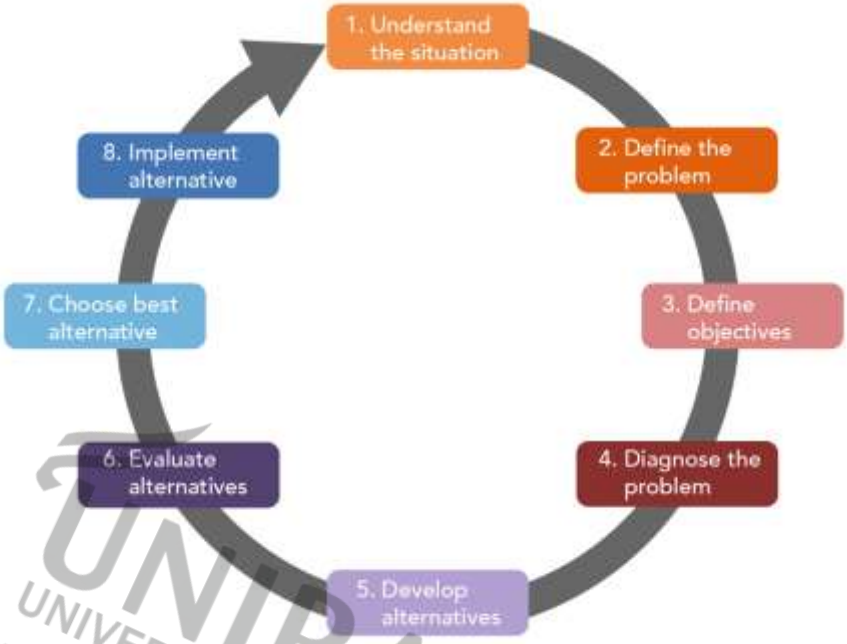


FIGURE 2. 6: PROCESS OF DECISION-MAKING. SOURCE: LUMEN LEARNING

The most difficult task that any investor has is making the appropriate investment selection. As a result, when making the best judgments, investors must consider a few criteria. On the technical side, investors must comprehend the numerous financing models and how they operate in order to forecast the market. Personal characteristics such as age, money, education, gender, and so on have a substantial impact on decision-making, not to mention situational circumstances that take psychological features into account.

Effective financial decision-making necessitates an understanding of human behaviour, and cognitive psychology plays a significant role in this regard

(Chandra, Decision Making in the Stock Market: Incorporating Psychology with Finance., 2008.). As the outcome from the Financial Crisis 2008, there are a lot of studies done on the irrational investors. “Behavioural Finance is becoming an integral component of decision-making process because it strongly effects the investors’ performance.” (Banerjee, 2011).

Investors can educate themselves on the many human psychological tendencies they are likely to display and utilise that knowledge to avoid them and increase their decision-making efficacy. "Rational behaviour can only be achieved when solid intellect and emotional discipline are combined," says (Parikh, 2011). In his study, Parikh concluded that an investor's success is determined by their comprehension of their own behavioural states and their ability to cope with them so that they do not repeat the same mistakes.

2.2.8 COVID-19 and Brief Effects on Malaysia Economy

Coronavirus (Covid-19) is closely related to SAR-CoV-2 and it has emerged in Wuhan, China (WHO,2020). It causes respiratory infections in human, and the China government has informed WHO about this unfamiliar pneumonia aetiology at the end of 2019. According to the National Health Commission of China, people who have infected by coronavirus have visited the seafood market, where the live animals, such as bats and rabbits were sold. The primary host of coronavirus is the human who consume the infected bats. However, this virus starts to spread from humans to humans through a close contact and it spread quickly worldwide. The transmission of COVID-19 is illustrated in figure 2.7.

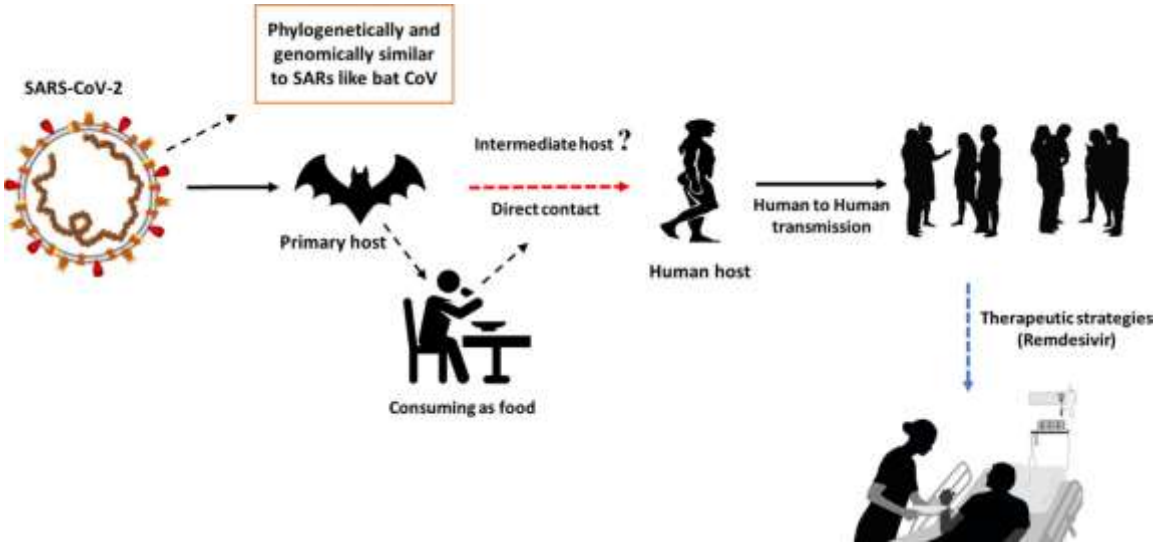


FIGURE 2. 7: COVID-19 INFECTION DEVELOPMENT AND TRANSMISSION. SOURCE: SCIENCEDIRECT.COM

On March 11, 2020, COVID-19 was declared a global pandemic. On January 20, 2020, the first case of COVID-19 was discovered in Malaysia. There was a total of 22 cases discovered, 12 of which had travelled to the impacted regions, 8 of which were due to close contacts, and two of which were from the humanitarian effort (WHO,2020). In comparison to SARS and MERS, COVID-19 has a high transmission rate, with 175 countries worldwide infected, compared to 29 countries impacted by SARS and 28 countries affected by MERS. This is depicted in Figure 2.8. COVID-19 has been confirmed in 222 countries and territories throughout the world to date.

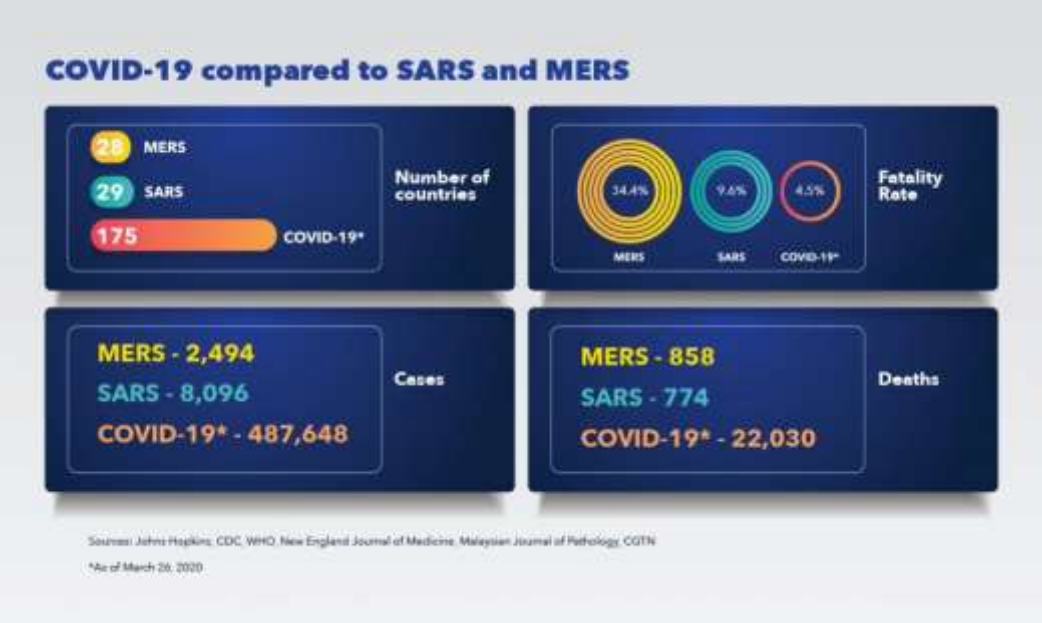


FIGURE 2. 8: COMPARISON OF COVID-19 TO SARS AND MERS. SOURCE: JOHNS HOPKINS

As of 24th December 2021, WHO has declared a total of 279,345,816 COVID-19 cases worldwide, with a total death of 5,409,044, and 2.73M cases in Malaysia with total death of 31,265 cases. Figure 2.9 and 2.10 below, illustrates the statistic of COVID-19 cases in Malaysia and global.

FIGURE 2. 9: COVID-19 GLOBAL STATISTIC UP TO DATE. SOURCE: WORLDOMETER

FIGURE 2. 10: COVID-19 STATISTIC OF MALAYSIA UP TO DATE. SOURCE: WORLDOMETER

The measures taken by some countries including Malaysia in order to control the spread of COVID-19, such as Movement Control Order (MCO) has critically impacted Malaysia's economy via high unemployment rate, suppressing private sector activities, tourism-related sectors, and depreciating in Malaysian Ringgit against USD. In January, 2020 the unemployment rate in Malaysia was at 3.2% and it continue to increase and reached 5.3% in May 2020. However, in 2nd quarter of 2021, it reduced to 4.8% (The Edge Malaysia, 2021).

Figure 2.11 depicts Malaysia's unemployment rate percentage from March 2020 to July 2021. According to (Shankar, 2020), the current unemployment trend is not a positive thing because the country's labour demand is declining. Despite the new variant Omicron potentially throwing a wrench in the nation's economic recovery plans, The Malaysian Reserve (2021) reported that with positive vaccination progress and extra precautionary measures to prevent the

new virus variant, Malaysia would be able to sustain labour market recovery into 2022 if the government's recovery plan policy was continued.

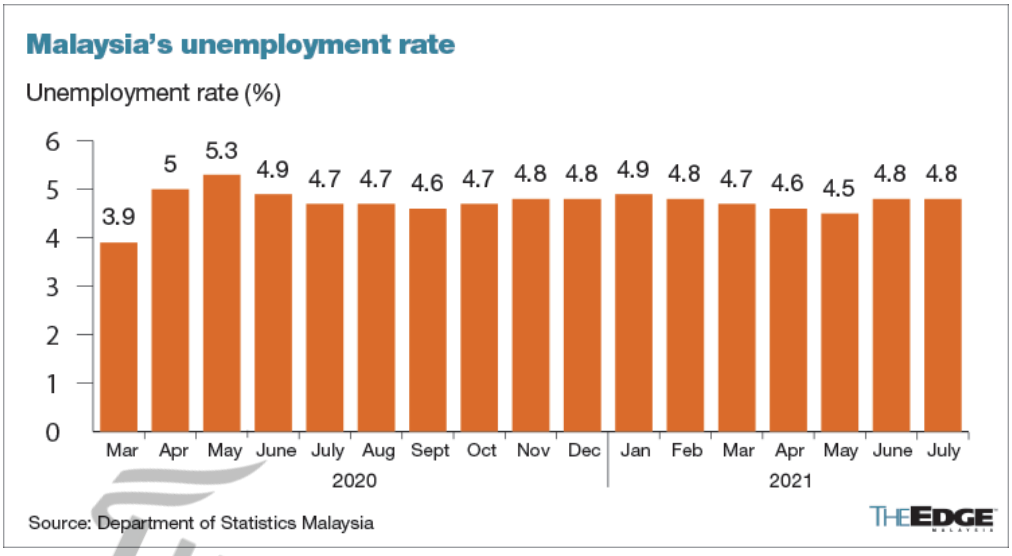


FIGURE 2. 11: THE UNEMPLOYMENT RATE IN MALAYSIA. SOURCE: THE EDGE MALAYSIA

Apart from the unemployment rate, the foreign exchange rate, which affects a country's amount of commerce, can be used to assess its economic health. Malaysia's exchange rate was at RM 4.09 to 1 USD in January 2020, and it has since appreciated to RM 4.20 to 1 USD in July 2021. Figure 2.12 illustrates this. As the cost of raw materials rises, a weaker exchange rate can drive up inflation in a country like Malaysia, which is a big importer. As a result, it has a negative influence on Malaysia's manufacturing sector, as the majority of machinery and raw materials are imported from China and Japan.

The purchasing power of the Malaysian Ringgit is negatively affected by a weakening currency, which means that Malaysians' living standards are lowered as a result of decreasing purchasing power. Consumer expenditure is

a critical component of a country's economy because it determines the country's economic health.

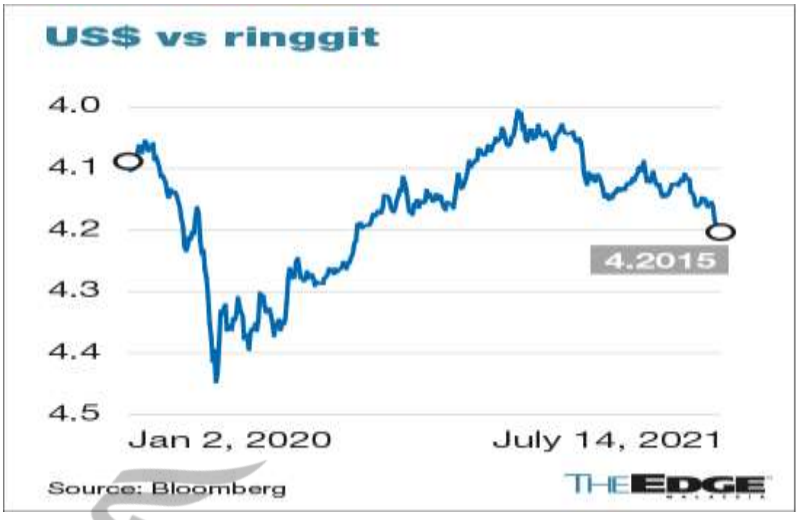


FIGURE 2. 12 : USD VS MALAYSIA RINGGIT EXCHANGE RATE SOURCE: THE EDGE

Number of non-essential sectors were forced to cease their operation during the MCO, such as construction, manufacturing, and tourism industry. Tourism is one of the most severely impacted industry. In 2019, the total tourist arrived in Malaysia were recorded at 26,100,784 but it has fallen by 19,641,784 to 6,459,000 as of June 2021. This data is shown in figure 2.13 and 2.14 below. Tourism is one of the most important sectors in Malaysia that boost the economic growth by promoting foreign spending on Malaysian goods and services. A continuous decrease in number of tourists, forced some of the tourist industry to shut down and citizens to lose their jobs.

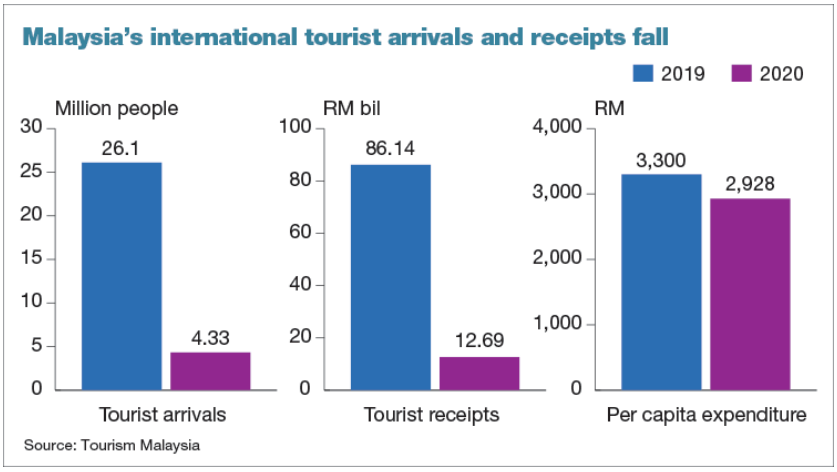


FIGURE 2. 13 ARRIVALS IN MALAYSIA'S TOURISM. SOURCE: TOURISM MALAYSIA

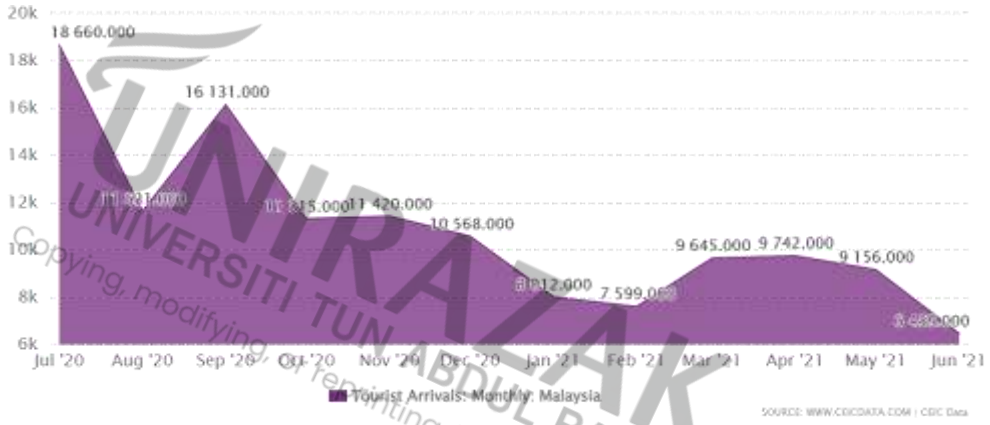


FIGURE 2. 14: MALAYSIA'S TOURISM ARRIVAL JULY 2020- JUNE 2021. SOURCE WWW.CEIDATA.COM

In a nutshell, COVID-19 has left a serious impact on Malaysian economy, and it is a crucial period to evaluate on investment decision-making of an individual.

2.2.9 Choice of Portfolios

Portfolio is a combination of investment held by an investor, and it can be divided into 3 categories; High Risk Investment, Moderate Risk Investment, and Low Risk Investment. In this paper, the author has chosen stocks from the High Risk, balance mutual fund from the Moderate Risk, and insurance and

cash from the Low Risk, to investigate the impact of behavioural finance on how an investor choose their investment portfolio. Figure 2.15 illustrate the risk investment pyramid.

2.2.9.1 High Risk Investment (Stock)

High risk investment refers to investments with a high degree of risk, where there is a high chance of an investor can lose a substantial amount from the investment. Stock or equity is a security that represent an ownership share in a company. Unit of stocks are called “shares”, and stock can be bought in stock exchange market. Companies sell securities to get income for them to grow, and people buy security as investment to earn money. However, investing in a stock is a risk that an investor takes because there is no guarantee of profits.

2.2.9.2 Moderate Risk Investment (Balance Mutual Fund)

Investments with a balanced approach and intermediate-term time horizons of 5 to 10 years are referred to as moderate risk investments. Moderate investors are willing to take some risk. A balance mutual fund is a moderate-risk investment that has a bond and stock component in a set ratio in a single portfolio. To put it another way, it enables the investor to invest carefully and with minimal risk rather than risking everything on the stock market.

2.2.9.3 Low Risk Investment (Insurance & Cash)

Low risk investment is an investment that perceived a slight chance of losing some or all the money that was invested because they are not likely to drop in value suddenly. Low risk investors main idea of investing is to grow their money for savings and protections. In this study, the author has chosen insurance and cash as low risk investment options.

FIGURE 2. 15: PYRAMID OF RISK. SOURCE: WISER ADVISOR

2.3 Review of Recent Research

Author	Year	Objectives	Variables	Findings	Future Research
Arpita Gurbaxani and Dr Rajani Gupte	2021	To study how the COVID-19 pandemic has influenced people's financial and investment decisions in tiny communities in underdeveloped nations like India.	Monthly investment Gender Age Method: Quantitative	Individual income was found to have a significant relationship with measures adopted to prevent the spread of COVID-19 (such as lockdown and travel restrictions); such preventive measures had a direct impact on savings and investing behaviour. During the COVID-19 epidemic, respondents reported a 43 percent decline in SIP investments. While both genders experienced a drop-in investment, the difference in percentage decline was statistically insignificant. Furthermore, investor age had little effect on investment behaviour. People were more risk averse. Prefer to invest in moderate with low risk funds.	Future research might look into the steps taken by various authorities to improve financial literacy in India's small towns, as well as their impact on the population's investment habits.
Phaik Nie Chin	2021	The goal of this study is to look at the psychological and sociological elements that drive excessive stock trading in Malaysia amid a worldwide health crisis like the COVID-19 pandemic.	Openness Conscientiousness Extraversion Agreeableness Neuroticism Trading Frequency Age, Income, Investment Experience & Type of Investor Method: Quantitative	Personality qualities such as openness to new experiences and agreeableness have a considerable impact on trading frequency, according to the findings. Gender, household income level, years of investment experience, and investor type all have a substantial positive link with trading frequency.	More retail investors could be recruited in future study to confirm the significance levels of those variables. Furthermore, the research might be carried out after the COVID-19 pandemic to see if there are any notable differences in the variables before and after the global health catastrophe. Financial risk tolerance can be added as IV
Dr. S. Uma Priyadharsh n	2020	Develop a model to assess the influence of the Big 5 personality traits on retail	Openness Conscientiousness Extraversion Agreeableness Neuroticism (IV)	Consciousness is the quality that has the most influence on investment decisions, with a 64 percent influence. Openness and agreeability has a 59 percent and 56 percent influence, respectively. Neuroticism has a 34 percent influence on	Consider the following aspects: Behavioural bias, upbringing environment, investor moral ideals,

Dr. S. Uma Priyadharsh n	2020	Develop a model to assess the influence of the Big 5 personality traits on retail investors' investment decisions.	Openness Conscientiousness Extraversion Agreeableness Neuroticism (IV) Method: Quantitative	Consciousness is the quality that has the most influence on investment decisions, with a 64 percent influence. Openness and agreeability has a 59 percent and 56 percent influence, respectively. Neuroticism has a 34 percent influence on investing decisions, and the estimate value for the attribute extroversion is negative.	Consider the following aspects: Behavioural bias, upbringing environment, investor moral ideals, and historical oppression all have an impact on an investor's financial judgments. Also, it is capable of covering a considerably wider spectrum of investments.
A.Seetharaman Indu Niranjan Nitin Patwa & Amit Kejriwa	2017	This research attempts to learn more about the factors that influence investment planners, financial counsellors, and individuals who want to improve their portfolio selection and performance.	Risk Profile Asset Familiarity Investment Objective Investor Behaviour Factors Affecting Choice of Portfolio Method: Quantitative	Investor behaviour is influenced by investment purpose and asset familiarity, with asset familiarity having the greatest impact. Investor behaviour, in turn, influences the investors' portfolio selection.	Future research will focus on precise investment selections and portfolio returns to better understand foreigners' investment portfolio performance, taking into account their primary investments in their home country.
Himamshu, Ritika, Nikhat Mushir, Ratan Suryavansh	2021	The goal of this study is to see how Covid19 affects individual investors' portfolio allocation decisions.	Investments avenues Risky Investments risk-free Investments Method: Quantitative	Due to the present financial crisis pertaining to COVID-19, investors have started reallocating their portfolios. Since the returns on risky assets are not as expected, investors are moving towards a conservative portfolio. However, the case of transition from risky to risk-free assets is not the same in the case	The investment options studied in the study are not exhaustive, and more options can be pursued if desired. Future research can leverage secondary data to examine various investors' portfolio holding methods and the returns on those

TABLE 3: LAST 5 YEARS LITERATURE REVIEW SUMMARY. SOURCE: AUTHOR

2.4 Research Gap Identification

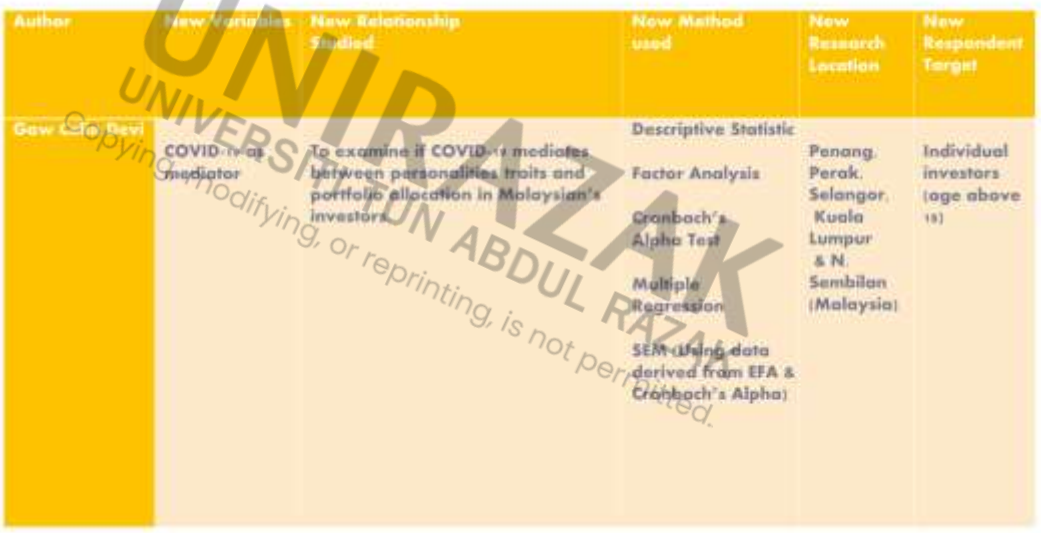
Author	Variables	New Relationship Studied	Method	New Research Location	New Respondent Target	Research Gap
Arpita Gurbaxani and Dr Rajani Gupte	Montly investment Gender Age	To learn how the COVID-19 pandemic has affected people's investment and financial decisions in small towns in developing countries like India based on monthly income, gender, and age.	T-test Regression Analysis	Madhaya Pradesh, India	Service Sector/ Owned business	Other industries, income levels, and investment preferences were absent. These would have provided further insight into the influence of COVID-19 on investors' investment decisions if they had been included. Research methodology gap -only 2 types of test done
Phaik Nie Chin	Openness Conscientiousness Extraversion Agreeableness Neuroticism Trading Frequency Age, Income, Investment Experience & Type of Investor	Relation between Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism with trading frequency. Age, income, investment experience & type of investor used as factors that influence IV	Stata T-score Multinomial Logistic Regression Model	Malaysia	Individual Investors	OCEAN traits were grouped using factors and not by the traits itself.
Dr. S. Uma Priyadharshin	Openness Conscientiousness Extraversion Agreeableness Neuroticism (IV)	Relationship between OCEAN with investment decision	SEM, AMOS 1.8, Reliability & Validity	India	Retail Investors	Corporate investors, Age and Income level was ignored
A.Seetharaman Indu Niranjan Nitin Patwa & Amit Kejriwa	Risk Profile Asset Familiarity Investment Objective Investor Behaviour Factors Affecting Choice of Portfolio	Relationship between risk profile, asset familiarity, and investment objectives with factors affecting choice of portfolio, mediated by investors behaviour.	Smart PLS Validity & Reliability Construct validity Convergent validity Discriminant Validity Sobel	Singapore	Individual Investors	Emotional and personality Factors were ignored. Not in the pandemic of COVID-19
Himamshu, Ritika, Nikhat Mushir, Ratan Suryavanshi	Risky Investments Risk-free Investments	Preferred choice of investment between risky & risk-free investments in the context of before & during COVID-19	Eigenvalue Consistency Ratio	Delhi & Mumbai, India	Individual Investors	Financial behavioural factors were ignored. Age and income level were ignored.

TABLE 4: RESEARCH GAP IDENTIFICATION. SOURCE: AUTHOR

Based on past investigations, Table 4 highlights the new research gaps evaluated for this study. The independent variables used in this study are the same as in prior studies, however COVID-19 was chosen as a mediator to study the effect of the pandemic on the cause-and-effect relationship between OCEAN and Retail Investors' Decision on Portfolio Allocation in Malaysia.

For this investigation, four basic methods were used. In contrast to earlier studies that used either two or three of these methodologies, this study used all four. In addition, SEM modelling used to examine complex interactions between numerous variables.

As demonstrated in Table 3 above, just a few studies in this topic have been conducted in Malaysia in the last five years. As a result, this study will cover new research areas in Malaysia, including Penang, Perak, Selangor, Kuala Lumpur, and Negeri Sembilan. The target audience will be the same as in past studies, with an emphasis on individual investors over the age of 18.



Author	New Variables	New Relationship Studied	New Method used	New Research Location	New Respondent Target
Gaw L. Q. Devi	COVID-19 as mediator	To examine if COVID-19 mediates between personalities traits and portfolio allocation in Malaysian's investors.	Descriptive Statistic Factor Analysis Cronbach's Alpha Test Multiple Regression SEM (Using data derived from EFA & Cronbach's Alpha)	Penang, Perak, Selangor, Kuala Lumpur & N. Sembilan (Malaysia)	Individual investors (age above 18)

TABLE 5: NEW PROPOSED VARIABLES, RELATION, METHOD, LOCATION & TARGET. SOURCE: AUTHOR

2.5 Conceptual Model Development

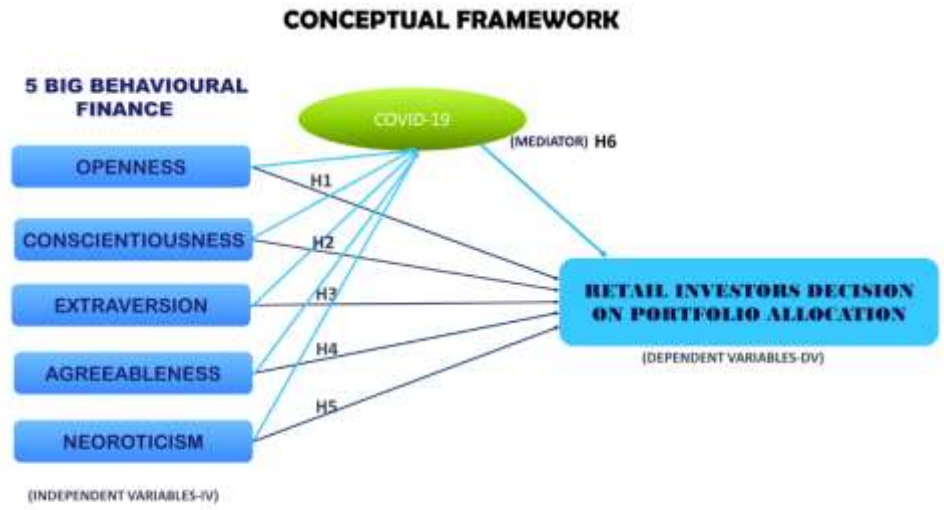


FIGURE 2. 16: CONCEPTUAL FRAMEWORK. SOURCE: AUTHOR

The researcher would like to bridge the gap in this study by including the gapped components due to a research gap observed in previous studies. Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism were chosen as the independent variables in this study, which have a cause-and-effect relationship with the dependent variable; Retail Investors' Portfolio Allocation Decisions.

Almost every individual or institution wants to invest their money in various types of financial assets in order to increase their wealth. A rational investors' decision on which investment avenue to pursue is influenced by elements such as expected rate of return, investment objectives, preferred holding term, risk aversion, financial literacy, market sentiments, mentality, and the investor's personality attributes. When these considerations aren't properly stated, the

investor makes a poor decision, resulting in unsatisfactory portfolio results. Thus, the researcher's goal in this study is to see if the mega trend component of behavioural finance influences investment decision on portfolio allocation in Malaysia. As a result, in this research, the IV-DV paradigm was utilised to investigate the direct impact of Big 5 personality traits on investment decisions and portfolio allocation. Figure 2.16 depicts the conceptual framework, and the following is the narrative:

Independent Variables:

1) Openness: Indicate level of intellectual curiosity.
2) Conscientiousness: A proclivity for being well-organized and dependable.
3) Extraversion: Positive emotions, surgency, assertiveness, and sociability.
4) Agreeableness: A proclivity towards compassion and cooperation.
5) Neuroticism: People who are more prone to psychological stress.

Dependent Variable:

1) Retail investors' decision on portfolio allocation.

Mediating Variable

Once the direct impact of IV and DV has been determined, COVID-19, a mediating factor, was employed to see if it causes mediation in the DV and IV relationship. In other words, the researcher wants to see if the worldwide pandemic has an impact on the outcome of the cause-and-effect relationship between the independent and dependent variables. To determine the

mediational impact, the final statistical data between IV and DV will be employed.

2.6 Hypothesis Development

The Big Five Personality Theory is the most widely acknowledged personality theory today among psychologists, and it is becoming increasingly important to economic studies. Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN) are the five main elements that make up human personality. Economists are beginning to study the impact of personality factors on investment decisions. Personality is the most important determinant of human behaviour since it creates a bias toward a certain type of reaction. (Heinstrom, 2003). The definition of the five personality co-variance components is shown in Figure 2.17.

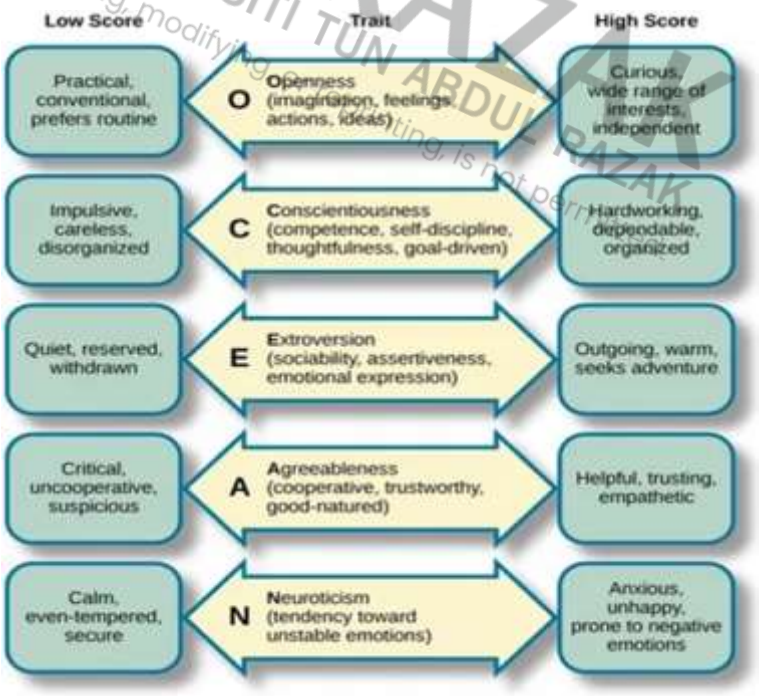


FIGURE 2. 17: THE BIG FIVE PERSONALITY TRAITS. SOURCE: PENNSTATE,BY R.GRAY,2017

Personality traits have been shown in a number of studies to have a major impact on an individual's decision-making process (Liu X. , 2016), investment avenue allocation (Priyadharshini D. S., 2020), stock market and investors behaviour (Subash, 2012), overconfidence and overreaction in the market (Durand R. N., 2013), short-term and long-term investment intentions (Durand R. N., 2013) short-term and long- term investment intentions (Mayfiled, 2008). The following is the development of each visionary's hypothesis.

2.5.1 Openness

People who are open to trying new things, "thinking outside the box," and engaging in intellectual and imaginative pursuits are described as open. As a result, persons who fall under this category are positively connected with intelligence and achievement (Douglas, 2016), whereas those who do not tend to be traditional and conservative, with narrow and low-intensity interests (Douglas, 2016). Furthermore, this group of people values consistency and is averse to change or attempting new things. According to studies, people with the openness characteristic are information searchers (Heinstrom, 2003), clever, knowledgeable, and capable of critical problem-solving thinking. As a result, they avoid overtrading and make the best selections possible ((Borgatta, 1964); (Zhang, 2014).

Investors with the openness attribute are willing to adjust their portfolio allocation based on current market movements and absorb fresh market knowledge (Pak, 2015). As a result, this research concluded that openness is positively connected to excessive trading, and that these investors would make

the best investment portfolio decisions during the COVID-19 pandemic due to market conditions and daily fresh information releases. (Zhang, 2014); (Borgatta, 1964).

H1: Openness has a significant positive impact on retail investors' decision on portfolio allocation.

2.5.2 Conscientiousness

Conscientiousness narrates a persons' ability to synchronize their impulse control to engage a goal-driven behaviour (Grohol,2019). Conscientiousness people are considered competence, dutifulness, organized, achievement striving, self-discipline, and deliberation, whereas non-conscientiousness people are considered unenthusiastic in goal-driven behaviour and pleasure-seeking (Costa, 2010).

Some research has found a link between conscientiousness and investment decision-making (Priyadharshini D. S., 2020), whereas others have found no such link. People that are conscientious are very attentive, confident, and have very clear investment goals, according to (Pak, 2015); (Zhang, 2014). As a result, they do not invest excessively in a single investment. These individuals make decisions based on sufficient information and experience, and they manage their temptation to invest when stocks are high and sell when stocks are low (Camgoz et al., 2011). As a result, H2 was created to investigate the impact of conscientiousness on decision-making in the setting of the COVID-19 pandemic.

H2 : Conscientiousness has a significant positive impact on retail investors' decision on portfolio allocation.

2.5.3 Extraversion

Extraversion people are positive thinkers and seeks interaction with environment. Extraversion people are considered sociable, excitement seeking, enjoy being in centre of attraction and outgoing, but lack in critical analysis because overly focused on external events. People who are not extraversion prefers solitude, reflective, reserved, shy, and prefer to be alone, but not necessarily suffer from social anxiety or unhappy (Costa, 2010).

(Durand R. N., 2008) shown that people with the extraversion characteristic make fair investing judgments because their social nature allows them to receive adequate information on the market environment. As a result, this research hypothesised that extraversion investors are emotionally stable and seek assistance on decision-making processes, making them more attuned to investment information and, as a result, making appropriate portfolio allocation decisions during the global health crisis.

H3 : Extraversion has a significant positive impact on retail investors' decision on portfolio allocation.

2.5.4 Agreeableness

Agreeableness trait refers to how a person treat others. People who falls under Agreeableness trait are sympathetic and willing to help others who are in need,

and believe that others will do the same. They are straightforward, trustworthy, compliance, modesty, and empathy. Contrast to that, people who do not have Agreeableness trait are sceptical, demanding, belittle others, stubborn, unsympathetic, show-off and competitive rather than cooperative (Costa, 2010).

Numerous studies states that Agreeableness investors tend to invest more compared to investors who don't fall under this category ((Durand R. N., 2013); (Zhang, 2014); (Tauni M. F., 2015). However, they find it difficult to make their own decisions and follow others that lead to herding behaviour. A most recent study (Chang, 2020) and (Kizys, 2021) highlighted significant herding behaviour in investment allocation during COVID-19 pandemic. Therefore, this hypothesis was developed to study if Agreeableness traits engage investors to make the right decision on portfolio allocation in the global health crisis.

H4 : Agreeableness has a significant positive impact on retail investors' decision on portfolio allocation.

2.5.5 Neuroticism

Individuals with neuroticism are emotionally unstable. People with the neuroticism trait are illogical, fragile, anxious, and have significant mood swings. They are more likely to experience unpleasant emotions like rage and fear. People who lack this feature, on the other hand, are more emotionally stable, confident, and capable of facing challenges and hardship without becoming agitated (Costa, 2010). Neuroticism has a negative impact on

decision-making, according to (Priyadharshini D. S., 2020). Investors with the Neuroticism attribute invest less, according to (Durand R. N., 2013). Many researchers, on the other hand, disagreed. Investors with high levels of neuroticism demonstrate intense emotion, impulsive behaviour, and a proclivity to invest more, especially when they receive investing advice from financial consultants ((Durand R. N., 2008); (Tauni M. F., 2015); (Tauni M. F., 2017) and (Zhang, 2014). As a result, the goal of this study was to see if neuroticism influenced their portfolio allocation decisions during the COVID-19 epidemic. They invest more when they receive investing advice from financial consultants (Durand R. N., 2008); (Tauni M. F., 2015) & (Tauni M. F., 2017); (Zhang, 2014).

H5: Neuroticism has a significant negative impact on retail investors' decision on portfolio allocation.

2.5.6 Mediator (COVID-19)

Few researches on investment behaviour in the context of COVID-19 have been conducted in the recent two years, and it has been discovered that there is a change in investment choice during COVID-19. In India, (Arpita Gurbaxani, 2021) discovered a 43 percent drop in SIP investment. Investors begin reallocating their portfolio during COVID-19, according to (Himanshu, Ritika, Mushir, & Suryavanshi., 2020). As a result, COVID-19 is thought to mediate the causal relationship between the 5 Big Behavioural Finance traits and investors' decision on portfolio allocation.

H6 : COVID-19 mediates the outcome of the cause-and-effect relationship between the 5 Big Behavioural Finance factors and decision on portfolio allocation.

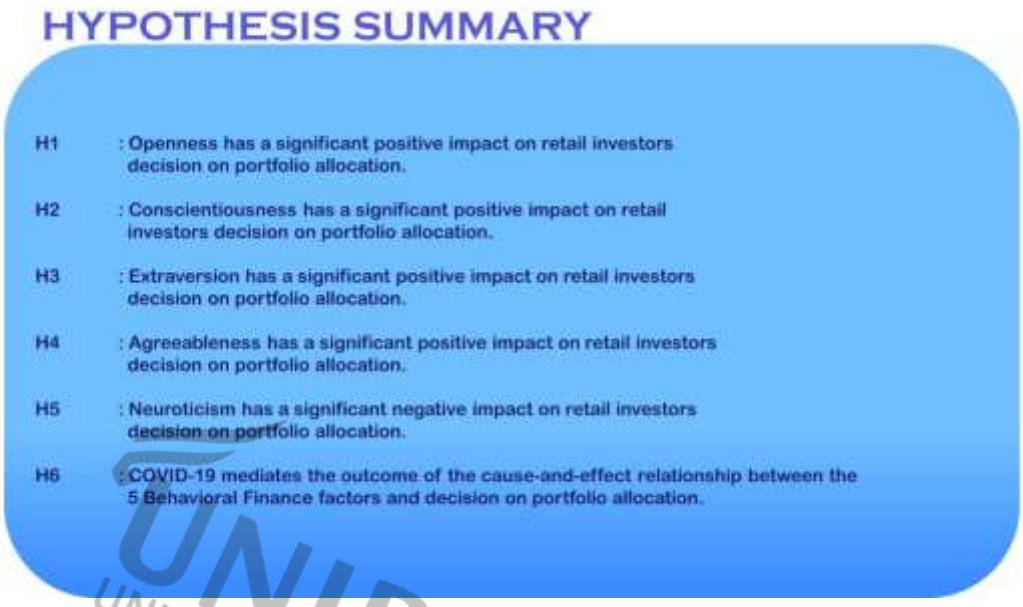


Table 6: Hypothesis Summary. Source: Author

2.7 Summary of Chapter 2

The relationship between behavioural finance and investment, personality traits and investment, the mediating impact of COVID-19 pandemic on investment, and choice of investment were further clarified in this section through literature review of previous studies. Based on the previous studies, it is hypothesized that the Big 5 Behavioural Finance traits variables have a significant positive or negative effect on retail investors decision-making process, and the effect is mediated by COVID-19 pandemic. Apart from that, detail explanations on related theories, the influence of the extra ordinary global pandemic and its' effect on Malaysian economic growth, and the choice of portfolio avenues

chosen for this study have been elaborated for a better understanding in this section.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction

Various psychological biases have been identified in behavioural finance literature, and each of it has an implication on retail investors decision-making process. Table 7 presents the 5 big personality traits analysed in this study.

Table 1. Big-Five Personality Traits: Alternative Labels and Salient Characteristics		
Personality Traits	Alternative Labels (Witt 2002)	Salient Characteristics
Agreeableness	Friendly compliance, social adaptability, likability	Achieving social harmony, compliance, altruistic, sympathetic, helpful, self-sacrifice
Conscientiousness	Will to achieve, conformity, prudence	Orderly, achievement oriented, reliable, hardworking, determined, self-disciplined
Extroversion	Sociability, surgency, confident self-expression	Social, energetic, 'life of the party', gratification seeking , assertive, active, bold, adventurous
Neuroticism	Emotional stability, emotional control, adjustment, ego strength	Emotionally reactive, anger, anxiety, depression, vulnerability, self-conscious
Openness to Experience	Intellect, culture, intellectance, autonomy, imagination	Curious, appreciation for ideas, creativity, sophistication

TABLE 7: BIG PERSONALITY TRAITS. SOURCE: SEMANTIC SCHOLAR

To help readers comprehend the techniques used to obtain information, Chapter 3 provides a summary of the procedures. The research method employed in this study is based on the research "Onion" by (Saunders, 2009). When conducting systematic research, the research onion model summarises the important questions that researchers must address. As shown in figure 3.1, it starts with research philosophy, then carries on to research approaches, research types, research strategies, research choices, time horizons, data collection techniques, and finally study analysis.

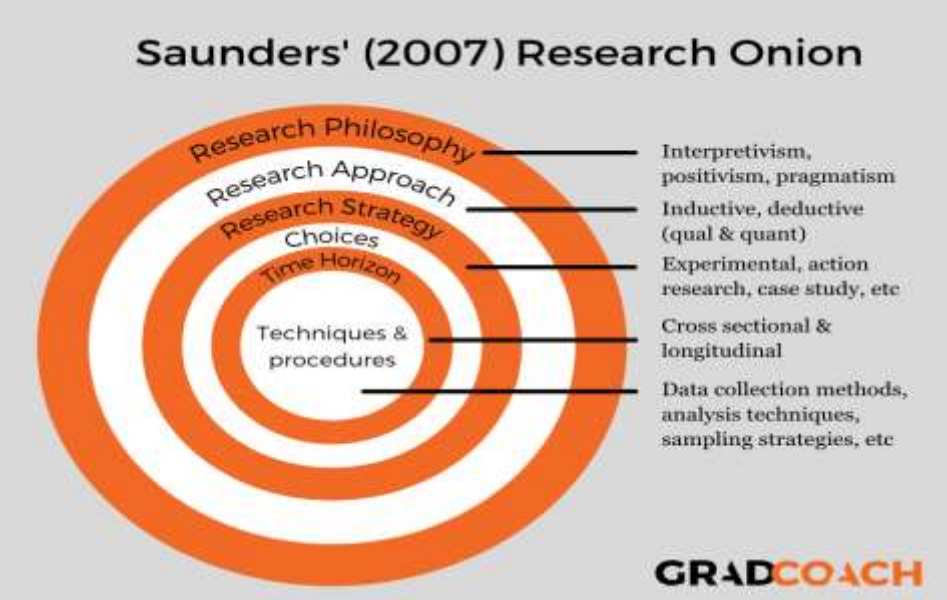


FIGURE 3. 1: THE "RESEARCH ONION" MODEL SOURCE: SAUNDERS,LEWIS&THORMILL (2009)

3.2 Research Philosophy

A research philosophy is a set of beliefs about how evidence about a situation should be gathered, analysed, and applied. The research philosophy outlined by (Blumberg, 2005) helps to illuminate the research design, research approach, data collecting, and analysis. According to this approach, inquiry is founded on theory and observation, and philosophy is explored from three perspectives: ontology, epistemology, and axiology. Ontology and epistemology are used in this study because ontology is concerned with the authenticity of information and is a "study of being," whereas epistemology is concerned with how information may be received and its validity (Collis, 2009).

3.2.1 Ontological Assumption

This research adopts an objectivist approach to ontological consideration. According to objectivism, social reality exists outside of the brains of the researchers and is thus unaffected by their views. This research adopts an objectivist approach to ontological consideration. Furthermore, social phenomena and their meanings exist even when social actors are not involved (Sarantakos, Social Research., 1998); (Bryman, 2007). Objectivism is a better fit for this study than constructionism because the goal is to discover how behavioural finance qualities impact investors' portfolio allocation decision, which are thought to be outside of the researcher's thinking and external to the researcher. Because constructionism or subjectivism maintains that social entities are constructed and malleable, it is critical to explore the subjective meanings that motivate actors in order to explain their actions and procedures (Saunders, 2009). In this study, all of the factors influencing investors' decisions are viewed as unique and existing "out there," with the goal of investigating them.

3.2.2 Epistemology assumption

The nature of knowledge, as well as how it connects to concepts like belief, truth, and justification, is the focus of epistemological assumption, also known as theory of knowledge. Figure 3.2.

depicts the epistemological propositions. In terms of epistemology philosophy, this study favours positivism because it focuses on identifying the behavioural factors that influence investors' decision-making process rather than attempting to explain and understand the implications of such decisions. It synthesises the general rule in order to generalise for the entire population.

In fact, epistemology represents the method to be used and the rules that should guide the study of reality, with two opposing positions: positivism and interpretivism. Positivism is a term taken from natural science that refers to the use of natural science approaches to investigate social reality (Bryman, 2007). Positivism emphasises that reality exists objectively out there as a natural science approach (Blumberg, 2005); (Sarantakos, Social Research., 1998). The purpose of positivism is to develop general laws for predicting behaviour (Fisher, 2010), which is in line with the objectives of understanding and forecasting investor behaviour.

For all of the reasons stated above, positivism is preferred in this investigation. Because a self-completion questionnaire with structured questions is employed, the research is conducted in a highly neutral manner. The respondents have no effect on the researcher, and the researcher has no effect on the respondents. All assumptions and hypotheses, as well as the

format of the questionnaire questions, are defined based on current theories and research findings. The hypothesis is then tested using survey data, which is in keeping with positivism's recommendations.

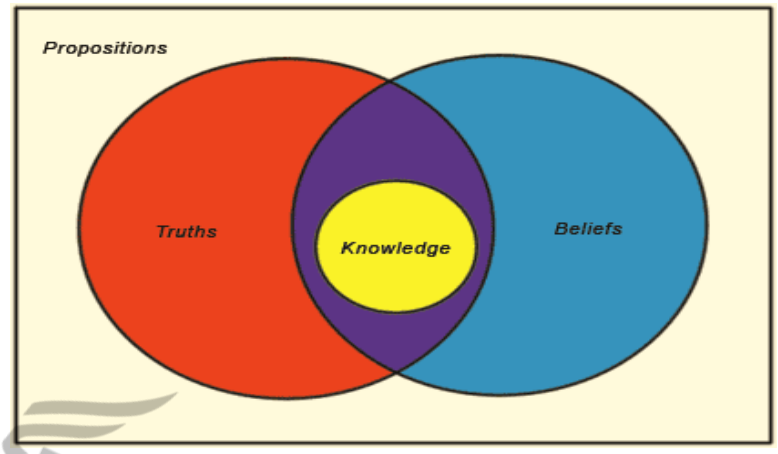


FIGURE 3. 2: EPISTEMOLOGY'S PROPOSITIONS. SOURCE: CREATION WIKI

3.3 Research Approach

In general, one of two procedures are used to create and test theory: induction or deduction. Researchers that use the deductive method start with a well-established theory and logical connections between concepts, then move on to empirical evidence. Inductive research, on the other hand, builds theory from empirical reality observations, and researchers infer the findings' implications for the theory that sparked the investigation (Ghauri, 2010); (Saunders, 2009); (Blumberg, 2005).

Rather than inferring and cresting theory, the main purpose of this study is to look into behavioural qualities that influence investor decision-making that are already "out there." Deductive theory looks to be the most suitable option. The study begins with an overview of behavioural finance in general, personality

traits in particular, COVID-19's impact on investment, and portfolio selection, in order to gain a theoretical and conceptual foundation as well as empirical findings from previous studies, from which the research model and hypothesis are developed. After that, the questionnaire questions are written.

This procedure is in line with the deductive approach, which emphasises that researchers may have a good understanding of how the world works and can use this approach to test their theories against “hard evidence” (Neuman, 2003). Data gathering and analysis are used to test the hypothesis to determine the discrepancies, researcher compare the research findings to current ideas. Deductive reasoning is commonly connected with quantitative research, which entails gathering quantitative or quantifiable data and analysing statistical methods; nevertheless, deductive reasoning is also compatible with quantitative research strategies. Inductive reasoning, on the other hand, is the process of deducting a general explanation from a specific phenomenon. Inductive research is used to develop theories and is usually related with qualitative procedures that use interpretative methods (Bryman, 2007).

Due to the divergence of these two approaches, it is preferable to determine which approach is appropriate, as it is frequently impossible to draw a clear line between the two, resulting in a hybrid of the two known as abduction. Figure 3.3 shows the distinctions between the steps of the deductive and inductive processes.

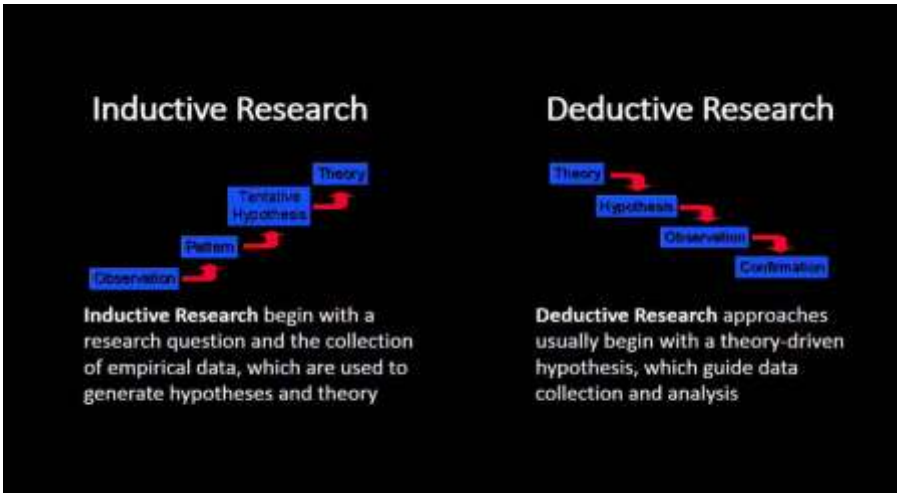


FIGURE 3. 3: INDUCTIVE AND DEDUCTIVE PROCESS. SOURCE: DAVID RUSSELL, 2015

3.4 Research Type

The answers to the research questions can be exploratory, explanatory (causal), or descriptive (Saunders, 2009). (Robson, 2002) describes exploratory research as a good way to figure out what's going on and gain fresh ideas. It can be used to clarify an ambiguous problem (Blumberg, 2005). As a result, this form of study is the greatest fit the purpose of investigating the behavioural finance traits influencing investors' decision in Malaysia during the COVID-19 pandemic, which appears to have been studied by only a few previous researchers.

Aside from exploratory research, there are two more sorts of studies: descriptive and explanatory. Descriptive research focuses on determining "who, what, where, when, and how much," whereas causal research focuses on the variables' cause and effect. This study can be characterised as both exploratory and explanatory or causal-comparative research since it explains investor behaviour, whereas descriptive research is not applicable.

This type of research is often attempt to establish cause-effect relationship among the variables and it is often identified with questionnaire survey, a method of collection data common in many social science fields. The main advantage of causal-comparative studies is that it permits to study cause-and-effect relationship under conditions where manipulation is impossible. It allows investigation on a number of variables that cannot be studied experimentally. Furthermore, in causal research, data are collected only once and multiple outcomes can be examined. The comparative analysis in this study is made easier by grouping investors by their personality trait, and then examining the group for similarities and variations in decision-making processes.

3.5 Research Strategy

The direction in which the research will be carried out might be defined as the research strategy. Depending on the level of current knowledge, available resources, and philosophical grounds, researchers can adopt a quantitative or qualitative technique.

This research takes a mixed-methods approach, with a focus on quantitative research. Quantitative research, which is often linked with objectivism, positivism, and a deductive approach (Collis, 2009), is entirely compatible with the ontological and epistemological perspectives discussed earlier. Furthermore, quantitative is frequently associated with the study of behaviours rather than meanings, which is relevant to the topic of behavioural finance. In addition, the fundamental purpose is to explore the characteristics that

influence investors' decisions, which can only be done effectively through quantitative research, which is designed to discover and define factors in order to establish a relationship between them (Garner, 2009).

In order to acquire accurate results, the questionnaire is utilised to choose a reliable and broad sample size. Furthermore, utilising a quantitative strategy allows us to obtain the results using statistical methods, which is especially useful when working with computers. The great majority of high-quality studies published in top journals used quantitative methods such as advanced statistical models and computer-assisted data processing (Sarantakos, Social Research., 1998).

3.6 Choice of Theory

The term “literature” refers to all data sources related to a specific topic. A literature search is defined as a systematic method for identifying existing knowledge on a certain subject (Collis, 2009). The literature is critical in giving researchers with the theoretical and conceptual framework of the study, which allows them to support their research questions (Bryman, 2007). Researchers can choose the theories that are most relevant to their research area by reviewing the existing literature, which includes consensus, controversies, inconsistent findings, and unanswered questions, so that they do not have to reinvent the wheel (Collis, 2009). The more applicable theories are chosen, the better the research will be.

The key sources of knowledge are scientific journals and books on behavioural finance, personality attributes, and methodology. Researcher use academic search engines like Google Scholar, websites of national and international professional bodies, and other reliable sources to locate scientific material. This study follows a systematic framework for doing a literature review, which includes a list of sources, the names of the authors, the technique, the sample, the context, the variables, the research questions, and the research findings. Table 8 is an example of the literature review template used for this study.

NO	Author	Method	Sample	Context	Variables/Factors/ Dimensions/Constructs	Research Problem	Research Findings
1	Akter and shah (2015)	Quantitative	Bank employees	Bank, Pakistan	Training, abilities, employee performance	1.1 how training needs establish, how effective the training methods of banks and their influence of employee performance	factors of training have positive impact on employee performance of banks of Karach
2	Newz (2019)						
3							
4							
5							
6							
7							

TABLE 8: LITERATURE REVIEW TEMPLATE. SOURCE: ASSIT. PROF. DR. FARHANA TAHMIDA NEWAZ

The most relevant literatures are found using a variety of key words. To strait the results, single key words and mixed key words are used. Finally, only reliable literature that is related to this topic is picked. The method then moves on to categories scientific papers, reviewing the abstracts of the relevant articles, and gathering information, starting with the most recently released ones. The important key words are listed in table 9 below.

KEY WORDS
BEHAVIOURAL FINANCE
PERSONALITY TRAITS
INVESTMENT AVENUES
INVESTMENT PORTFOLIO
COVID-19 PANDEMIC
MALAYSIA ECONOMY
FINANCIAL THEORY
FACTORS INFLUENCING INVESTORS BEHAVIOUR

TABLE 9: KEY WORDS FOR FINDING LITERATURE REVIEW. SOURCE: AUTHOR

3.7 Research Design

The "blueprint" of a research is the research design or style of research that allows the researcher to come up with solutions to problems and guides the researcher through the many stages of the research. The term "research design" is used to describe the process of creating a study and to show how a specific research design aids in the organisation of data collection, analysis, and interpretation (Franfort-Nachmias & Nachmias., 2008)

The design study established a set of phenomena that lead to a systematic research. The figure 3.4 illustrates the stages in research design studies.

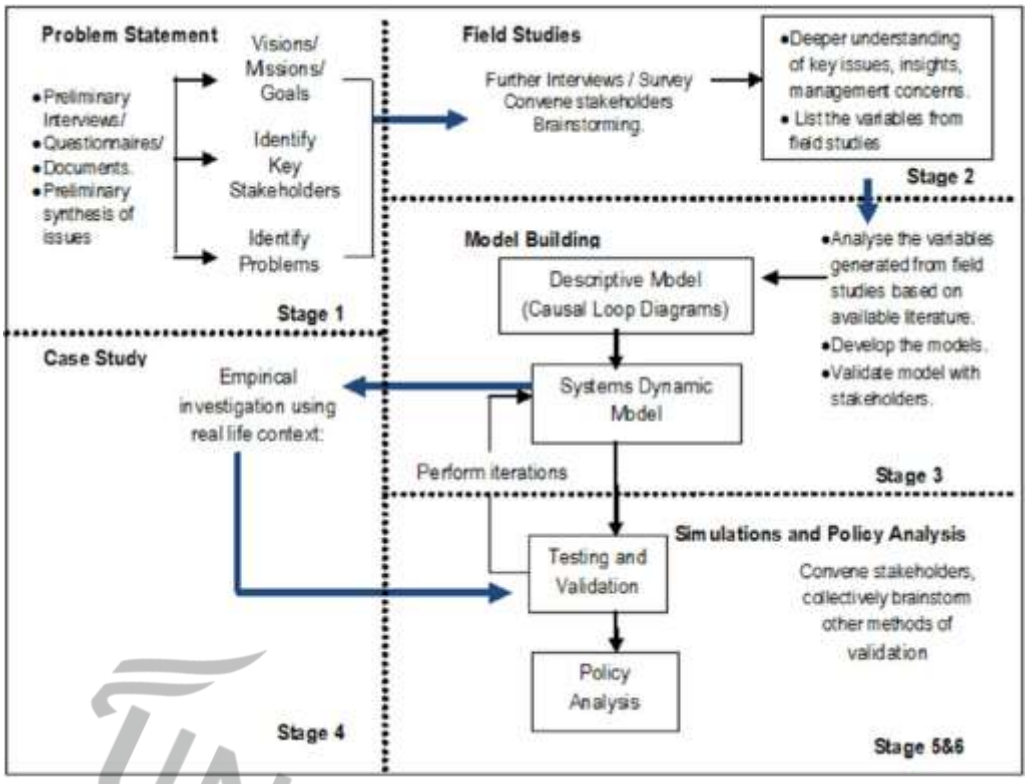


FIGURE 3. 4: RESEARCH DESIGN STUDY STAGES

Once the problem has been identified, the research objectives will be advanced in future study. The scope, significance, and limitations of the study are then decided to aid the process, as shown in figure 3.4. The research model is defined at this point in order to acquire the necessary data and to test the hypothesis of interest. The methods for gathering quantitative data, as well as the specification of the information required, measuring and scaling procedures, questionnaires, sampling protocols, and data analysis plans, were all determined.

The following objectives are covered by the sample selection process: (1) the study; (2) identifying the source of information; (3) targeted respondent; (4) sample size determination; (5) define survey; (6) ensuring data collection; (7)

define the hypothesis and statistical data; (8) testing procedures. It would all be general conclusions, summaries, and study recommendations.

3.8 Time Horizon

Cross-sectional designs are more appropriate for analysing the common behaviours of individual investors than case studies, experiments, or longitudinal techniques. The use of an experimental design to study the relationship between variables is common. Experiments are frequently used to research and explain a subject. In experimental research, two groups should be created: one for the experimental group and one for the control group, so that the differences between the two groups may be compared (Saunders, 2009). A longitudinal design is used to assess changes and provide accidental influences across time, while a case study suggests the investigation of a single case (Collis, 2009). Because this study necessitates the analysis of a large sample size at one time, a cross-sectional approach was used.

Data from several instances is collected and assessed at the same time when a cross-sectional approach is employed. Following that, the patent of association is examined using the quantitative or quantifiable information that has been gathered (Saunders, 2009). This aspect is crucial to this study for two reasons: first, it fits the nature of the study, which is to explain a general trend in investor behavioural patterns rather than a specific example, and second, the data was obtained in one go rather than in stages.

Secondary data from prior studies is also used to support this research. The secondary data was gathered through a study of empirical studies in order to identify personality qualities that influence portfolio allocation decisions, such as Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Through a thorough study of periodicals, information on financial theory, portfolio selection, and the COVID-19 epidemic was also gathered.

3.9 Study of Population and Sampling Procedures

Because the purpose of the study is to look at the behavioural characteristics of retail investors, a large sample size is required. The larger the sample size, the more representative it can be (Saunders, 2009). The results will be more representative if the sample size is bigger. As a result, the more trustworthy result is (Saunders, 2009). The sample size, however, is dictated by the researchers' available resources, which include time, money, and human resources (Saunders, 2009). To determine the appropriate sample size, three criteria must usually be specified: the precision, the level of confidence in the risk, and the degree of variability in the attributes being measured (Michener, 1976). The sample for this study was taken using Taro Yamane's (Yamane., 1973.) formula with a 95% confident level. According to (Hair, 1998), and Tatham (1988), in order for statistical methods of data analysis to fit, quantitative research should comprise at least 100 respondents. As a result, based on the Taro Yamane table, 300 questionnaires are distributed to individual investors in the hope of receiving a minimum of 121 respondents (±7% sample size).

Taro Yamane Table 1

Table 1. Sample size for ±5%, ±7% and ±10% Precision Levels Where Confidence Level is 95% and P=.5.			
Size of	**Sample Size (n) for Precision (E) of:**		
Population	**±5%**	**±7%**	**±10%**
100	81	67	51
125	96	78	56
150	110	86	61
175	122	94	64
200	134	101	67
225	144	107	70
250	154	112	72
275	163	117	74
300	172	121	76
325	180	125	77
350	187	129	78
375	194	132	80
400	201	135	81
425	207	138	82
450	212	140	82

TABLE 10: TARO YAMANE SAMPLE SIZE DETERMINATION SOURCE: YAMANE, 1973

Stratified random sampling is used to distribute questionnaires to respondents. When sending to friends and family, convenience sampling was initially chosen since it is the most effective strategy for generating the highest response rate. It would also assist in the saving of both money and time. Despite the fact that the goal is to learn about the financial investment decisions of the entire population of retail investors, convenience sampling is a type of non-probability sampling that can't provide a representative sample, so the results can't be generalised to the entire population (Bryman, 2007). In contrast, stratified random sampling allows us to split the population according to a criterion (in this case, study location), then select a random or systematic sample from each stratum (Bryman, 2007). Stratified sampling guarantees a uniform distribution of the sample throughout the population (Bryman, 2007). Table 11 shows the number of questionnaires given to each state based on the demographics of the research location.

NO	STATES IN MALAYSIA	NUMBER OF QUESTIONNAIRES SENT
1	PENANG	60
2	PERAK	60
3	KUALA LUMPUR	60
4	SELANGOR	60
5	NEGERI SEMBILAN	60

TABLE 11:QUESTIONNAIRE DISTRIBUTION LOCATION. SOURCE: AUTHOR

3.10 Data Collection Method

The self-administered questionnaire appears to be one of the most common quantitative research tools. A self-administered questionnaire allows respondents to fill out the form themselves and answer questions. This method was adopted for a variety of reasons. The first is that a questionnaire is the best option for gathering standardised data that is easy to process and analyse because the study questions are carefully specified. Furthermore, because no interviewers are present during the completion of the questionnaires, the results may not be influenced by them (Bryman, 2007).

It is also less expensive than other options and saves a significant amount of time by allowing hundreds of surveys to be sent out in a single batch (Bryman, 2007). Furthermore, because investors may not have a lot of time for interviews, questionnaires may make them feel more at ease because they can complete them whenever they have free time. Questionnaires are also more convenient for respondents if they need to provide sensitive information, or, to put it another way, they are more honest than interviews (Bryman, 2007).

In summary, the data for this study comes from questionnaires sent to retail investors via online platform, such as Email, WhatsApp, and Microsoft platform. The survey questionnaire is sent to an email address list, as well as WhatsApp numbers list, that has been compiled. The results of data analysis provide a fundamental grasp of the behavioural qualities that influence investors' decision-making process by guiding them through the data gathered through surveys.

3.11 Operationalisation and Measurement

Operationalisation, according to (Jonker, 2010), is the process of turning a theoretical construct into a concept that can be "seen" in empirical reality. According to (Sarantakos, Social Research., 1993), operationalisation is the process of converting concepts into actual measurements or quantifying variables in order to track their occurrence, strength, and frequency.

In Chapter 2, the preceding conceptual framework (Figure 2.16) is hypothetical and must be empirically tested. More research is needed in this area to determine the feasibility of the proposed conceptual model using an exploratory and explanatory research design, as well as to empirically test the model by answering the research question posed in this paper to identify the most relevant variables that actually influence portfolio allocation decision and, as a result, investment behaviour.

In this study, three types of variables; Independent Variables, Mediating Variables, and Dependant Variable, are used to study the hypothesis outcome.

3.11.1 Independent Variables

a) Openness

b) Conscientiousness

c) Extraversion

d) Agreeableness

e) Neuroticism

3.11.2 Mediating Variable

a) COVID-19

3.11.3 Dependent Variable

a) Retail investors' decision on portfolio allocation

Personal information, Big 5 behavioural traits assessment, investment decisions information, and COVID-19 impact on investment assessment are the four sections of the questionnaire. In the personal information area, nominal and ordinal measurements were used. Both categorising and rating order of items or observations necessitate ordinal scales. Objects are classified using nominal scales, but both purposes require ordinal scales (Ghauri, 2010). Table 12 shows the different types of measurements that were used for this part.

PERSONAL INFORMATION	QUESTIONS	TYPES OF MEASUREMENT
Classifying: Gender, State, Marital, Academic, Investing Habit, Investment range & Investment rates	1,2,4,5,8,10,11	Nominal scale
Classifying & ranking order of: Age, Years of working, Income, & Years of investing	3,6,7,9	Ordinal scale

TABLE 12: TYPES OF MEASUREMENT FOR PERSONAL INFORMATION. SOURCE: AUTHOR

This research is based on behavioural finance theories such as Modern Portfolio Theory, Efficient Market Hypothesis, Prospect Theory, and 5 Basic Personality Traits Theory, about the effects of behavioural factors on investors' decision-making, as mentioned by (Waweru, 2008) and many other authors cited in the literature review, to synthesise a set of questions about behavioural traits influencing investment decisions and investment choices during COVID-19 epidemic. Retail investors are asked to evaluate the degrees of agreements of their personality trait, with the impact of behavioural factors on their investment decisions as well with statements of investing attitude during COVID-19 epidemic using 6-point Likert scales, which are rating scales widely used for gauging respondents' opinions and attitudes, (Fisher, 2010).

The six points on the scale, which range from 1 to 6, are extremely disagree, highly disagree, somewhat disagree, somewhat agree, highly agree, and extremely agree. The measurements and questions for these components are listed in Table 13.

Because respondents cannot easily identify the means of the 6-point scale in the questionnaire, as they can with the 5-point or 7-point scales, the 6-point Likert measurements were used in this study to limit respondents' bias evaluation.

GROUPS	DIMENSIONS	QUESTIONS	MEASUREMENTS
BEHAVIOURAL TRAITS	OPENNESS	22 - 26	6-point Likert
	CONSCIENTIOUSNESS	32 - 36	6-point Likert
	EXTRAVERSION	12 - 16	6-point Likert
	AGREEABLENESS	27 - 31	6-point Likert
	NEUROTICISM	17 - 21	6-point Likert
INVESTMENT DECISION	Return rate & satisfaction of investment decisions	37 - 47	6-point Likert
COVID-19 INFLUENCES	Investment decision during COVID-19	48 - 54	6-point Likert

TABLE 13:TYPES OF MEASUREMENTS. SOURCE: AUTHOR

3.12 List of all the questions under the variables studied.

Extraversion Traits

1. I see myself as someone who warms up quickly to others.
2. I see myself as someone who is always on the go.
3. I see myself as someone who seeks quiet.
4. I see myself as someone who is assertive and take charge.
5. I see myself as someone who hold back from expressing my opinion.

Neuroticism

1. I see myself as someone who often feel blue.

2. I see myself as someone who is not easily bothered by things.
3. I see myself as someone who becomes stressed out easily.
4. I see myself as someone who comes overwhelmed by emotion.
5. I see myself as someone who does things I regret later.

Openness

1. I see myself as someone who have a good imagination.
2. I see myself as someone who is interested in many things.
3. I see myself as someone who tries to understand myself.
4. I see myself as someone who prefers to stick with things that I know.
5. I see myself as someone who is interested in abstract ideas.

Agreeableness

1. I see myself as someone who trust others.
2. I see myself as someone who is easy to satisfy.
3. I see myself as someone who thinks highly of myself.
4. I see myself as someone who puts people under pressure.
5. I see myself as someone who values cooperation over competition.

Conscientiousness

1. I see myself as someone who completes task successfully.
2. I see myself as someone who postpone decisions.
3. I see myself as someone who works hard.
4. I see myself as someone who see the consequences of things.
5. I see myself as someone who put things back in their proper place.

Dependent Variable.

1. You believe your knowledge can outperform the market.
2. You rely on your previous experience for your next investment.
3. You forecast the changes in investment avenues based on recent prices.
4. You prefer low risk investment (saving/insurance).
5. You prefer moderate risk investment (balance mutual fund).
6. You prefer high risk investment (stock/share).
7. You consider friends and relatives information as the reliable reference to choose your investment.
8. You are most risk seeking after a prior gain.
9. You are more risk averse after a prior loss.
10. You feel more sorrow holding losing investment than selling winning investment too soon.
11. You tend to treat each element of your investment portfolio separately.

Mediator Variable

1. You still give preference to investment during COVID-19.
2. You prefer low risk investment (Saving/insurance) during COVID-19.
3. You prefer moderate risk investment (balance mutual funds) during COVID-19.
4. You prefer high risk investment (stock/share) during COVID-19.
5. Rate the satisfaction with the return generated by your investment option during COVID-19.

a) Share

b) Cash

c) Insurance

d) Balance Mutual Funds

The IV questions (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) was adapted from the Myer-Briggs Type Theory. Carl G. Jung first proposed this psychological type theory in the 1920s. Isabel Briggs Myers created the MBTI instrument in the 1940s, and the original study was conducted in the 1940s and 1950s. (Vaishnavi Rathinasamy, 2020) utilised these questions in her study, "Impact of Big Five Personality Traits on Investment Decisions."

The DV and mediator questions, on the other hand, were taken from (Subash, Role of Behavioural Finance in Portfolio Investment, 2011/12) and (Le Phuoc Luong, 2011), "Behavioural Factors Influencing Individual Investors' Decision-Making and Performance."

After the pilot test, the questions on the surveys were changed. Unrelated questions have been eliminated, and some have been relocated to the demography section. The finalised questionnaire can be found in Appendix A.

3.13 Data Analysis Techniques

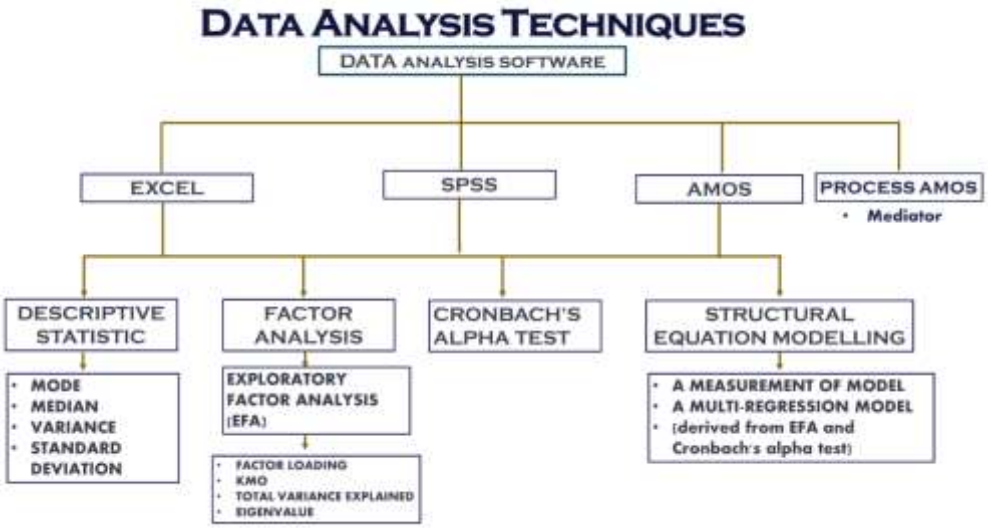


FIGURE 3. 5: DATA ANALYSIS TECHNIQUE USED FOR THIS STUDY. SOURCE: AUTHOR

The summary of data analysis technique for this study is shown in figure 3.5 above. The data is handled and evaluated using Excel, SPSS, and AMOS software. The data is initially cleaned by removing any low-quality questionnaires, such as those with too many missing values or bias scores. Pilot test on 31 respondents were carried out before the actual analysis. Some of the statistical methodologies used for the data to achieve the research objectives include descriptive statistics, factor analysis, Cronbach's Alpha test, multiple regression, and structural equation modelling (SEM).

Descriptive statistics (mode, median, variance, and standard deviation) are used to characterise respondents' personal information. Descriptive statistics are also used to describe the impact of behavioural attributes on portfolio allocation decisions made by investors.

Factor Analysis: A series of multivariable statistical processes aiming at discovering the essential structure of a data matrix is referred to as factor analysis. It facilitates the investigation of the structure of correlations between several variables by establishing a set of fundamental features known as factors (Ghauri, 2010). Questionnaire variables are divided into homogeneous domains that show similar traits in component analysis (O'Brien, 2007). The two basic approaches of factor analysis are EFA (exploratory factor analysis) and CFA (confirmatory factor analysis). EFA is a sort of factor analysis that is more commonly used to discover the underlying structure of a large number of variables. CFA, on the other hand, is used to verify that the number of components retrieved by the analytical method and those generated by pre-existing theories are compatible (Liua, 2009). In this study, EFA is utilised to look at the relationships between the behavioural finance and portfolio allocation variables (question 37 - 54) in the questionnaire. EFA is used to reduce the number of questionnaire items that do not meet the criteria for the analysis (O'Brien, 2007). EFA is used to evaluate hypotheses H1 to H5 from the chapter 2 conceptual framework in this situation.

Factor loadings, KMO, total variance explained, and Eigenvalue are the exploratory factor analysis criteria employed in this work. The correlations between each item and the factor to which it belongs are known as factor loadings. The fact that item loadings on a factor are more than 0.5 (with a sample size of 100) indicates that EFA is relevant to the data under consideration (Hair, 1998). The Kaiser-Meyer Olkin Measure of Sampling Adequacy (KMO) determines if EFA is appropriate for the data collected.

The KMO should be between 0.5 and 1.0 (significant level less than 0.005) to ensure that factor analysis is appropriate for the data (Ali, 2006). The number of maintained factors is determined by the overall variance explained, with the last component contributing for only a small portion of the explained variance. According to (Hair, 1998), more than half of the variance is explained. The Eigenvalue of a factor is defined as the amount of variance in all variables explained by that factor. Because an eigenvalue of less than 1 indicates that the component explains less information than a single variable, the eigenvalue should be greater than 1. (Leech, 2005). The EFA is carried out using SPSS software.

The Cronbach's Alpha Test is used to examine the internal consistency and reliability of continuous variable measurements (for example, 6-point Likert measurements). It provides a statistical summary of the consistency of a sample of responders across a set of questions or parameters. To put it another way, it can help determine how consistent participants' reactions to measures are (Helms, 2006). In social and behavioural sciences, Cronbach's alpha is a regularly used matrices of dependability (Liu Y. W., 2010). As a result, given the questionnaire employs 6-point Likert scales and the study is focused on behavioural finance, the Cronbach's alpha is perfect for this study. In this study, Cronbach's alpha is used to analyse the consistency of the measurements contained in the factors that come from the factor analysis.

According to (Nunnally, Psychometric theory., 1978), the Cronbach's alpha analysis should be at least 0.7 to verify that the measurements are accurate. Many statisticians, on the other hand, believe that a Cronbach's alpha of higher than 0.6 is appropriate (Shelby, 2011). Furthermore, statisticians recommend that the adjusted item-total correlations be taken into consideration when utilising the Cronbach's alpha index. At least 0.3 should be found in the adjusted item-total correlations, which show the relationship between the total score for all other items and the correlation of variables or items designated (Shelby, 2011). Because Malaysian investors are unfamiliar with financial behaviour metrics, the acceptable Cronbach's alpha is 0.6 or higher, with an adjusted item-total correlation index of 0.3 or higher. Furthermore, the acceptable significant level of the F-test using Cronbach's alpha is not greater than 0.05. The Cronbach's alpha test is completed using SPSS software.

SEM (Structural Equation Modelling) is a technique that combines confirmatory factor analysis (CFA) and multiple regressions. SEM (Schreiber, 2006) examines the likelihood of latent variable correlations and is divided into two parts: (1) a measurement model (essentially the CFA) and (2) a structural model (the multi-regression model). In this study, SEM is used to confirm whether behavioural qualities (derived from EFA and Cronbach's alpha test) have an impact on individual investors' investing decisions, as well as to estimate the regression weights among them. In other words, SEM is utilised to test the hypotheses H1 through H6 in the research model described in Chapter 2.

With the help of the AMOS programme, SEM is carried out. A lot of indicators affect SEM's overall model fit. (Asberg, 2008) conclude that the model is appropriate when the squared error of approximation (RMSEA) is less than or equal to.10, the comparative fit index (CFI) is more than or equal to.90, and the parsimonious fit index (PFI) is greater than or equal to 0.60. A complete set of criteria for an acceptable SEM is stated in the table below, according to (Schreiber, 2006):

Indexes	Shorthand	General rule for acceptable fit
Absolute/predictive fit		
Chi-Square	$\chi 2$	Ratio of $\chi 2$ to df ≤ 2 or 3
Akaike information criterion	AIC	Smaller the better
Browne-Cudeck criterion	BCC	Smaller the better
Bayes information criterion	BIC	Smaller the better
Consistent AIC	CAIC	Smaller the better
Expected cross-validation index	ECVI	Smaller the better
Comparative fit		
Normed fit index	NFI	≥ 0.95 for acceptance
Incremental fit index	IFI	≥ 0.95 for acceptance
Tucker-Lewis index	TLI	≥ 0.95 for acceptance
Comparative fit index	CFI	≥ 0.95 for acceptance
Relative noncentrality fit index	RNI	≥ 0.95 similar to CFI
Parsimonious fit		
Parsimony-adjusted NFI	PNFI	Very sensitive to model size
Parsimony-adjusted CFI	PCFI	Sensitive to model size
Parsimony-adjusted GFI	PGFI	Closer to 1 the better
Other		
Goodness-of-fit index Adjusted GFI	GFI/AGFI	≥ 0.95
Root mean square residual	RMR	Smaller, the better
Standardized residual	SRMR	≤ 0.08
Weighted root mean residual	WRMR	<0.90
Root mean square error of approximation	RMSEA	<0.06 to 0.08 or below (0.1)

TABLE 14:CRITERIA FOR AN ACCEPTED SEM MODEL. SOURCE: SCHREIBER, ET AL.,2006)

The model fit of surveyed data is tested in this study following the criteria for an approved SEM (which are listed in table14). A synopsis of the data gathering and analysis technique is shown in figure 3.6.

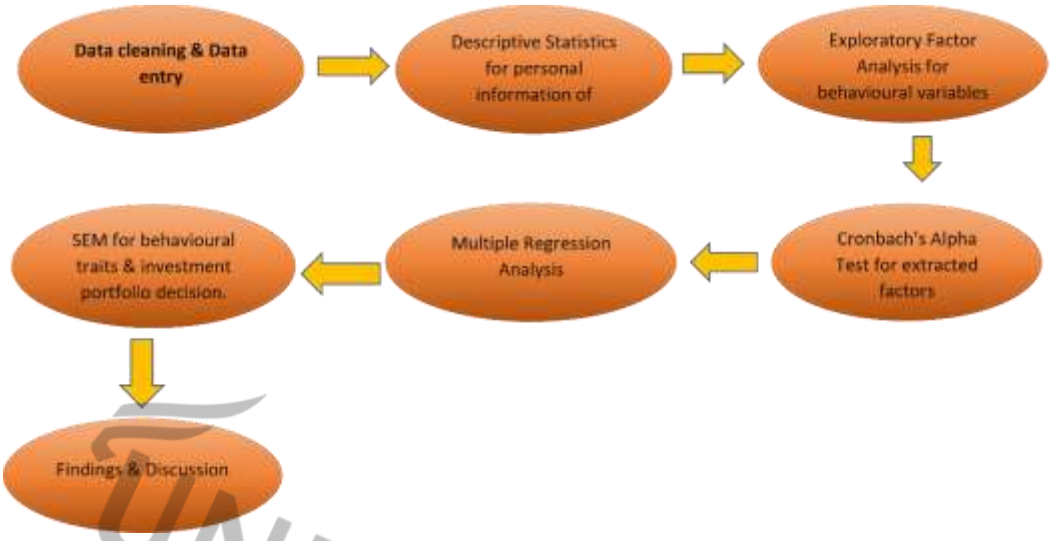


FIGURE 3. 6:THE PROCESS OF DATA ANALYSIS. SOURCE: AUTHOR

3.14 Ethical Considerations

Some of the ethical issues addressed in this study include informed consent, violation of privacy, and injury to individuals (Fisher, 2010); (Bryman, 2007); (Sarantakos, Social Research., 1998); (Blumberg, 2005); (Collis, 2009). More specifically, respondents may not be fully aware of the entire research process, resulting in "contaminated" conclusions (Fisher, 2010). Respondents in this study, on the other hand, are given all of the information they need to participate actively in the research, which is one of the features of so-called informed consent (Silverman, 2001). The surveys, in particular, have a cover page that provides the responders with enough information about the study. In

addition, respondents are given questions via an online platform, and they can choose whether or not to answer them.

Another ethical consideration is the precision with which data is collected, processed, and reported (Sarantakos, Social Research., 1998). In this study, data is collected and processed using methodical and scientific approaches that match the requirements set forth by famous methodology writers. The information is solely used for study and not for personal advantage. Survey questions are also used to achieve research goals. The report accurately reflects the data obtained, with no data being changed or generated in order to achieve the desired goals (Blumberg, 2005).

3.15 Pilot Test

The purpose of the pilot study was to acquaint researchers with the review process before the actual study. Salain (2002), conducted a pilot study in order to get input on the review tools utilised as well as make adjustments before the main review. After acquiring experience and receiving comments from a pilot study, quantitative research tools can be improved. On the other hand, in quantitative studies, improvements can be made using observation statistics in addition to input in the form of suggestions.

According to the researcher, a number of 30 to 50 responses is a realistic, optimal, and accepted number (acceptable). This approach is in line with (Connelly, 2008,) and (Treece, 1982), who suggest that the study's sample size be 10% of the total number of respondents.

Furthermore, (Isaac, 1980) and (Hill, 1998) advised a sample size of 10 to 30 respondents for the study. In this regard, experts estimate that a total of 30 to 50 responses were the most reasonable, based on the views and many more other viewpoints. According to (Cooper, 2011), the number of respondents who suit the study is 25 to 100 respondents, so the number of respondents in this study is appropriate. While (George A.Johanson, 2009) recommends that a study require a total of 30 respondents to establish whether the goal is to evaluate early or development scales (Ruhizan Mohd Yasin, 2015).

The pilot studies were conducted among friends and family members to assess the validity and consistency of each item and construct in the questionnaire that was created, as well as the degree of reliability of each item and construct. A total of 31 people was chosen at random to participate in the study. The data was analysed using factor analysis, reliability test, and multiple regression, using the Statistical Software Package for Social Sciences (SPSS).

3.15.1 Factor Analysis

According to Miller (1994), the test impact on each item is critical to the test seal structures and items included in the questionnaire, which include content constructs and study-relevant items. Any test validity that is done for review based on current instruments and constructs is appropriate to measure variables utilised in this respect. If the instrument can accurately measure, it has a high degree of validity

based on content, prediction validity, and concurrent validity. CFA approach has been adopted for pilot test in this study.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.257
Bartlett's Test of Sphericity	Approx. Chi-Square	487.791
	df	300
	Sig.	.000

TABLE 15: KMO AND BARTLETT'S TEST. SOURCE: SPSS

CFA and its applications are distinct from EFA, however the factor scores generated by CFA are comparable in that they can be used to identify ranking on a latent variable and employed in follow-up analysis. CFA approaches provide a number of advantages than EFA, including the ability to measure at the latent level, differentiate the error component from what is shared with a factor, use multiple fit indices, and design models with a lot more flexibility (Bollen, 1989). Furthermore, because this is simply a pilot test, the number of participants is considered small ,and the variable chosen for this study is the Big 5 personality traits, CFA was employed at the pilot test stage to confirm the comparability of the numbers of components recovered by the analysis procedure and those formed by pre-existing theories (Liua, 2009).

The descriptive, extraction, and rotation options were used in the factor analysis. The descriptive option selected univariate descriptive and initial solution for the statistic, and KMO and determinant for the correlation matrix. The principal component approach was chosen as

the analysis method for the correlation matrix utilising the fixed number of factor option, which was set to 5. Finally, the varimax at maximum iterations for convergence was set to 25 under the rotation option.

The significant level, according to the findings, is .000, which is lower than .005. This meant that the entire analysis was correct. The KMO, on the other hand, gives a value of .257, which is insufficient. However, if the number of respondents grows, there is a probability that factor loading will rise, improving the KMO value.

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Extra4:I see myself as someone who is assertive and take charge	-0.816				
Open2:I see myself as someone who does interested in many things	0.656				
Neuro5:I see myself as someone who does things I later regret	0.654				
Extra5:I see myself as someone who hold back from expressing my opinion	0.505				
Neuro1:I see myself as someone who often feel blue					
Agree4:I see myself as someone who puts people under pressure		0.776			
Open4:I see myself as someone who prefer to stick with things that I k now		0.771			
Agree1:I see myself as someone who trust others		0.628			
Cons1:I see myself as someone who completes task successfully		0.606			
Cons3:I see myself as someone who works hard		0.537			
Agree3:I see myself as someone who thinks highly of					
Extra1:I see myself as someone who warms up quickly			0.678		
Open1:I see myself as someone who does not have a good imagination			0.657		
Cons2:I see myself as someone who postpone			0.623		
Neuro3:I see myself as someone who becomes stressed out easily			0.614		
Neuro4:I see myself as someone who comes overwhelmed by emotion			-0.555		
Open5:I see myself as someone who is not interested in abstract ideas				0.739	
Extra3:I see myself as someone who seeks quiet				0.648	
Neuro2:I see myself as someone who is not easily bothered by things	0.551			0.563	
Agree2:I see myself as someone who is easy to satify				0.555	
Extra2:I see myself as someone who is always on the					
Agree5:I see myself as someone who values cooperation over competition					0.799
Cons5:I see myself as someone who often forget to put things back in their proper place					0.676
Cons4:I see myself as someone who doesn't see the cons equences of things					0.624
Open3:I see myself as someone who tries to understand myself					0.525

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

TABLE 16:ROTATED COMPONENT MATRIX. SOURCE: SPSS

Moreover, because each factor has a mix of domains, the rotated component matrix too, does not actually display a decent result. However, given the questionnaire was developed from an established instrument

and this test is simply a pilot test with 31 respondents, the researcher chose to continue with it. With more responders, the results are likely to improve, and the researcher is interested in learning about the changes.

3.15.2 Reliability Analysis

Factors	Cronbach's Alpha
Extraversion	. -590
Neuroticism	. -130
Openness	0.455
Agreeableness	0.479
Conscientiousness	0.703
DV	0.758
Mediator	0.67

TABLE 17: SUMMARY OF CRONBACH'S ALPHA. SOURCE: AUTHOR

For descriptive and inter-item reliability test statistics, the researcher chose item, scale, and scale if item eliminated, as well as correlations. For the ANOVA table, the 'None' option was used.

Table 17 illustrates the summary of reliability test for all the factors, and it reveal a poor result for each element because the factor analysis did not meet its expectations. Only two elements, however, yield a negative result. As a result, the researcher feels more confidence in continuing to use the questionnaire.

However, in order to improve the questionnaire's validity and reliability, certain items were removed from the original questionnaire and others were rephrased as positive statement questions. All of the items that

were deleted were multi-choice questions, and the answer groups for the remaining multi-choice questions were reduced to a maximum of two groups of responses.

3.15.3 Multi-regression analysis

The goal of a Multiple Regression Analysis is to find changes in two or more factors that are responsible for a change in an independent variable. The linear model was used for the pilot multi-regression analysis. The regression value was calculated using the sum of the components. Estimates regression coefficient, model fit, and R-squared change were used for the regression statistic option.

Model Summary	Model		1
	R		.683[a]
	R Square		0.466
	Adjusted R Square		**0.360**
	Std. Error of the Estimate		4.71470
	Change Statistics	R Square Change	0.466
		F Change	4.370
		df1	5
		df2	25
		Sig. F Change	0.005

TABLE 18:REGRESSION MODEL SUMMARY. SOURCE: SPSS

The adjusted R-square is 0.360. It means that the Big five personality factors can predict 36% of the variation. This is a reasonable result for a pilot study with 31 participants. Any study that seeks to predict human behaviour would tend to have a lower R-square, according to **(Frost, 2018)** paper "How High Does R-square Need to Be?" published in 2018. R^2 alone is not a fair indicator of the goodness of fit, according to **(Fonticella, 1999)** research, "The Usefulness of the R^2 Statistic," published in 1999. We shouldn't automatically dismiss data if R^2 isn't higher than some arbitrary criterion. Instead, we should look for other information to trend. Thus, this model is significant.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	485.710	5	97.142	**4.370**	**.005[b]**
	Residual	555.709	25	22.228		
	Total	1041.419	30			

TABLE 19: ANOVA TABLE FOR MULTI-REGRESSION ANALYSIS. SOURCE:SPSS

Table 19 is an ANOVA table that displays the Hypothesis' results. The mean square variance across interventions is around 97, the mean square variation within interventions is 22.23, and the F test statistic value is 4.37, as can be seen.

The degrees of freedom are 5 and 25, respectively, and with this information, the p value is 0.005, which is incredibly small. As a result, we reject Ho and conclude that the model is significant, implying that at least one of the model's independent variables is valuable.

Table 19 shows the R square values, which equal 0.466, implying that the model explains about 46.6 percent of the variation in the dependent variable. The correlation between real Y and that values is 0.68.

Because adjusted R square takes into consideration the importance of independent variables, it is 0.36, which is smaller than R square. The use of an independent variable in a model is beneficial. On the other hand, the .005 significant level is likewise regarded as a good value.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	19.396	9.165		2.116	.044
	Sum_Extra	-.197	.534	-.069	-.368	.716
	Sum_Neuro	-.194	.387	-.089	-.502	.620
	Sum_Open	1.243	.374	.747	3.323	.003
	Sum_Agree	.441	.337	.255	1.308	.203
	Sum_Cons	-.529	.356	-.321	-1.486	.150

TABLE 20: MULTIPLE REGRESSION COEFFICIENT TABLE. SOURCE:SPSS

Because the significant coefficient for Extraversion and Neuroticism is more than .005, which is the cut off value for coefficient significant for a fit model, it is regarded not statistically significant. Significant coefficients for Agreeableness and Conscientiousness are regarded poor, but with a larger responder number, they may improve. The Openness factor is the sole factor that is less than .005, making it the most important factor that can influence the DV.

3.16 Summary of Chapter 3

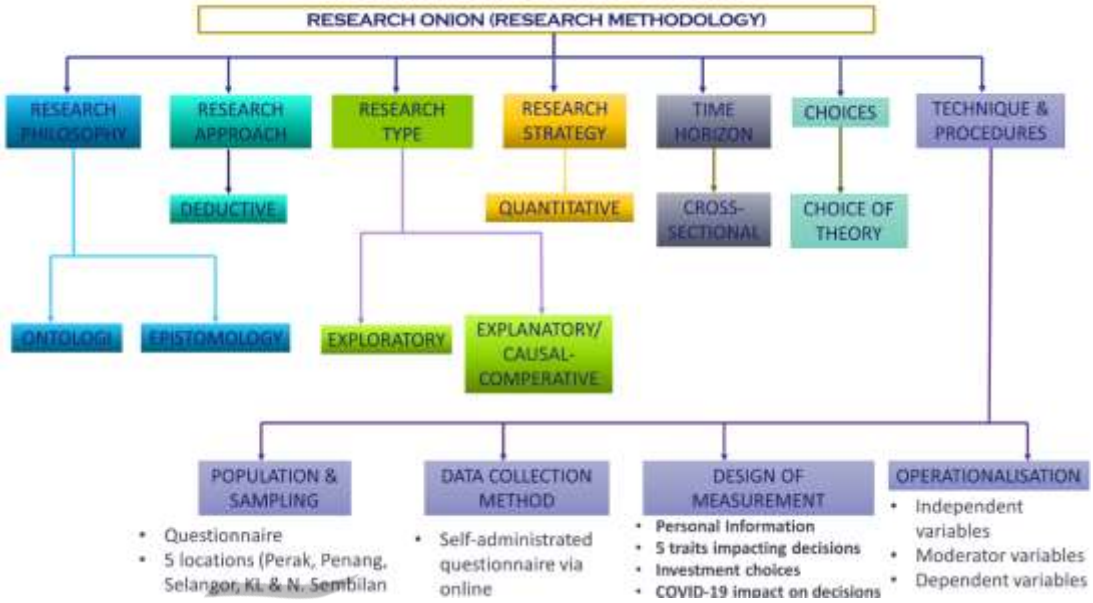


FIGURE 3. 7: RESEARCH METHODOLOGY SUMMARY. SOURCE: AUTHOR

Figure 3.7 illustrate the summary of research methodology that was used and thoroughly discussed in this study. The data analysis and findings will be presented in the following chapter.

CHAPTER 4 - EMPIRICAL FINDINGS

4.1 Introduction

The data background is given initially in this chapter to provide an overview of the surveyed sample. The results of factor analysis, Cronbach's Alpha test for measurement reliability, multiple regression analysis to identify the impact levels of behavioural factors, and structural equation modelling-identified correlations between behavioural factors and investment decision on portfolio allocation are then presented and discussed. The theories presented in Chapter 2 are put to the test through data analysis.

4.2 Demographic Analysis

199 respondents were reported from 300 questionnaires distributed to individual investors in five Malaysian states: Penang, Perak, Kuala Lumpur, Selangor, and Negeri Sembilan, yielding a respondent rate of 66.33 percent, which is a moderately high rate for a postal questionnaire study. The following are the characteristics of the 199-respondent sample, which include gender, state, age, marital status, education, work experience, and income.

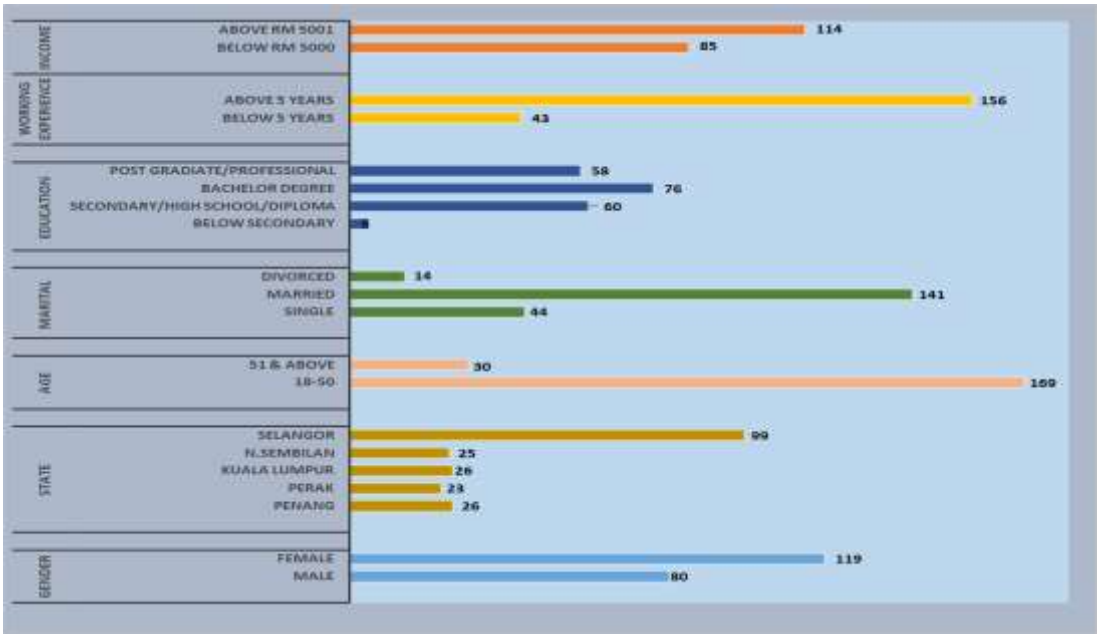


FIGURE 4. 1: DEMOGRAPHIC DISPERSION. SOURCE: AUTHOR

Figure 4.1 depicts the proportion of female and male investors in the sample (Male 40.2 percent, Female 59.8 percent), indicating that female respondents outnumber male respondents. The majority of the respondents are between the ages of 18 to 50 (169 respondents, or 84.9% of the overall sample), with 15.1% percent of the respondents being the ages of 51 and above. Selangor accounts for 49.7% of responses, with 13.1 percent from Kuala Lumpur and Penang, 12.6 percent from Negeri Sembilan, and 11.6 percent from Perak. This sample represents the reality that a large percentage of individual investors are between the age of 18 to 50, and this research may accurately reflect their investment habits.

Figure 4.1 also reveals that married persons account for the majority of the sample (70.9%), whereas single people account for 22.1 percent and divorced people account for only 7 percent. A bachelor's degree is held by the majority of respondents (38.2%), followed by 30.2 percent secondary/high school

graduate/diploma, 29.1 percent post graduate/professional, and only 2.5 percent have a high school diploma. This indicates that the vast majority of persons who responded to the survey are well-educated and understand the value of investments. According to the data, 78.4 percent of respondents had more than 5 years of experience, while 21.6 percent had less than 5 years of experience. 57.3 percent had a monthly income of greater than RM 5001.

Statistics

		Gender:Indicate your gender	State:Which state do you come from?	Age:Indicate your age	Marital:Marital status	Education:Indicate your highest academic/ professional qualification	Working:How many years of working experience?	Income:What is your average monthly income?	Investing:Have you been investing?	Years:Number of years you have been investing?	Range:Your preferable range of investment?	Rates:Which rates do you want your investment to grow?
N	Valid	199	199	199	199	199	199	199	199	199	199	199
	Missing	0	0	0	0	0	0	0	0	0	0	0
Minimum		1	1	1	1	1	1	1	1	1	1	1
Maximum		2	5	2	3	4	2	2	2	3	3	3

TABLE 21: DEMOGRAPHIC DESCRIPTIVE STATISTIC. SOURCE: SPSS

The statistics output for Section A: Demographic, is shown in the table 21. This table shows the number of valid cases (N) and the number of cases with missing values for each of the variables. Because there are no missing values, the total number of valid cases is 199 for the eleven items listed. Figure 4.2 below shows the investment pattern of respondents.

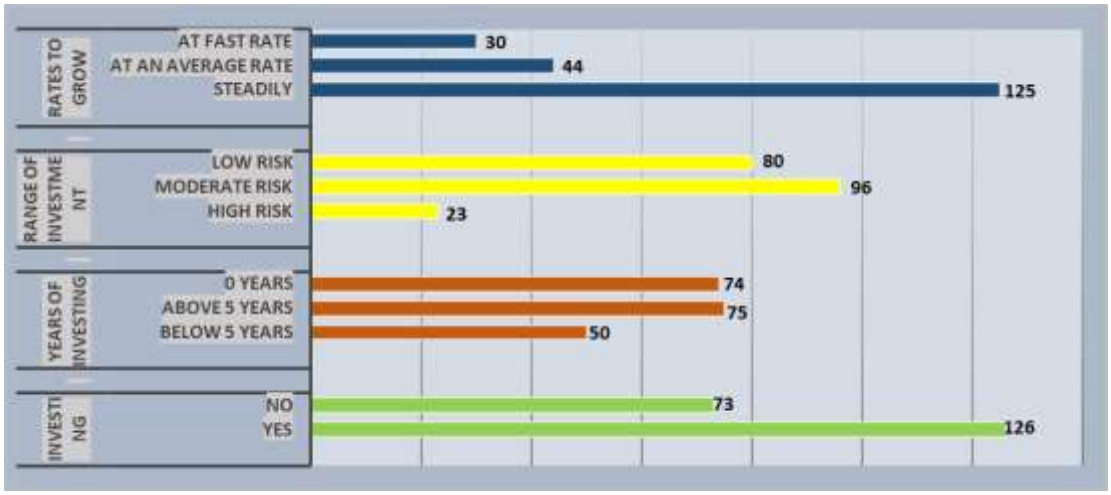


FIGURE 4. 2: INVESTMENT PATTERN OF RESPONDENT. SOURCE: AUTHOR

Individual respondents in the studied sample who are now investing, account for 63.3 percent of the total, while those who are not investing account for 36.7 percent. 37.7 percent of the 63.3 percent of respondents are investing for more than five years, while 25.1 percent are investing for less than five years. 37.2 percent are not involved in any investment. The sample includes a wide range of investment distributions, including high risk, moderate risk, and low risk investments. Moderate risk is preferred by 48.2 percent, while low risk is preferred by 40.2 percent. According to the survey, there are only 8% difference between moderate and low-risk investments. The majority of respondent favour investments with consistent growth rates. The polled sample also revealed that 11.6 percent of respondents choose high-risk investments, while 15.1 percent want their investment rates to grow at a fast rate.

In summary, the respondents for this survey are individual investors, with a higher proportion of female respondents aged between 18 to 50, with a decent educational background, and who have been investing for more than 5 years. In

general, these respondents chose moderate and low-risk investments that increase at a steady rate.

4.3 Frequency Analysis for Independent Variables

Frequency analysis is a methodology for predicting how often certain values of a variable phenomenon will occur and evaluating the accuracy of the prediction. The following is a scaled representation of these viewpoints:

Choose between 1-6, where 1= Extremely Disagree, 2= Highly Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Highly Agree, 6= Extremely Agree

Table 22 to 26 show the results of the Big 5 Behavioural Finance Trait assessment, as well as the number of occurrences of each value. Percentages are also displayed. The percentage of results is calculated using the total number of participants, which is 199. Based on the results, the respondents' personality traits are separated into two groups: low score trait and high score trait. Low score trait is those who choose a score between 1 and 3, while high score trait choose a value between 4 and 6.

Open1:I often try new ideas in investment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	22	11.1	11.1	11.1
	Highly Disagree	27	13.6	13.6	24.6
	Somewhat Disagree	55	27.6	27.6	52.3
	Somewhat Agree	51	25.6	25.6	77.9
	Highly Agree	26	13.1	13.1	91.0
	Extremely Agree	18	9.0	9.0	100.0
	Total	199	100.0	100.0	
Open2:I'm someone who is interested in new knowledge					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	3	1.5	1.5	1.5
	Highly Disagree	12	6.0	6.0	7.5
	Somewhat Disagree	11	5.5	5.5	13.1
	Somewhat Agree	42	21.1	21.1	34.2
	Highly Agree	60	30.2	30.2	64.3
	Extremely Agree	71	35.7	35.7	100.0
	Total	199	100.0	100.0	
Open3:I'm someone who tries to understand myself					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	8	4.0	4.0	4.0
	Highly Disagree	19	9.5	9.5	13.6
	Somewhat Disagree	7	3.5	3.5	17.1
	Somewhat Agree	34	17.1	17.1	34.2
	Highly Agree	59	29.6	29.6	63.8
	Extremely Agree	72	36.2	36.2	100.0
	Total	199	100.0	100.0	
Open4:I see myself as creative and enjoy in different field					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	4	2.0	2.0	2.0
	Highly Disagree	5	2.5	2.5	4.5
	Somewhat Disagree	21	10.6	10.6	15.1
	Somewhat Agree	44	22.1	22.1	37.2
	Highly Agree	67	33.7	33.7	70.9
	Extremely Agree	58	29.1	29.1	100.0
	Total	199	100.0	100.0	
Open5:I'm someone who is interested in abstract ideas					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	4	2.0	2.0	2.0
	Highly Disagree	7	3.5	3.5	5.5
	Somewhat Disagree	23	11.6	11.6	17.1
	Somewhat Agree	55	27.6	27.6	44.7
	Highly Agree	60	30.2	30.2	74.9
	Extremely Agree	50	25.1	25.1	100.0
	Total	199	100.0	100.0	

TABLE 22: FREQUENCY ANALYSIS FOR OPENNESS TRAIT. SOURCE: SPSS

Cons1: I see myself as someone who completes task successfully					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	3	1.5	1.5	2.5
	Somewhat Disagree	19	9.5	9.5	12.1
	Somewhat Agree	34	17.1	17.1	29.1
	Highly Agree	83	41.7	41.7	70.9
	Extremely Agree	58	29.1	29.1	100.0
	Total	199	100.0	100.0	
Cons2:I see myself as someone who manage time well					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	3	1.5	1.5	1.5
	Highly Disagree	14	7.0	7.0	8.5
	Somewhat Disagree	18	9.0	9.0	17.6
	Somewhat Agree	52	26.1	26.1	43.7
	Highly Agree	67	33.7	33.7	77.4
	Extremely Agree	45	22.6	22.6	100.0
	Total	199	100.0	100.0	
Cons3:I see myself as someone who works hard					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	5	2.5	2.5	2.5
	Highly Disagree	3	1.5	1.5	4.0
	Somewhat Disagree	22	11.1	11.1	15.1
	Somewhat Agree	27	13.6	13.6	28.6
	Highly Agree	78	39.2	39.2	67.8
	Extremely Agree	64	32.2	32.2	100.0
	Total	199	100.0	100.0	
Cons4:I see myself as someone who does see the consequences of things					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	3	1.5	1.5	1.5
	Highly Disagree	17	8.5	8.5	10.1
	Somewhat Disagree	13	6.5	6.5	16.6
	Somewhat Agree	35	17.6	17.6	34.2
	Highly Agree	81	40.7	40.7	74.9
	Extremely Agree	50	25.1	25.1	100.0
	Total	199	100.0	100.0	
Cons5:I see myself as someone who is tidy and clean					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	7	3.5	3.5	3.5
	Highly Disagree	11	5.5	5.5	9.0
	Somewhat Disagree	20	10.1	10.1	19.1
	Somewhat Agree	25	12.6	12.6	31.7
	Highly Agree	63	31.7	31.7	63.3
	Extremely Agree	73	36.7	36.7	100.0
	Total	199	100.0	100.0	

TABLE 23: FREQUENCY ANALYSIS FOR CONSCIENTIOUSNESS TRAIT. SOURCE: SPSS

Extra1:I see myself as someone who warms up quickly to others					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	17	8.5	8.5	9.5
	Somewhat Disagree	25	12.6	12.6	22.1
	Somewhat Agree	57	28.6	28.6	50.8
	Highly Agree	64	32.2	32.2	82.9
	Extremely Agree	34	17.1	17.1	100.0
	Total	199	100.0	100.0	
Extra2:I see myself as someone who is joyful and brave					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	1	0.5	0.5	0.5
	Highly Disagree	2	1.0	1.0	1.5
	Somewhat Disagree	18	9.0	9.0	10.6
	Somewhat Agree	51	25.6	25.6	36.2
	Highly Agree	77	38.7	38.7	74.9
	Extremely Agree	50	25.1	25.1	100.0
	Total	199	100.0	100.0	
Extra3:I see myself as a positive person					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	9	4.5	4.5	5.5
	Somewhat Disagree	9	4.5	4.5	10.1
	Somewhat Agree	36	18.1	18.1	28.1
	Highly Agree	79	39.7	39.7	67.8
	Extremely Agree	64	32.2	32.2	100.0
	Total	199	100.0	100.0	
Extra4:I love to make new friends					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	1	0.5	0.5	0.5
	Highly Disagree	5	2.5	2.5	3.0
	Somewhat Disagree	26	13.1	13.1	16.1
	Somewhat Agree	51	25.6	25.6	41.7
	Highly Agree	50	25.1	25.1	66.8
	Extremely Agree	66	33.2	33.2	100.0
	Total	199	100.0	100.0	
Extra5:I see myself as someone who is energetic					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	4	2.0	2.0	3.0
	Somewhat Disagree	19	9.5	9.5	12.6
	Somewhat Agree	39	19.6	19.6	32.2
	Highly Agree	69	34.7	34.7	66.8
	Extremely Agree	66	33.2	33.2	100.0
	Total	199	100.0	100.0	

TABLE 24: FREQUENCY ANALYSIS FOR EXTRAVERSION TRAIT. SOURCE: SPSS

Agree1:I see myself as someone who trust others					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	4	2.0	2.0	2.0
	Highly Disagree	12	6.0	6.0	8.0
	Somewhat Disagree	36	18.1	18.1	26.1
	Somewhat Agree	71	35.7	35.7	61.8
	Highly Agree	45	22.6	22.6	84.4
	Extremely Agree	31	15.6	15.6	100.0
	Total	199	100.0	100.0	
Agree2:I'm someone who seldom get into arguments					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	4	2.0	2.0	2.0
	Highly Disagree	25	12.6	12.6	14.6
	Somewhat Disagree	31	15.6	15.6	30.2
	Somewhat Agree	54	27.1	27.1	57.3
	Highly Agree	49	24.6	24.6	81.9
	Extremely Agree	36	18.1	18.1	100.0
	Total	199	100.0	100.0	
Agree3:I'm someone who is generous and kind					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	3	1.5	1.5	2.5
	Somewhat Disagree	21	10.6	10.6	13.1
	Somewhat Agree	32	16.1	16.1	29.1
	Highly Agree	76	38.2	38.2	67.3
	Extremely Agree	65	32.7	32.7	100.0
	Total	199	100.0	100.0	
Agree4:I'm someone who is willing to listen others advise					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	4	2.0	2.0	2.0
	Highly Disagree	7	3.5	3.5	5.5
	Somewhat Disagree	25	12.6	12.6	18.1
	Somewhat Agree	47	23.6	23.6	41.7
	Highly Agree	73	36.7	36.7	78.4
	Extremely Agree	43	21.6	21.6	100.0
	Total	199	100.0	100.0	
Agree5:I'm someone who values cooperation over competition					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	2	1.0	1.0	1.0
	Highly Disagree	16	8.0	8.0	9.0
	Somewhat Disagree	10	5.0	5.0	14.1
	Somewhat Agree	32	16.1	16.1	30.2
	Highly Agree	64	32.2	32.2	62.3
	Extremely Agree	75	37.7	37.7	100.0
	Total	199	100.0	100.0	

TABLE 25: FREQUENCY ANALYSIS FOR AGREEABLENESS TRAIT. SOURCE: SPSS

Neuro1:I see myself as someone who often feel moody					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	25	12.6	12.6	12.6
	Highly Disagree	37	18.6	18.6	31.2
	Somewhat Disagree	56	28.1	28.1	59.3
	Somewhat Agree	37	18.6	18.6	77.9
	Highly Agree	36	18.1	18.1	96.0
	Extremely Agree	8	4.0	4.0	100.0
	Total	199	100.0	100.0	
Neuro2:I gives up easily when things go wrong					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	45	22.6	22.6	22.6
	Highly Disagree	46	23.1	23.1	45.7
	Somewhat Disagree	43	21.6	21.6	67.3
	Somewhat Agree	25	12.6	12.6	79.9
	Highly Agree	26	13.1	13.1	93.0
	Extremely Agree	14	7.0	7.0	100.0
	Total	199	100.0	100.0	
Neuro3:I'm someone who becomes stressed out easily					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	33	16.6	16.6	16.6
	Highly Disagree	47	23.6	23.6	40.2
	Somewhat Disagree	44	22.1	22.1	62.3
	Somewhat Agree	34	17.1	17.1	79.4
	Highly Agree	20	10.1	10.1	89.4
	Extremely Agree	21	10.6	10.6	100.0
	Total	199	100.0	100.0	
Neuro4:I often feel nervous and sensitive on emotion					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	14	7.0	7.0	7.0
	Highly Disagree	43	21.6	21.6	28.6
	Somewhat Disagree	51	25.6	25.6	54.3
	Somewhat Agree	44	22.1	22.1	76.4
	Highly Agree	31	15.6	15.6	92.0
	Extremely Agree	16	8.0	8.0	100.0
	Total	199	100.0	100.0	
Neuro5:I'm someone who does things I later regret					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	40	20.1	20.1	20.1
	Highly Disagree	45	22.6	22.6	42.7
	Somewhat Disagree	54	27.1	27.1	69.8
	Somewhat Agree	34	17.1	17.1	86.9
	Highly Agree	19	9.5	9.5	96.5
	Extremely Agree	7	3.5	3.5	100.0
	Total	199	100.0	100.0	

TABLE 26: FREQUENCY ANALYSIS FOR NEUROTICISM TRAIT. SOURCE: SPSS

Respondents are assessed using the OCEAN model, which consists of five major personality factors. 77.1 percent of the population have a high score for the first personality trait, Openness, while 22.1 percent have a low score. Conscientiousness is the second trait, with a high score of 83.9 percent and a low score of 16.1 percent.

Extraversion, the third attribute, with a high score of 85.7 percent and a low score of 14.3 percent. The fourth trait, Agreeableness, has a high score of 79.7% and a low score of 20.3 percent, while the last trait, Neuroticism, has a high score of 37.4 percent and a low score of 62.6 percent.

The study's findings demonstrate that all four traits, Openness, Conscientiousness, Extraversion, and Agreeableness, are skewed toward the high-scoring categories, with the exception of neuroticism, which has a larger value in the low-scoring category.

On the other hand, Table 27 below shows the frequency and percentage of retail investors' decision on portfolio allocation, which is the study's dependent variable.

DV1:You believe your knowledge can out perform the market					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	3	1.5	1.5	1.5
	Highly Disagree	16	8.0	8.0	9.5
	Somewhat Disagree	37	18.6	18.6	28.1
	Somewhat Agree	78	39.2	39.2	67.3
	Highly Agree	46	23.1	23.1	90.5
	Extremely Agree	19	9.5	9.5	100.0
	Total	199	100.0	100.0	
DV2:You rely on your previous experience for your next investment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	13	6.5	6.5	6.5
	Highly Disagree	30	15.1	15.1	21.6
	Somewhat Disagree	25	12.6	12.6	34.2
	Somewhat Agree	57	28.6	28.6	62.8
	Highly Agree	50	25.1	25.1	87.9
	Extremely Agree	24	12.1	12.1	100.0
	Total	199	100.0	100.0	
DV3:You forecast the changes in the investment avenues based on recent					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	7	3.5	3.5	3.5
	Highly Disagree	9	4.5	4.5	8.0
	Somewhat Disagree	56	28.1	28.1	36.2
	Somewhat Agree	66	33.2	33.2	69.3
	Highly Agree	47	23.6	23.6	93.0
	Extremely Agree	14	7.0	7.0	100.0
	Total	199	100.0	100.0	

DV4:You prefer low risk investment(saving/insurance)					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	6	3.0	3.0	3.0
	Highly Disagree	21	10.6	10.6	13.6
	Somewhat Disagree	43	21.6	21.6	35.2
	Somewhat Agree	48	24.1	24.1	59.3
	Highly Agree	40	20.1	20.1	79.4
	Extremely Agree	41	20.6	20.6	100.0
	Total	199	100.0	100.0	

DV5:You prefer moderate risk investment (balance mutual fund)					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	9	4.5	4.5	4.5
	Highly Disagree	11	5.5	5.5	10.1
	Somewhat Disagree	38	19.1	19.1	29.1
	Somewhat Agree	72	36.2	36.2	65.3
	Highly Agree	55	27.6	27.6	93.0
	Extremely Agree	14	7.0	7.0	100.0
	Total	199	100.0	100.0	

DV6:You prefer high risk investment (stock/share)					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	38	19.1	19.1	19.1
	Highly Disagree	41	20.6	20.6	39.7
	Somewhat Disagree	30	15.1	15.1	54.8
	Somewhat Agree	36	18.1	18.1	72.9
	Highly Agree	35	17.6	17.6	90.5
	Extremely Agree	19	9.5	9.5	100.0
	Total	199	100.0	100.0	

DV7:You consider friends and relatives information as the reliable reference to					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	17	8.5	8.5	8.5
	Highly Disagree	30	15.1	15.1	23.6
	Somewhat Disagree	34	17.1	17.1	40.7
	Somewhat Agree	68	34.2	34.2	74.9
	Highly Agree	36	18.1	18.1	93.0
	Extremely Agree	14	7.0	7.0	100.0
	Total	199	100.0	100.0	

DV8:You are more risk seeking (daring) after a prior gain					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	16	8.0	8.0	8.0
	Highly Disagree	23	11.6	11.6	19.6
	Somewhat Disagree	50	25.1	25.1	44.7
	Somewhat Agree	60	30.2	30.2	74.9
	Highly Agree	36	18.1	18.1	93.0
	Extremely Agree	14	7.0	7.0	100.0
	Total	199	100.0	100.0	

DV9:You are more risk averse (careful) after a prior loss					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	12	6.0	6.0	6.0
	Highly Disagree	11	5.5	5.5	11.6
	Somewhat Disagree	36	18.1	18.1	29.6
	Somewhat Agree	53	26.6	26.6	56.3
	Highly Agree	47	23.6	23.6	79.9
	Extremely Agree	40	20.1	20.1	100.0
	Total	199	100.0	100.0	

DV10:You feel more sorrow holding losing investment than selling winning					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	14	7.0	7.0	7.0
	Highly Disagree	22	11.1	11.1	18.1
	Somewhat Disagree	43	21.6	21.6	39.7
	Somewhat Agree	74	37.2	37.2	76.9
	Highly Agree	31	15.6	15.6	92.5
	Extremely Agree	15	7.5	7.5	100.0
	Total	199	100.0	100.0	

DV11:You tend to treat each element of your investment portfolio separately					
		Frequency	Percent	Valid Percent	Percent
Valid	Extremely Disagree	7	3.5	3.5	3.5
	Highly Disagree	12	6.0	6.0	9.5
	Somewhat Disagree	51	25.6	25.6	35.2
	Somewhat Agree	71	35.7	35.7	70.9
	Highly Agree	40	20.1	20.1	91.0
	Extremely Agree	18	9.0	9.0	100.0
	Total	199	100.0	100.0	

TABLE 27: FREQUENCY ANALYSIS FOR INVESTMENT DECISION INFORMATION. SOURCE:SPSS

In this part, respondents were asked eleven questions to assess their investment decisions. On the agree category, DV1 received 71.9 percent, DV2- 65.8 percent, DV3- 63.8 percent, DV4- 64.8 percent, DV5- 70.9 percent, DV6- 45.6 percent, DV7- 59.3 percent, DV8- 55.3 percent, DV9-70.4 percent, DV10- 60.3 percent, and DV11- 64.8 percent. Except for DV6, DV7, and DV8, the higher respondents agreed in the disagree group. This suggests that respondents are generally optimistic about investing, but are wary about high-risk investments and risk-taking behaviour. They do not mind, however, incorporating information from friends and relatives when making investing decisions.

The mediating variable items are presented in the last section of the questionnaire, and the frequency analysis for the mediating effect is provided in table 28 below.

Media1:You still give preferences to investment during

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	14	7.0	7.0	7.0
	Highly Disagree	25	12.6	12.6	19.6
	Somewhat Disagree	37	18.6	18.6	38.2
	Somewhat Agree	64	32.2	32.2	70.4
	Highly Agree	43	21.6	21.6	92.0
	Extremely Agree	16	8.0	8.0	100.0
	Total	199	100.0	100.0	

Media2:You prefer low risk investment (saving and

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	7	3.5	3.5	3.5
	Highly Disagree	15	7.5	7.5	11.1
	Somewhat Disagree	40	20.1	20.1	31.2
	Somewhat Agree	38	19.1	19.1	50.3
	Highly Agree	66	33.2	33.2	83.4
	Extremely Agree	33	16.6	16.6	100.0
	Total	199	100.0	100.0	

Media3:You prefer moderate risk investment (balance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	18	9.0	9.0	9.0
	Highly Disagree	32	16.1	16.1	25.1
	Somewhat Disagree	43	21.6	21.6	46.7
	Somewhat Agree	62	31.2	31.2	77.9
	Highly Agree	34	17.1	17.1	95.0
	Extremely Agree	10	5.0	5.0	100.0
	Total	199	100.0	100.0	

Media4:You prefer high risk investment(stock/share)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	50	25.1	25.1	25.1
	Highly Disagree	38	19.1	19.1	44.2
	Somewhat Disagree	35	17.6	17.6	61.8
	Somewhat Agree	40	20.1	20.1	81.9
	Highly Agree	27	13.6	13.6	95.5
	Extremely Agree	9	4.5	4.5	100.0
	Total	199	100.0	100.0	
Media5:Rate your satisfaction with the low risk					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	7	3.5	3.5	3.5
	Highly Disagree	33	16.6	16.6	20.1
	Somewhat Disagree	54	27.1	27.1	47.2
	Somewhat Agree	52	26.1	26.1	73.4
	Highly Agree	35	17.6	17.6	91.0
	Extremely Agree	18	9.0	9.0	100.0
	Total	199	100.0	100.0	
Media6:Rate your satisfaction with the moderate risk					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	10	5.0	5.0	5.0
	Highly Disagree	22	11.1	11.1	16.1
	Somewhat Disagree	55	27.6	27.6	43.7
	Somewhat Agree	73	36.7	36.7	80.4
	Highly Agree	29	14.6	14.6	95.0
	Extremely Agree	10	5.0	5.0	100.0
	Total	199	100.0	100.0	
Media7:Rate your satisfaction with the high risk (Share)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Disagree	30	15.1	15.1	15.1
	Highly Disagree	34	17.1	17.1	32.2
	Somewhat Disagree	43	21.6	21.6	53.8
	Somewhat Agree	63	31.7	31.7	85.4
	Highly Agree	19	9.5	9.5	95.0
	Extremely Agree	10	5.0	5.0	100.0
	Total	199	100.0	100.0	

TABLE 28: FREQUENCY ANALYSIS FOR MEDIATING VARIABLE. SOURCE: SPSS

Seven questions were posed to evaluate the role of COVID-19 as a mediating factor. 61.8 percent of respondents still choose to invest during a pandemic, according to the findings. The pattern of investing, however, remained mostly intact. Low risk investments are still preferred by most of the respondents (68.8%), while moderate risk investments are preferred by 53.3 percent. Furthermore, during the COVID-19 pandemic, 52.8 percent of respondents are satisfied with their return on

low risk investment, while 56.3 percent are satisfied with their return on moderate risk investment. On the other hand, the study shows that during the COVID-19 pandemic, 38.2 percent of respondents still favour high-risk investments, despite the fact that this is just a 7% decrease from before the pandemic. During COVID-19, 46.2 percent of them were satisfied with their high-risk investment return.

4.4 Descriptive Statistic Analysis.

A descriptive statistic summarises and characterises a set of data. It is a type of data analysis that focuses on data management, presentation, and classification with the goal of describing the state of the data. The data displayed is more appealing, easier to grasp, and capable of providing a notion of what information may be acquired from the data used as a result of this approach.

By computing the values of the sample mean of each variable, the influence levels of the Big 5 Behavioural finance variables on investors decision on portfolio allocation is determined. Because the effect levels of these elements are quantified on a 6-point scale, the following rules can be used to determine which score do the respondents belongs to:

- The fact that the mean values are less than 2 indicates that the factors have very minor influence.
- The fact that the mean values range from 2 to 3 indicates that the factors have a minor influence.
- Variables with mean values ranging from 3 to 4 indicate that they have a moderate impact.

- The fact that the mean values range from 4 to 5 indicates that the factors have a high influence.
- The presence of more than five mean values indicates that the variables have a significant impact.

Statistics							
		Open1:I often try new ideas in investment	Open2:I'm someone who is interested in new knowledge	Open3:I'm someone who tries to understand myself	Open4:I see myself as creative and enjoy in different field	Open5:I'm someone who is interested in abstract ideas	Total_Open
N	Valid	199	199	199	199	199	199
	Missing	0	0	0	0	0	0
Mean		3.43	4.79	4.67	4.70	4.56	22.16
Std. Deviation		1.412	1.240	1.442	1.184	1.200	4.372
Minimum		1	1	1	1	1	10
Maximum		6	6	6	6	6	30

TABLE 29: OPENNESS TRAIT DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Statistics							
		Cons1: I see myself as someone who completes task successfully	Cons2:I see myself as someone who manage time well	Cons3:I see myself as someone who works hard	Cons4:I see myself as someone who does see the consequences of things	Cons5:I see myself as someone who is tidy and clean	Total_Cons
N	Valid	199	199	199	199	199	199
	Missing	0	0	0	0	0	0
Mean		4.84	4.51	4.82	4.63	4.73	23.54
Std. Deviation		1.059	1.222	1.188	1.252	1.376	5.271
Minimum		1	1	1	1	1	7
Maximum		6	6	6	6	6	30

TABLE30: CONSCIENTIOUSNESS TRAIT DESCRIPTIVE STATISTIC. SOURCE: SPSS

Statistics							
		Extra1:I see myself as someone who warms up quickly to others	Extra2:I see myself as someone who is joyful and brave	Extra3:I see myself as a positive person	Extra4:I love to make new friends	Extra5:I see myself as someone who is energetic	Total_Extra
N	Valid	199	199	199	199	199	199
	Missing	0	0	0	0	0	0
Mean		4.34	4.76	4.87	4.72	4.84	23.54
Std. Deviation		1.207	0.995	1.114	1.160	1.110	4.276
Minimum		1	1	1	1	1	12
Maximum		6	6	6	6	6	30

TABLE 31: EXTRAVERSION TRAIT DESCRIPTIVE ANALYSIS. SOURCE:SPSS

Statistics							
		Agree1:I see myself as someone who trust others	Agree2:I'm someone who seldom get into arguments	Agree3 I'm someone who is generous and kind	Agree4:I'm someone who is willing to listen others advise	Agree5:I'm someone who values cooperation over competition	Total_Agree
N	Valid	199	199	199	199	199	199
	Missing	0	0	0	0	0	0
Mean		4.18	4.14	4.87	4.54	4.83	22.56
Std. Deviation		1.195	1.341	1.093	1.179	1.266	4.242
Minimum		1	1	1	1	1	11
Maximum		6	6	6	6	6	30

TABLE 32: AGREEABLENESS TRAIT DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Statistics							
		Neuro1:I see myself as someone who often feel moody	Neuro2:I gives up easily when things go wrong	Neuro3:I'm someone who becomes stressed out easily	Neuro4:I often feel nervous and sensitive on emotion	Neuro5:I'm someone who does things I later regret	Total_Neuro
N	Valid	199	199	199	199	199	199
	Missing	0	0	0	0	0	0
Mean		3.23	2.91	3.12	3.42	2.84	15.52
Std. Deviation		1.384	1.556	1.556	1.379	1.372	5.095
Minimum		1	1	1	1	1	5
Maximum		6	6	6	6	6	30

TABLE 33: NEUROTICISM TRAIT DESCRIPTIVE STATISTIC. SOURCE: SPSS

Table 29 to 33 shows the statistical analysis for independent variables. The results of the descriptive analysis demonstrate that the traits of Openness, Conscientiousness,

Extraversion, and Agreeableness have a mean ranging from 3 to 5 (SD= 0.9 to 1.5), indicating that responders in each of the variables have a high score trait and the variables have moderate to high influence. The neuroticism trait, on the other hand, has a low score, with a mean value ranging from 2 to 3 (SD= 1.3 to 1.6), indicating that the factor has a low impact.

Table 34 below shows the statistical value for dependent variable. In the dimension of decision making, all the 11 items have a moderate degree of impact with mean of each variable ranging from 3 to 5 (SD= 1.1 to 1.5). The individual investors have a high tendency of investing in low risk investment (DV4, mean = 4.10). In general, the components of an investment portfolio have mutual relationships with one another, and their combined impact on investors' portfolio allocation decisions, therefore handling these aspects separately may have a negative impact on their investment success. In the next sections, we'll go over this topic in further detail.

Statistics

		DV1:You believe your knowledge can out perform the market	DV2:You rely on your previous experience for your next investment	DV3:You forecast the changes in the investment avenues based on recent prices	DV4:You prefer low risk investment(saving/insurance)	DV5:You prefer moderate risk investment (balance mutual fund)	DV6:You prefer high riak investment (stock/share)	DV7:You consider friends and relatives information as the reliable reference to choose your investment	DV8:You are more risk seeking (daring) after a prior gain	DV9:You are more risk averse (careful) after a prior loss	DV10:You feel more sorrow holding losing investment than selling winning investment too soon	DV11:You tend to treat each element of your investment portfolio separately	Total_DV
N	Valid	199	199	199	199	199	199	199	199	199	199	199	199
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		4.03	3.87	3.90	4.10	3.98	3.23	3.59	3.60	4.17	3.66	3.90	42.02
Std. Deviation		1.123	1.429	1.137	1.391	1.176	1.635	1.360	1.322	1.403	1.281	1.172	8.328
Minimum		1	1	1	1	1	1	1	1	1	1	1	13
Maximum		6	6	6	6	6	6	6	6	6	6	6	66

TABLE 34: DEPENDENT VARIABLE DESCRIPTIVE STATISTIC. SOURCE: SPSS

The mean and standard deviation for mediating variable is shown in Table

35. The mean of all seven items ranged from 2 to 4.5, with a standard deviation of 1 to 1.6. The factors have the least influence on item 4, which has a mean value of 2.91.

Statistics									
		Media1:You still give preferences to investment during COVID-19	Media2:You prefer low risk investment (saving and insurance) during COVID-19	Media3:You prefer moderate risk investment (balance mutual fund) during COVID-19	Media4:You prefer high risk investment(stock/share) during COVID-19	Media5:Rate your satisfaction with the low risk (cash/insurance) return on investment during COVID-19	Media6:Rate your satisfaction with the moderate risk (mutual fund) return on investment during COVID-19	Media7:Rate your satisfaction with the high risk (Share) return on investment during COVID-19	Total_Media
N	Valid	199	199	199	199	199	199	199	199
	Missing	0	0	0	0	0	0	0	0
Mean		3.73	4.21	3.46	2.91	3.65	3.60	3.19	24.7437
Std. Deviation		1.340	1.334	1.329	1.533	1.294	1.167	1.378	5.68976

TABLE 35: MEDIATOR VARIABLES DESCRIPTIVE STATISTIC. SOURCE: SPSS

4.5 Summary of Descriptive Analysis

Statistics								
		Total_Extra	Total_Neuro	Total_Open	Total_Agree	Total_Cons	Total_DV	Total_Media
N	Valid	199	199	199	199	199	199	199
	Missing	0	0	0	0	0	0	0
Mean		23.54	15.52	22.16	22.56	23.54	42.02	24.7437
Median		24.00	15.00	23.00	23.00	25.00	42.00	25.0000
Mode		25	15	23	23	25	37	27.00
Std. Deviation		4.276	5.095	4.372	4.242	5.271	8.328	5.68976
Variance		18.280	25.958	19.115	17.995	27.785	69.363	32.373
Skewness		-0.385	0.186	-0.282	-0.328	-1.000	-0.136	0.044
Std. Error of Skewness		0.172	0.172	0.172	0.172	0.172	0.172	0.172
Kurtosis		-0.636	-0.266	-0.196	-0.204	0.537	1.274	0.996
Std. Error of Kurtosis		0.343	0.343	0.343	0.343	0.343	0.343	0.343
Range		18	25	20	19	23	53	35.00

TABLE 36: SUMMARY OF DESCRIPTIVE ANALYSIS. SOURCE: SPSS

The total descriptive analysis for each variable is shown in Table 36. For each variable, the mean, median, and mode are calculated as measures of central tendency. To calculate the dispersion, which shows how much a Mesokurtic

distribution with a kurtosis of 3 differs from a normal distribution, the standard deviation and range are calculated when data deviates from the mean. Kurtosis and skewness are used to compute normalcy.

The peakness or flatness of a series' distribution is measured by kurtosis, which is classified as:

- Positive kurtosis (peaked-curve), more higher values is known as Leptokurtic.
- Negative kurtosis (flattened-curve) with more lower values is known as Platykurtic.

Skewness, on the other hand, is a measure of a series' degree of asymmetry, which is classified as:

- Skewness is normal when it is 0: the distribution is symmetric around its mean.
- Long right tail, more higher values, positive skewness
- Negative skewness is characterised by a long-left tail and a greater number of lower values.

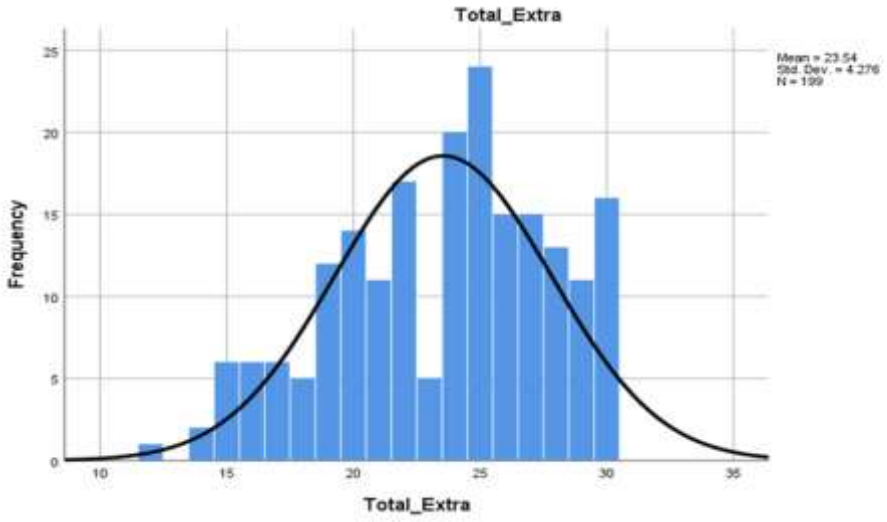


FIGURE 4. 3: EXTRAVERSION TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

The skewness of the Extraversion trait variable is negative (-0.385), indicating that the data is skewed to the left. The kurtosis measurement likewise has a negative value (-0.636), which < 3, indicating that the distribution is platykurtic.

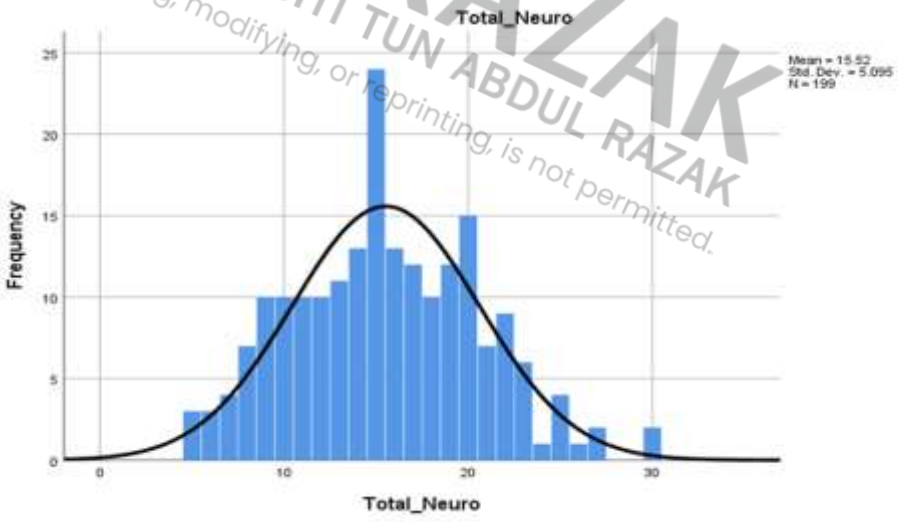


FIGURE 4. 4: NEUROTICISM TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Neuroticism trait shows a normal skewness (0.186) and platykurtic because it has a negative value (-0.266) and the value is less than 3.

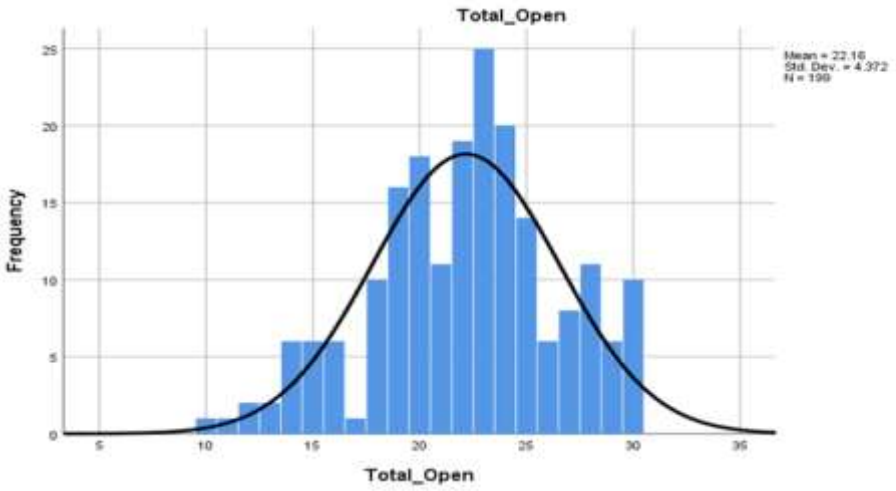


FIGURE 4. 5:OPENNESS TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Openness trait variable has long-left tail or negative skewness (-0.282) and platykurtic because the kurtosis value is negative (-0.196) and less than 3.

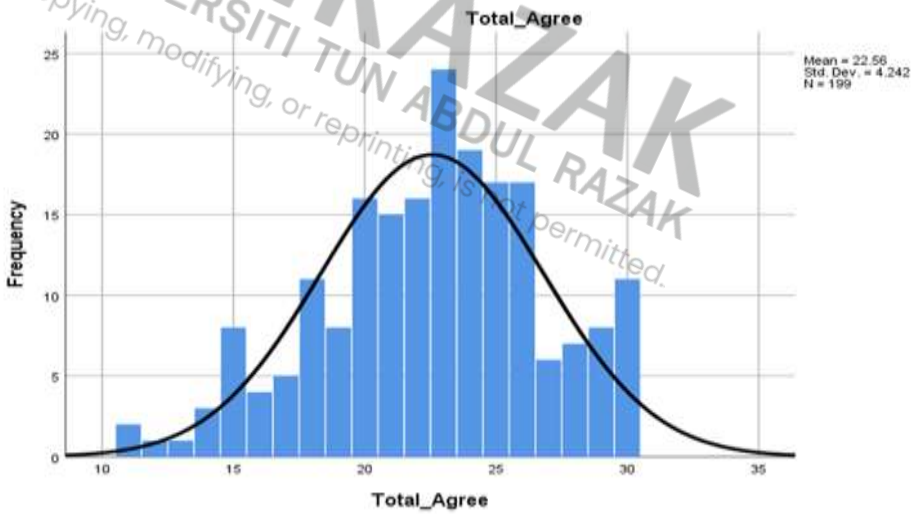


FIGURE 4. 6: AGREEABLENESS TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Agreeableness trait variable has long-left tail or negative skewness (-0.328) and platykurtic because the kurtosis value is negative (-0.204) and less than 3.

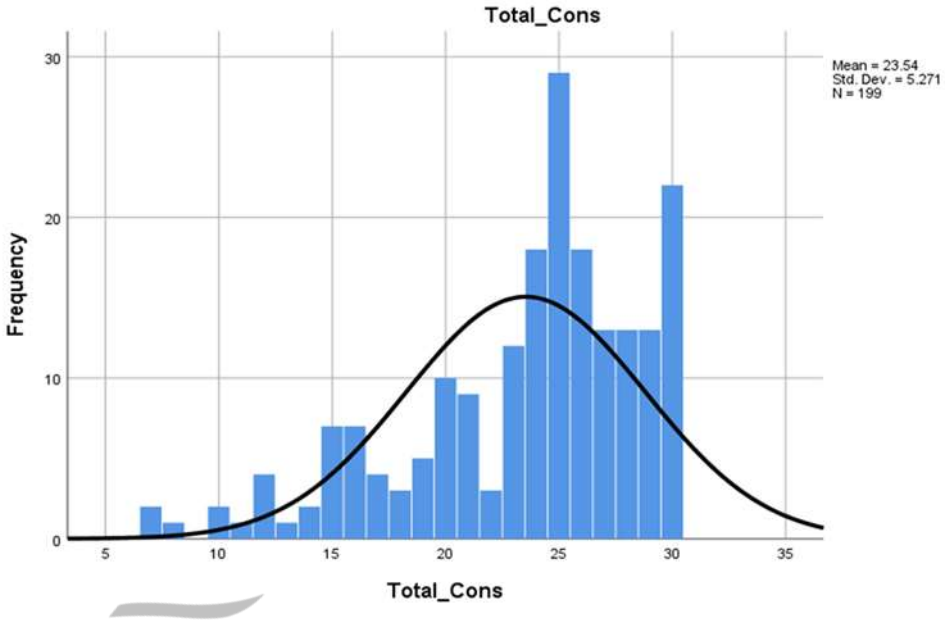


FIGURE 4. 7:CONSCIENTIOUSNESS TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Conscientiousness trait variable shows long-left tail or negative Skewness (-1.0) and platykurtic because the kurtosis value, 0.537 is less than 3.

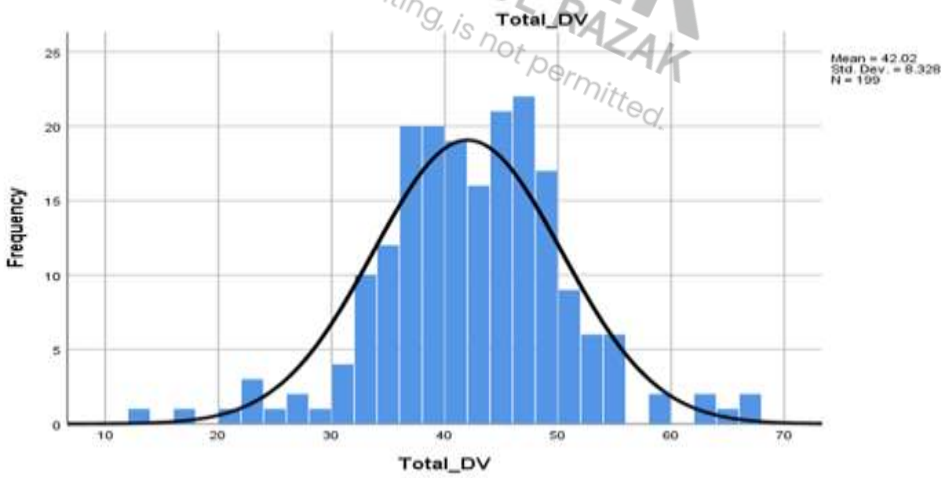


FIGURE 4. 8:DEPENDENT VARIABLE TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Total dependent variable shows long-left tail or negative skewness (-0.136) and platykurtic because the kurtosis value, 1.274 is less than 3.

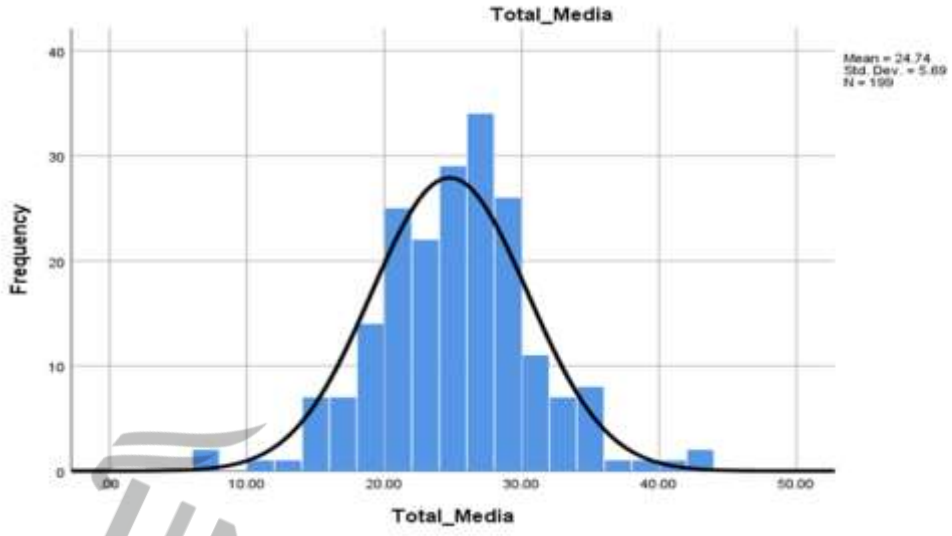


FIGURE 4. 9:MEDIATOR VARIABLE TOTAL DESCRIPTIVE ANALYSIS. SOURCE: SPSS

Total mediator variable shows long-right tail or positive skewness (0.044) and platykurtic because the kurtosis value, 0.996 is less than 3.

4.6 Factor Analysis of IV Influencing Portfolio Allocation

Factor analysis is used to reduce a huge number of variables to a manageable number of factors. Because personality traits had too many items (25), factor analysis was utilised in this study to reduce them to five primary components. Questions 12 to 36 of the surveys, which are coded from Extra 1- 5, Neuro 1-5, Open 1-5, Agree 1-5, and Cons 1-5, are meant to look at the impact of the Big 5 Behavioural Finance traits on individual portfolio allocation decisions.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.895
Bartlett's Test of Sphericity	Approx. Chi-Square	2554.309
	df	300
	Sig.	0.000

TABLE 37: KMO & BARTELETT'S TEST. SOURCE: SPSS

The Kaiser-Meyer-Olkin Measure is a criterion for determining sampling adequacy. According to (Kaiser, 1974), the minimal acceptable level is 0.5, while values between 0.5 and 0.6 are regarded mediocre. Values greater than 0.7 are deemed good, 0.8 is exceptional, and 0.9 is excellent. The KMO rating in the above table is 0.895, which is deemed excellent and acceptable. As a result, using data reduction techniques is appropriate and valid.

The Bartlett's Test of Sphericity assists a researcher in determining whether the results of a factor analysis are worth evaluating and whether the research should be continued. Bartlett's Test of Sphericity is significant at a level of less than 0.005, indicating that there is a high amount of correlation between variables, making factor analysis appropriate.

The correlations among variables in the data were neither single nor identity correlation matrix, according to Bartlett's Test of Sphericity, which is significant at .000. Thus, after examining preliminary tests such as the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Cronbach's Alpha (discussed in 4.8 below), the results in all cases support the use of factor analysis for data gathered using the 6-point Likert-scale construct. The researcher kept the default number of factors created by SPSS taking into account (that is, eigenvalues greater than 1)

because the average communality value is greater than 0.4 and the sample size is 199 respondents (Kaiser's criterion of preserving the number of factors).

The variable consistency to the construct was measured using exploratory factor analysis. Five factors were loaded using the EFA. Five factors with eigenvalues greater than one were identified, with percent of the total variance explained. The exploratory factor analysis (EFA) is used to discover the components that these variables correspond to, for behavioural characteristics (Extra 1-5, Neuro 1-5, Open 1-5, Agree 1-5, and Cons 1-5). To decrease the variables, the prerequisites of factor analysis, which are discussed in Chapter 3, are met.

The remaining variables are grouped into five factors (Mixed behavioural, Neuroticism, High score Openness, Agreeableness, and Low score Openness) after several rounds of removing unsuitable variables, with Eigenvalue > 1.089, KMO = 0.895 (sig. = 0.000), percent of total variance explained = 61.41 percent, and all factor loadings greater than 0.4. These indices demonstrate that factor analysis is completely appropriate and acceptable for these variables. The results are reported in Table 4.2 to Table 4.6, and more information about the SPSS analysis may be found in Appendix B.

FACTOR 1: MIXED BEHAVIOUR TRAITS				
Variables	Variables Description	Rotated Loading	% of Variance	Eigen Value
Cons4	I see myself as someone who does see the consequences of things	0.829	35.716	8.929
Cons5	I see myself as someone who is tidy and clean	0.787		
Cons3	I see myself as someone who works hard	0.770		
Cons2	I see myself as someone who manage time well	0.657		
Agree5	I'm someone who values cooperation over competition	0.788		
Agree4	I'm someone who is willing to listen others advise	0.556		
Agree3	I'm someone who is generous and kind	0.448		
Open3	I'm someone who tries to understand myself	0.734		
Open2	I'm someone who is interested in new knowledge	0.662		
Extra2	I see myself as someone who is joyful and brave	0.681		
Extra3	I see myself as a positive person	0.632		
Extra5	I see myself as someone who is energetic	0.598		
Extra4	I love to make new friends	0.591		
Extra1	I see myself as someone who warms up quickly to others	0.494		

TABLE 38: FACTOR 1 LOADING. SOURCE: AUTHOR

Factor I – Fourteen variables are loaded under factor one, with values ranging from 0.494 to 0.829. The Eigenvalue of factor 1 is 8.929 with 35.7% of variance. The variables are related to Conscientiousness, Agreeableness, Openness, and Extraversion behavioural traits.

Factor 1 has a relatively high significant loading on variables *"I see myself as someone who does see the consequences of things"* (0.829) and moderately high loading on variables *"I see myself as someone who is tidy and clean"* (0.787), *"I see myself as someone who works hard"* (0.770), *"I'm someone who values cooperation over competition*" (0.788), and *"I'm someone to tries to understand myself"* (0.734). It also has a good significant loading on *"I see myself as someone who is joyful and brave"* (0.681), *"I'm someone who is interested in new knowledge"* (0.662), *"I see myself as someone who manage time well"(*0.657), and *"I see myself as a positive person"* (0.632).On the other hand, *"I see myself as someone who is energetic*" (0.598)*, "I love to make new friends"* (0.591)*, "I'm someone who is willing to listen others advise*" (0.556)*, "I see myself as someone who warms up quickly to others"*

(0.494)*, and "I'm someone who is generous and kind"* (0.448) have marginally significant loading.

Component 1 and component 4 have loaded the item *"I'm someone who is willing to listen others advise."* However, because the item is related to the Agreeableness factor and the difference in loading value isn't significant, the researcher opted to put it with component 4, under factor 4.

FACTOR 2: NEUROTICISM TRAITS				
Variables	Variables Description	Rotated Loading	% of Variance	Eigen Value
Neuro3	I'm someone who becomes stressed out easily	0.755	10.000	2.500
Neuro5	I'm someone who does things I later regret	0.753		
Neuro4	I often feel nervous and sensitive on emotion	0.723		
Neuro1	I see myself as someone who often feel moody	0.656		
Neuro2	I gives up easily when things go wrong	0.500		

TABLE 39: FACTOR 2 LOADING. SOURCE: AUTHOR

Factor 2 identifies five variables with values ranging from 0.500 to 0.755. The Eigenvalue of factor 2 is 2.5 with 10% of variance. The variables are related to Neuroticism behavioural traits. All the five variables carries a good significant loading; *"I'm someone who becomes stressed out easily"* (0.755), *"I'm someone who does things I later regret"* (0.753), *and "I often feel nervous and sensitive on emotion"* (0.723) has a high significant loading, whereas, *"I see myself as someone who often feel moody"* (0.656) and *"I gives up easily when things go wrong"* (0.500).

FACTOR 3: OPENNESS TRAITS				
Variables	Variables Description	Rotated Loading	% of Variance	Eigen Value
Open5	I'm someone who is interested in abstract ideas	0.785	1.609	6.435
Open4	I see myself as creative and enjoy in different field	0.703		

TABLE 40: FACTOR 3 LOADING. SOURCE: AUTHOR

Factor 3 specifies two variables with 0.703 to 0.785 as their values. Factor 3 has an Eigenvalue of 6.435 and a variance of 1.61 percent. Variables *"I'm someone who is*

interested in abstract ideas" and *"I see myself as creative and enjoy in different field"* had strong and significant loadings of 0.785 and 0.703, respectively, and are associated to Openness traits.

FACTOR 4: AGREEABLENESS TRAITS				
Variables	Variables Description	Rotated Loading	% of Variance	Eigen Value
Agree2	I'm someone who seldom get into arguments	0.716	1.226	4.904
Agree1	I see myself as someone who trust others	0.591		
Agree4	I'm someone who is willing to listen others advise	0.515		

TABLE 41: FACTOR 4 LOADING. SOURCE: AUTHOR

Factor 4 has three variables. The first variable, *"I'm someone who seldom get into argument,"* has the largest loading (0.716), whereas the second variable, *"I see myself as someone who trust others,"* has a marginally significant loading and followed by *"I'm someone who is willing to listen others advise"*(0.515). Factor 4 has an Eigenvalue of 4.904 and a variance of 1.23%.

FACTOR 5: OPENNESS TRAITS				
Variables	Variables Description	Rotated Loading	% of Variance	Eigen Value
Open1	I often try new ideas in investment	0.774	1.089	4.354

TABLE 42: FACTOR 5 LOADING. SOURCE: AUTHOR

Only one item, with an Eigenvalue of 4.354 and a variance of 1.09 percent, was loaded under factor 5. It has a high loading value.

4.7 Reliability Test Analysis using Cronbach's Alpha

Inter-item consistency was assessed using the Cronbach's alpha coefficient. Cronbach's alpha is a measure of internal consistency, or how closely a group of things are related to one another. It is regarded as a scale dependability indicator, and it is acceptable if the reliability value is 0.70 or above. Cronbach's Alpha is used in this section to assess the reliability of items contained in the components

identified through factor analysis. This test is performed to ensure that the measurements are accurate enough for future use. The Cronbach's alpha test findings are provided in Table 43.

Factors	Variables	Cronbach's Alpha	Corrected Item-total Correlation	Cronbach's alpha if Item Deleted	F (sig.)
Factor 1: Mixed Behaviour	Cons4	0.926	0.777	0.917	6.404 (.000)
	Cons5		0.732	0.918	
	Cons3		0.731	0.918	
	Cons2		0.689	0.920	
	Agree5		0.737	0.918	
	Agree4		0.596	0.923	
	Agree3		0.525	0.925	
	Open3		0.701	0.920	
	Open2		0.660	0.921	
	Extra2		0.647	0.921	
	Extra3		0.678	0.920	
	Extra5		0.657	0.921	
	Extra4		0.611	0.922	
	Extra1		0.504	0.926	
Factor 2: Neuroticism	Neuro3	0.742	0.601	0.659	8.200 (.000)
	Neuro5		0.604	0.662	
	Neuro4		0.479	0.707	
	Neuro1		0.422	0.727	
	Neuro2		0.435	0.726	
Factor 3: Openness	Open5	0.686	0.522	.	3.113 (0.79)
	Open4		0.522	.	
Factor 4: Agreeableness	Agree2	0.587	0.383	0.512	9.444 (.000)
	Agree1		0.348	0.553	
	Agree4		0.464	0.389	
Factor 5: Openness	Open1	.	.	.	.

TABLE 43: CRONBACH'S ALPHA TEST FOR FACTORS ITEM. SOURCE: AUTHOR

As indicated in Table 4.24, Cronbach's Alpha indices for all factors are larger than 0.5, and the corrected item-total correlation for all items is greater than 0.30. If the reliability value is 0.70 or higher, it is considered satisfactory. Other researchers, such as (Nunnally, Psychometric Theory, 1967), have proposed lower limitations of acceptability for Cronbach's alpha, who advocated for values as low as 0.50 for exploratory investigation in the first edition of his book. According to Hair et al. (2010), while 0.70 is commonly regarded as a respectable value, values as low as 0.60 may be acceptable for exploratory research.

Furthermore, if any item is removed, the factor's Cronbach's Alpha is less than the factor's Cronbach's Alpha, and the significance of the F test for each factor is less than 0, except for factor 3, a form of test to assess the applicability of applying Cronbach's Alpha technique for the data. These indices demonstrate that the items in Factor 1: Mixed Behaviour, Factor 2: Neuroticism, and Factor 4: Agreeableness are reliable enough to be employed in future research: The associations between the variables were further investigated using multiple regression analysis and structural equation modelling. Cronbach's alpha for all of these items, as determined by SPSS, is included in Appendix C.

In the case of factor 5, the Factor Analysis has only extracted one item from component 5, making Cronbach's Alpha analysis unfeasible. The factor loading value for this item, on the other hand, is quite high. As a result, it has been chosen to study this variable further using the Multi Regression approach.

4.8 Multiple Regression Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
Total_DV	42.02	8.328	199
Total_Extra	23.54	4.276	199
Total_Neuro	15.52	5.095	199
Total_Open	22.16	4.372	199
Total_Agree	22.56	4.242	199
Total_Cons	23.54	5.271	199

TABLE 44: DESCRIPTIVE STATISTIC TABLE. SOURCE: SPSS

The above table 44 shows the descriptive statistics performed based on 5 independent variables (OCEAN) and one dependent variable (Retail Investors' Decision on Portfolio allocation).

The dependent variable is the variable that the research intends to investigate, and the independent variables are the variables that are used to predict the value of the dependent variable (DV).

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.621[a]	0.385	0.369	6.615	0.385	24.178	5	193	0.000

a. Predictors: (Constant), Total_Cons, Total_Neuro, Total_Open, Total_Agree, Total_Extra

b. Dependent Variable: Total_DV

TABLE 45: MULTIPLE REGRESSION ANALYSIS MODEL SUMMARY. SOURCE: SPSS

R has a value of 0.621 and the R-square is 0.385. R is the coefficient of correlation between projected values (DV) and the independent variable, whilst R-squared is the square of this coefficient and represents the percentage of variation explained by the regression line out of total variation. The result shows that 38.5% of the total variation in Retail Investors Decisions' on Portfolio Allocation (DV), is explained by the regression and that DV and IV have a coefficient of correlation of 62.1%. As a result, the model is statistically significant.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5289.367	5	1057.873	24.178	.000[b]
	Residual	8444.553	193	43.754		
	Total	13733.920	198			

a. Dependent Variable: Total_DV

b. Predictors: (Constant), Total_Cons, Total_Neuro, Total_Open, Total_Agree, Total_Extra

TABLE 46: MULTIPLE REGRESSION ANOVA TABLE. SOURCE: SPSS

The statistical significance of the R-square value in the model summary table is tested using analysis of variance. The null hypothesis is that the R-square of the population is zero. The ANOVA results show statistical significance (F=24.18, p <.005), indicating that the population R-square is significantly higher than zero.

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	7.905	3.681		2.148	0.033	0.645	15.165
	Total_Extra	0.210	0.172	0.108	1.221	0.224	-0.130	0.550
	Total_Neuro	0.142	0.099	0.087	1.441	0.151	-0.053	0.337
	Total_Open	0.619	0.149	0.325	4.154	0.000	0.325	0.913
	Total_Agree	0.573	0.156	0.292	3.661	0.000	0.264	0.881
	Total_Cons	0.013	0.142	0.008	0.092	0.927	-0.268	0.294
a. Dependent Variable: Total_DV								

TABLE 47: MULTIPLE REGRESSION COEFFICIENTS TABLE. SOURCE: SPSS

From the coefficients result, the researcher is 95% confident that beta interval is between -0.053 and 0.913. The confident interval is calculated by using the formula as following:

The critical value for 95% confident level is 2.36, thus,

confident interval = the standard error value (3.681) * 2.36.

= 8.69

= 8.69 ± beta

According to the coefficient table, the t statistic for Open and Agree are statistically significant because the p-value is less than .001. However, because the t statistic for components Extra, Neuro and Cons are greater than .001, these three factors are not statistically significant.

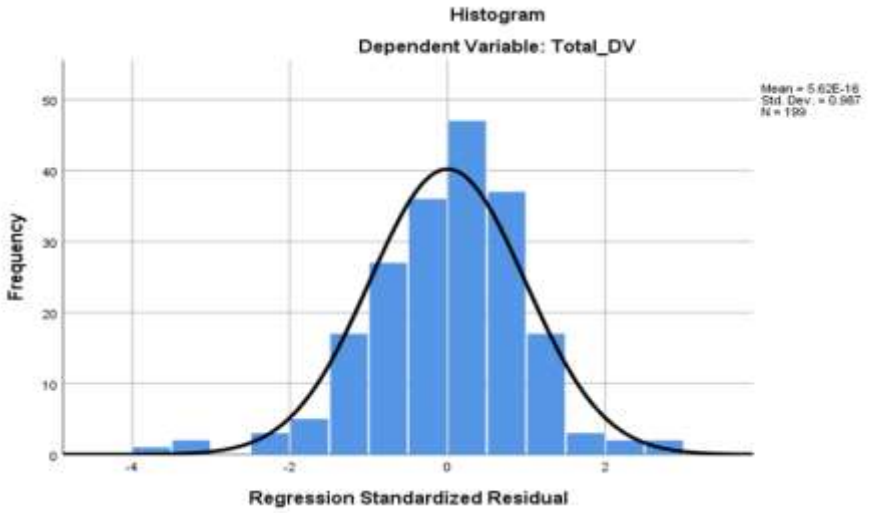


FIGURE 4. 10: TOTAL DV REGRESSION STANDARDIZED RESIDUAL HISTOGRAM. SOURCE: SPSS

The regression standardised residual of the dependent variable is normally distributed and symmetrical. The bell-shaped symmetrical curve could be seen in the histogram graph above, with maximum scores in the middle and lower scores at the margins.

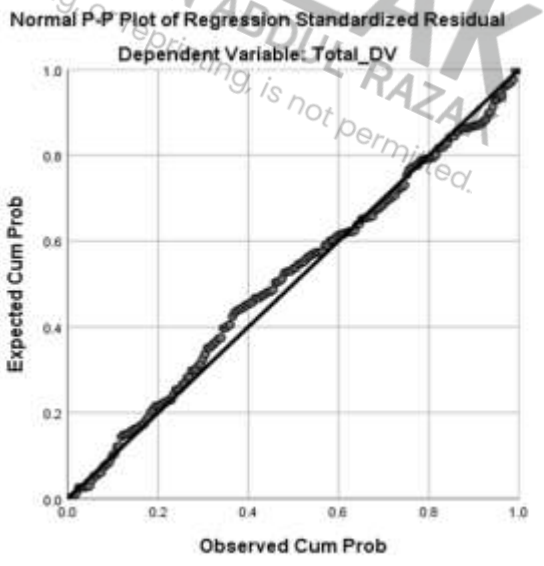


FIGURE 4. 11: P-P PLOT OF REGRESSION STANDARDIZED RESIDUAL. SOURCE: SPSS

In the Normal P-P Plots of Regression, the standardised residuals have a normal distribution as well. This can be seen by looking at how the data is laid out on the straight diagonal line. Therefore, it indicates that there are no issues with linearity or normality.

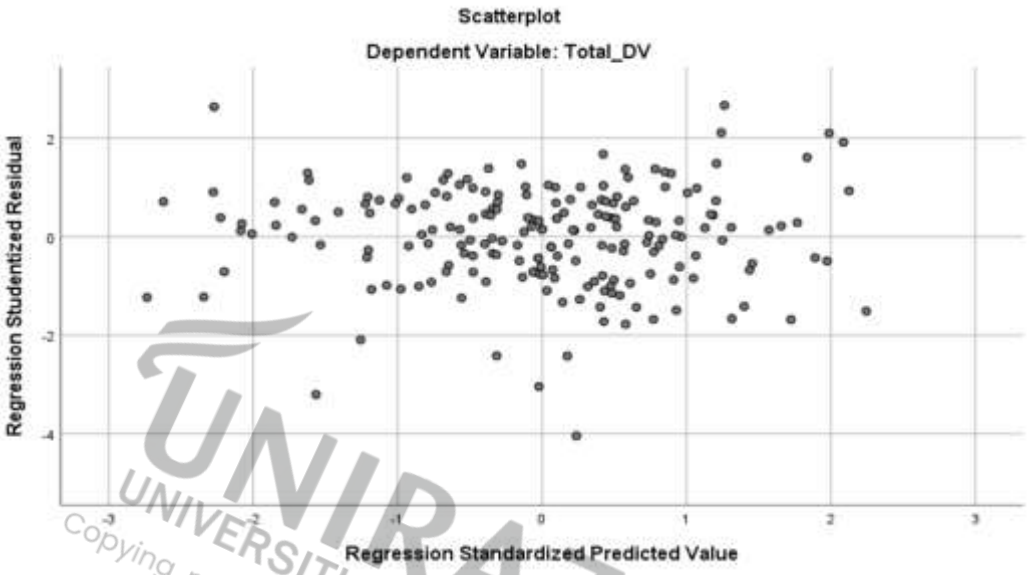


FIGURE 4. 12: SCATTERPLOT OF REGRESSION STANDARDIZED PREDICTED VALUE. SOURCE: SPSS

Except for a few univariate or multivariate outliers, the scatterplot reveals that most of the data is in the centre, indicating that there is no linearity or normality issue. Appendix D contains the entire report.

4.9 Mediator Effect Analysis

The goal of this study was to see how the Big Five Behavioural Finance Traits influence retail investors' portfolio allocation decision, as mediated by the COVID-19 pandemic. Tables 48 to 52 show the outcomes.

Total_Me

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4404	.1940	26.2269	47.4027	1.0000	197.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	12.0428	1.8801	6.4053	.0000	8.3350	15.7505
Total_Op	.5731	.0832	6.8850	.0000	.4090	.7373

Total_DV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5497	.3022	48.6479	85.3125	1.0000	197.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	18.8141	2.5606	7.3475	.0000	13.7644	23.8639
Total_Op	1.0472	.1134	9.2365	.0000	.8236	1.2707

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
1.0472	.1134	9.2365	.0000	.8236	1.2707	.5497

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.6130	.1052	5.8267	.0000	.4055	.8205	.3218

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Total_Me	.4341	.0918	.2668	.6259

TABLE 48: MEDIATING EFFECT ON OPENNESS TRAIT AND INVESTORS' DECISION. SOURCE: SPSS

Table 48 shows the mediating effect on the Openness (IV) trait and investor decision (DV). The direct effect (b=.5731, se=.0832, p<.001) from Openness trait to mediator was positive and statistically significant. The path (direct effect) from Openness to investors' decision was positive and statistically significant (b=.6130, se=.1052, p< .001) in the total investors' decision outcome, indicating that those who scored higher on the Openness trait are more likely to have an impact on investment decision than those who scored lower on the measure. COVID-19 (Mediator) has a positive and statistically significant direct influence on investment

choice (b=.7575, se=.0808, p< .001), indicating that COVID-19 pandemic is more likely to have an impact on investment decision.

Non-parametric bootstrapping is used to test the indirect effect. The inference is that the population indirect effect is 0 if the null of 0 falls between the lower and upper bounds of the 95 percent confidence interval. The indirect effect is inferred to be non-zero if 0 falls beyond the confidence interval. The indirect impact (IE=.4341) is statistically significant in this circumstance; 95 percent confidence interval (.2668, .6259).

Total_Me

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2976	.0886	29.6554	19.1469	1.0000	197.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	17.1819	1.7707	9.7033	.0000	13.6899	20.6739
Total_Co	.3213	.0734	4.3757	.0000	.1765	.4661

Total_DV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.7068	.4996	35.0641	97.8400	2.0000	196.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	11.0892	2.3408	4.7374	.0000	6.4729	15.7056
Total_Co	.4221	.0836	5.0475	.0000	.2572	.5870
Total_Me	.8485	.0775	10.9527	.0000	.6957	1.0013

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.6947	.1011	6.8710	.0000	.4953	.8941	.4397

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.4221	.0836	5.0475	.0000	.2572	.5870	.2671

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Total_Me	.2726	.0711	.1489	.4269

TABLE 49: MEDIATING EFFECT ON CONSCIENTIOUSNESS TRAIT AND INVESTORS' DECISION. SOURCE: SPSS

Table 49 shows the mediating effect on the Conscientiousness (IV) trait and investor decision (DV). The direct effect (b=.3213, se=.0734, p< .001) from Conscientiousness trait to mediator was positive and statistically significant. The path (direct effect) from Conscientiousness to investors' decision was positive and statistically significant (b=.4221, se=.0836, p< .001) in the total investors' decision outcome, indicating that those who scored higher on the Conscientiousness trait are more likely to have an impact on investment decision than those who scored lower on the measure. COVID-19 (Mediator) has a positive and statistically significant direct influence on investment choice (b=.8485, se=.0775, p< .001), indicating that the pandemic is more likely to have an impact on investment decision.

The indirect impact (IE=.2726) is statistically significant in this circumstance; 95 percent confidence interval (.1489, .4269).

Total_Me

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3894	.1516	27.6050	35.2019	1.0000	197.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	12.5477	2.0891	6.0064	.0000	8.4279	16.6675
Total_Ex	.5181	.0873	5.9331	.0000	.3459	.6904

Total_DV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6992	.4888	35.8174	93.7214	2.0000	196.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	10.1130	2.5883	3.9072	.0001	5.0085	15.2176
Total_Ex	.4928	.1080	4.5628	.0000	.2798	.7058
Total_Me	.8207	.0812	10.1130	.0000	.6607	.9808

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.9180	.1224	7.5001	.0000	.6767	1.1594	.4713

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.4928	.1080	4.5628	.0000	.2798	.7058	.2530

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Total_Me	.4253	.0940	.2542	.6150

TABLE 50: MEDIATING EFFECT ON EXTRAVERSION TRAIT AND INVESTORS' DECISION. SOURCE: SPSS

Table 50 shows the mediating effect on the Extraversion (IV) trait and investor decision (DV). The direct effect (b=.5181, se=.0873, p< .001) from Extraversion trait to mediator was positive and statistically significant. The path (direct effect) from Extraversion to investors' decision was positive and statistically significant (b=.4928, se=.1080, p< .001) in the total investors' decision outcome, indicating that those who scored higher on the Extraversion trait are more likely to have an impact on investment decision than those who scored lower on the measure. COVID-19 (Mediator) has a positive and statistically significant direct influence on investment choice (b=.8207, se=.0812, p< .001), indicating that a COVID-19 pandemic is more likely to have an impact on investment decision.

The indirect impact (IE=.4253) is statistically significant in this circumstance; 95 percent confidence interval (.2542, .6150).

Total_Me

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3898	.1519	27.5945	35.2901	1.0000	197.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	12.9480	2.0202	6.4091	.0000	8.9639	16.9321
Total_Ag	.5228	.0880	5.9406	.0000	.3492	.6963

Total_DV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.7220	.5213	33.5432	106.7198	2.0000	196.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	8.4918	2.4486	3.4680	.0006	3.6627	13.3208
Total_Ag	.6279	.1054	5.9598	.0000	.4201	.8357
Total_Me	.7824	.0786	9.9608	.0000	.6275	.9374

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
1.0370	.1188	8.7305	.0000	.8027	1.2712	.5282

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.6279	.1054	5.9598	.0000	.4201	.8357	.3198

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Total_Me	.4091	.0939	.2422	.6107

TABLE 51: MEDIATING EFFECT ON AGREEABLENESS TRAIT AND INVESTORS' DECISION. SOURCE: SPSS

Table 51 shows the mediating effect on the Agreeableness (IV) trait and investor decision (DV). The direct effect (b=.5228, se=.0880, p< .001) from Agreeableness trait to mediator was positive and statistically significant. The path (direct effect) from Agreeableness to investors' decision was positive and statistically significant (b=.6279, se=.1054, p< .001) in the total investors' decision outcome, indicating that those who scored higher on the Agreeableness trait are more likely to have an

impact on investment decision than those who scored lower on the measure. COVID-19 (Mediator) has a positive and statistically significant direct influence on investment choice (b=.7824, se=.0786, p< .001), indicating that a COVID-19 pandemic is more likely to have an impact on investment decision.

The indirect impact (IE=.4091) is statistically significant in this circumstance; 95% confidence interval (.2422, .6107).

Total_Me

Model Summary

R	R-sq	MSE	F	df1	df2	p
.0412	.0017	32.4824	.3355	1.0000	197.0000	.5631

Model

	coeff	se	t	p	LLCI	ULCI
constant	24.0290	1.2985	18.5056	.0000	21.4683	26.5897
Total_Ne	.0460	.0795	.5792	.5631	-.1107	.2028

Total_DV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6613	.4373	39.4308	76.1520	2.0000	196.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	19.3929	2.3674	8.1916	.0000	14.7241	24.0618
Total_Ne	-.0855	.0877	-.9748	.3309	-.2583	.0874
Total_Me	.9681	.0785	12.3323	.0000	.8133	1.1229

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
-.0409	.1164	-.3511	.7259	-.2705	.1887	-.0250

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
-.0855	.0877	-.9748	.3309	-.2583	.0874	-.0523

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Total_Me	.0446	.0784	-.1177	.1870

TABLE 52: MEDIATING EFFECT ON NEUROTICISM TRAIT AND INVESTORS' DECISION. SOURCE: SPSS

Table 52 shows the mediating effect on the Neuroticism (IV) trait and investor decision (DV). The direct effect (b=.0460, se=.0795, p > .001) from Neuroticism trait

to mediator was positive but statistically insignificant. The path (direct effect) from Neuroticism to investors' decision was negative and statistically insignificant (b=.-.0855, se=.0877, p > .001) in the total investors' decision outcome, indicating that those who scored lower on the Neuroticism trait are more likely to have an negative impact on investment decision than those who scored higher on the measure. COVID-19 (Mediator) has a positive and statistically significant direct influence on investment choice (b=.9681, se=.0785, p< .001), indicating that a COVID-19 pandemic is more likely to have an impact on investment decision.

The indirect impact (IE=.0446) is statistically significant in this circumstance; 95% confidence interval (-.1177, .1870). Appendix E has more detailed tables of the mediating impact created by PROCESS MACRO (SPSS).

4.10 Structural Equation Modelling Analysis

Structural Equation Modelling (SEM) is used to depict relationships between variables in this section. Multiple regression and factor analysis are combined into one model in SEM. One component of SEM is confirmatory factor analysis (CFA), which helps to confirm which factors and their variables (formed by EFA as mentioned above) are suitable for the structural model; the other component, multiple regression, estimates the regression weights between behavioural factors (consisting of independent variables and mediating variable) and the factor of retail investors' decision on portfolio allocation. The results of AMOS' SEM are shown in Figure 4.13.

With GFI (Goodness-of-Fit Index) = 0.995, TLI (Tucker-Lewis Coefficient) = 0.979, CFI (Comparative Fit Index) = 0.998, RMSEA (Root Mean Square Error of Approximation) = 0.056, NFI = 0.995, CMIN/df = 1.619, SRMR = 0.041, P close 0.348, and p-value >.05, the structural model fit is considered as excellent (see the

criteria for an accepted SEM at Chapter 3). These indices show that the model has a high predictive validity for the surveyed data. Appendix D contains additional extensive tables of SEM performed by AMOS.

The route diagram below depicts the influence of the five subdimensions of personality traits: Openness (OPEN), Consciousness (CONS), Agreeableness (AGREE), Neuroticism (NEURO), and Extroversion (EXTR) (EXTRA). The model's RMSEA fit statistics were 0.056, which is considered a best fit model ((Browne, 1993); (Diamantopoulos, 2000). The route diagram depicts the impact of personality qualities on an investor's financial decision.

The variances of each variable explained by the other variables are shown in Figure 4.13, together with estimates of factor loadings, regression weights across variables, and variances of each variable explained by the other variables. Only two parameters are found to be statistically significant on retail investors' portfolio allocation decisions: Agreeableness and Openness. The factor loadings between each factor and its variables are all greater than 0.3, indicating that data measurements are convergent. With a regression estimate of .38 ($p < .001$), the Agreeableness trait had the greatest beneficial impact on retail investors' decision on portfolio allocation. Followed by Openness trait with a regression weight of .37 ($p < .001$).

The hypothesis H2, H3, and H5 are not supported by SEM's findings. Only the two components of Agreeableness (H4) and Openness (H1) are believed to have beneficial effects on retail investors' portfolio allocation decisions, whereas the

mediating factor has a positive effect on the outcome of the cause-and-effect relationship between the Openness, Conscientiousness, Extraversion, and Agreeableness factors and decision on portfolio allocation, whereas, Neuroticism has a negative effect. Appendix F has additional complete tables of SEM performed by AMOS.

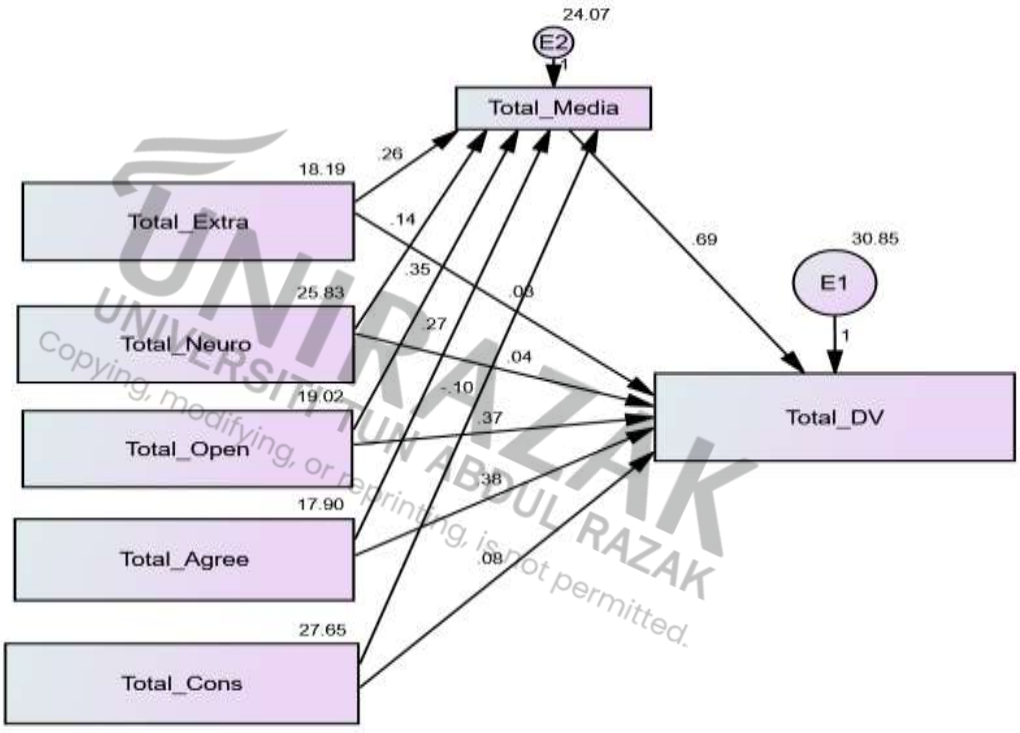


FIGURE 4. 13: STRUCTURAL EQUATION MODELLING. SOURCE: SPSS AMOS

CHAPTER 5- CONCLUSION AND RECOMMENDATION

5.1 Introduction

The purpose of this chapter is to discuss and compare the findings from the empirical findings section (chapter 4) with the ideas presented in the literature review chapter. This chapter focuses on determining the answers to the research questions in order to satisfy the study objectives. It begins with a theoretical examination of the Big 5 Behavioural finance elements influencing Malaysian individual investors' portfolio allocation decision, followed by a detailed discussion of the relationships between the behavioural factors and investment decision.

Then, based on the findings of the IBM SPSS and SPSS AMOS results analysis, report the findings and make recommendations. Furthermore, the research implications help to demonstrate the importance of investigating solutions to the recognised problem as well as the study's significance to other parties. The limits of the analysis have also been identified and investigated. Finally, practical recommendations were made, and the study was completed with research ideas for the future.

5.2 Conclusion

To examine the statistical significance of path coefficients, the current empirical research used the usual bootstrapping approach (500 bootstraps samples) and

199 respondents. Table 5.1 and 5.2 shows the current study's entire structural model estimates.

Hypothesis	Relationship	Beta	S.E	t-value	p-value	Result
H1	Openness ---> Portfolio Allocation Decision	0.619	0.149	4.154	0.000	Accepted
H2	Conscientiousness ---> Portfolio Allocation Decision	0.013	0.142	0.092	0.927	Rejected
H3	Extraversion ---> Portfolio Allocation Decision	0.21	0.172	1.221	0.224	Rejected
H4	Agreeableness ---> Portfolio Allocation Decision	0.573	0.156	3.661	0.000	Accepted
H5	Neuroticism ---> Portfolio Allocation Decision	0.142	0.099	1.441	0.151	Rejected

TABLE 53: IV AND DV RELATIONSHIP. SOURCE: AUTHOR

Hypothesis 1 (H1- Openness has a significant positive impact on retail investors' decision on portfolio allocation) is a one-tail hypothesis that predicts a positive link between Openness and Portfolio Allocation Decision. At a 1% level, the data in Table 5.1 reveal a significant positive association between Openness and an Individual Investors' Portfolio Allocation Decision (ß = 0.619; p-value <.005), showing that H1 is supported.

Individuals with a characteristic of Openness to experience, as defined by Martins (2002), are broad-minded, resourceful, and creative. They are attracted to fresh ideas, aesthetics, and novelty (Gunkel et al., 2010). The findings of this study confirm a strong positive relationship between Openness to experience and investment intention, and they are similar to those of Mayfield et al. (2008), who discovered a positive relationship between Openness to experience and investment intention.

Hypothesis 2 (H2- Conscientiousness has a significant positive impact on retail investors' decision on portfolio allocation) is a one-tail hypothesis that predicts a positive link between Conscientiousness and Portfolio Allocation Decision. At a

1% level, the data in Table 5.1 reveal an insignificant positive association between Conscientiousness and an Individual Investors' Portfolio Allocation Decision (ß = 0.013; p-value >.005), showing that H2 is not supported.

"Conscientious persons are actively involved in decision making," according to Gunkel et al. (2010). Conscientious investors avoid relying on misconceptions, and this capacity allows them to be more selective in their investment choices and risk tolerance (Sadi et al., 2011). The findings of this study however, does not support a link between Conscientiousness and investment intention. This finding contradicts the findings of other research (Donnelly, 2012), (Nga, 2013); (Asebedo, 2018); (Priyadharshini D. S., 2020).

Hypothesis 3 (H3- Extraversion has a significant positive impact on retail investors' decision on portfolio allocation) is a one-tail hypothesis that predicts a positive link between Extraversion and Portfolio Allocation Decision. At a 1% level, the data in Table 5.1 reveal an insignificant positive association between Extraversion and an Individual Investors' Portfolio Allocation Decision (ß = 0.21; p-value >.005), showing that H3 is not supported.

An extravert, according to McCrae and Costa Jr (1997), is a person who is active, positive, thrill-seeking, and socialises in large groups. The findings of this study revealed an unfavourable association between extraversion and investors' decision on portfolio allocation, supporting (Gokhan Ozer, 2019) findings.

Hypothesis 4 (H4- Agreeableness has a significant positive impact on retail investors' decision on portfolio allocation) is a one-tail hypothesis that predicts a positive link between Agreeableness and Portfolio Allocation Decision. At a 1% level, the data in Table 5.1 reveal a significant positive association between Extraversion and an Individual Investors' Portfolio Allocation Decision (ß = 0.573; p-value <.005), showing that H4 is supported.

Agreeable people are less likely to get into fights and are more likely to accept information from others without question (McCrae & Costa Jr, 1997). The findings of this study show a link between agreeableness and portfolio allocation decisions made by investors, supporting (Priyadharshini D. S., 2020).

Hypothesis 5 (H5- Neuroticism has a significant negative impact on retail investors' decision on portfolio allocation) is a one-tail hypothesis that hypothesized a positive link between Neuroticism and Portfolio Allocation Decision. At a 1% level, the data in Table 5.1 reveal an insignificant positive association between Neuroticism and an Individual Investors' Portfolio Allocation Decision (ß = 0.142; p-value >.005), showing that H5 is not supported.

Neurotic investors avoid hesitation, are fearful of risk, and steer clear of debt instruments and international shares (Niszczota, 2014). Furthermore, neurotic individuals lack conceptual knowledge, analytical capacity, cognitive capabilities, and critical thinking abilities. These flaws make neurotic people nervous and apprehensive when they make dangerous decisions (McCrae & Costa Jr, 1997; Young et al., 2012). This study, on the other hand, finds a positive but

statistically insignificant association between neuroticism and portfolio decisions, corroborating (Gokhan Ozer, 2019).

	Standard Estimation	p-value	Result
Openness	0.5497	***	Significant Impact
Conscientiousness	0.4397	***	Significant Impact
Extraversion	0.4713	***	Significant Impact
Agreeableness	0.5282	***	Significant Impact
Neurotism	-0.025	0.7259	Insignificant Impact

TABLE 54: MEDIATING EFFECT ON IV AND DV RELATIONSHIP. SOURCE: AUTHOR

Hypothesis 6 (H6- COVID-19 mediates the outcome of the cause-and-effect relationship between the 5 behavioural finance factors and decision on portfolio allocation) is a two-tailed hypothesis that examines the cause-and-effect relationship between the Big 5 Behavioural Finance traits (OCEAN) and portfolio allocation decisions during the COVID-19 pandemic. Table 5.2 shows that Openness, Conscientiousness, Extraversion, Agreeableness, and an individual investor's portfolio allocation have a positive cause-and-effect relationship. Furthermore, each of the four characteristics has a significant impact. On the other hand, neuroticism shows a negative correlation and has a statistically insignificant impact. The 6th hypothesis has been accepted.

This empirical work aims to test the relationship between behavioural finance traits and investors' portfolio allocation decision mediated by COVID 19 pandemic in Malaysia using multiple regression and the SEM path modelling technique, which is widely recognised and applied in the study of social sciences ((Hair Jr, 2011); (Kura, 2016); (Roldán, 2012), and is the first in Malaysia to investigate the mediator determinants' significance.

In terms of investment decision during the COVID-19 pandemic, this study's conclusions are similar to those of Arpita Gurbaxani and Dr Rajani Gupte (2021). Individual investors are more risk averse and seek investments that are generally safe. As a result, it demonstrates that individual investors are generally optimistic.

On the other side, Phaik Nie Chin (2021) has done a similar study in Malaysia, and the findings are compatible with the findings of this study. Both of these studies show that personality traits, demographic, socioeconomic, and investment behaviours influence investor decisions in Malaysia. Similar to the findings of this study, Phaik Nie Chin's findings show that Malaysian investors with high Openness and Agreeableness traits have a greater impact on investment decisions, which is distinct from other countries. Individuals with high Openness and Agreeableness tend to be more open to new ideas and market knowledge, which drives them to modify their trading strategies or plans more frequently than others. High Agreeableness investors are also thought to be less autonomous and more likely to follow the herd ((Shuai, 2014). These findings are congruent with herd behaviour demonstrated by investors in other nations during the COVID-19 epidemic, as reported in Asian Journal of Business and Accounting 14(1), 2021 137.

(Priyadharshini D. S., 2020) conducted a comparable study with a focus on India, with results that differ from this one. In her study, Conscientiousness trait has a major impact on investment decision, followed by Extraversion. Neuroticism, Agreeableness, and Openness, the other three personality qualities, have little bearing on investment decision. A person's personality traits are the result of a combination of elements such as upbringing, moral values, religious beliefs, and

social conditioning factors applicable to the many social groups with which an investor identifies. As a result, these factors could be to accountable for the disparity in results when the same study was conducted in Malaysia.

(Himanshu, Ritika, Mushir, & Suryavanshi., 2020) discovered a similar finding in their study of COVID-19's impact on portfolio allocation in India. The findings reveal that before COVID-19, Indian investors chose risky assets, but turned to risk-free assets during the outbreak. A similar effect was found in this research of Malaysian investors. The findings of this study also show that during the COVID-19 outbreak, majority of Malaysian investors preferred low-risk investments.

This shift could be attributed to the current state of uncertainty, which includes not only the financial market environment but also global changes. A global lockdown has never been experienced before. Furthermore, the current financial situation surrounding COVID-19 has left everyone wondering what will happen next. Emotions such as fear, rage, and others, act as external cues that generate a somatic condition in the brain, directing persons consciously or unconsciously in the act of decision-making, according to (Bechara, 1997). Emotions operate as a shortcut mechanism for making decisions during times of financial distress, according to academic research (Loewenstein, 2001). People are afraid of the COVID-19 crisis since it is the first pandemic to strike the modern world. As a result, as evidenced by the findings of this study, psychological considerations have a significant impact on their decision-making.

5.3 Contribution of Study

During the COVID-19 pandemic, the study drew a broad picture of the effects of behavioural finance features on individuals' portfolio allocation decisions in five Malaysian states. This study is one of the few in Malaysia that looks at the factors that influence portfolio allocation decisions using behavioural finance. Prior research, such as those by (Mohamed Albaity, 2012) and (Hawati Janor, 2016), focused mostly on risk, overconfidence, regret, happiness, and trust, but this study aims to employ a whole range of behavioural characteristics to examine their impacts on Malaysian individual investors.

In terms of theoretical contribution, this research demonstrates that investors make rational decisions in order to maximise their wealth in the instance of the global pandemic. Malaysian investors were still interested in investing throughout the COVID-19 outbreak, according to this study, but majority of them chose a low-risk investment option. However, according to the study, 42% of investors still prefer high-risk investments during the outbreak and are satisfied with the returns. As a result, it demonstrates that Malaysian investors make sound decisions even when faced with uncertainty.

This study proves the pattern of investors' decision-making depending on their personality attribute that leads to emotional process, and to what extent it influences decision-making from a human perspective during a pandemic. The study shows that before the pandemic 71% of investors in Malaysia prefers high risk investment, 67.7% prefers moderate risk investment, and 16.1% prefers low risk investment. However, during the pandemic, 54.9% prefers low risk

investment and 42% prefers high risk investment. Moderate risk investment was not preferred at all.

These finding provides financial institutions and individual investors information into the impact of personality qualities, as well as the kind of personality traits that would lead to excessive investment during times of uncertainty.

As a result, from a practical standpoint, this study will help financial policymakers adjust their policies in light of current pandemic crises and plan for future pandemic situations. The research aids economists and financial market regulators in developing current regulations based on human behaviour when making investment decisions in the face of uncertainty. Financial planning and forecasting can have a favourable impact on financial planning and the market if done correctly.

This research can also help financial advisors improve people's opinions about increased uncertainty by analysing investors' personalities and recommending the best investment for them.

5.4 Recommendation for Retail Investors

According to the research, Openness and Agreeability have a beneficial impact on portfolio allocation. As a result, individual investors with these characteristics should apply their talents and expertise in specific situations to improve investing

outcomes. These two characteristics can assist investors make decisions and foresee future trends in the face of uncertainty.

In contrast to the actual IV and DV relationship, the data show that investors respond differently when faced with uncertainty, such as during the COVID-19 pandemic. Openness, Conscientiousness, Extraversion, and Agreeableness are all favourable and statistically significant qualities that influence portfolio allocation decisions. This suggests that during the pandemic, Malaysian investors are more favourable to investment and portfolio allocation. As a result, a helpful piece of advice for all Malaysian investors is to leverage their personality traits to pick appropriate investments and invest wisely.

5.5 Recommendation for Future Research

It is recommended that future research focus on the entire country, analysing the personality features of Malaysian investors based on cultural differences and the availability of a variety of investment options. Future studies could focus on Malaysia's youth (Generation Y), who make up the majority of the country's population. Furthermore, by extending the current study with a broad sampling frame, the investment behaviour of retirees can be assessed.

It is also recommended for future researcher to compare the same variables outcome after the COVID-19 pandemic. This is one of the volunteers applying behavioural finance in Malaysia, with 6-point Likert scale measures. Further research with a larger sample size and a greater diversity of respondents is required to substantiate the conclusions of this study.

It is also advised that more study be done to develop behavioural finance metrics and tweak them to match the case of the Malaysian investment market, during and after COVID-19 pandemic.

More research is needed to utilise behavioural finance to investigate the behaviours that influence institutional investors' decisions in Malaysia. These studies can aid in determining if behavioural finance is appropriate for all types of investment markets and all types of investors.

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GOW CELIA DEVI'S BIOGRAPHY

Gow Celia Devi is always referred to as Celia by her co-workers and friends. She is a highly passionate, active, and joyful person who is always eager to learn new things and is not afraid to take risks.

She was born in Seremban, Negeri Sembilan on October 13,1976. In 1999, she earned a Bachelor of Pengajian Melayu from the University of Malaya. Celia began her career as a marketing coordinator in a lubricant industry after completing her degree, and was later promoted to Marketing Manager. Lubetron Oil (M) Sdn Bhd, which trades industrial lubricants, was

founded by her in March 2002. She moved the company from trading to manufacture in 2006 with the help of her husband, and now to refinery.

Celia gave birth to her second child in 2006 and decided to care for both of her children on her own while also slowing down her travel for the sake of the company's growth. She has held her current role as Finance Director since then. She is in charge of all financial concerns for three subsidiary companies as well as the main corporation. Her keen interest in finance prompted her to learn more about it, prompting her to enrol in an MBA programme with a Finance major.

EDUCATION & CREDENTIALS
ISO 9001:2015 Std Implication & Internal Audit, 2018
Certificate in Baking & Pastry, 2007
B.A, Malay Studies, University Malaya, 1999

APPENDIX A: Questionnaire

"The Mediating Role of COVID-19 Environment on Po folio Allocation Decision. A Case Study in Malaysia."

Dear participants,

This is my research dissertation for my MBA in Finance at the University Tun Abdul Razak in

Kuala Lumpur. This quiz is designed to study "The Mediating Role of COVID-19 Environment on Portfolio Allocation Decision. A Case Study in Malaysia.". I would like to invite you to join this research project by filling out the survey attached.

The following quiz should take no more than 10 minutes to complete. There is no monetary

reward for replying, and there is no recognized risk. Please do not provide your name in order to ensure that all information is kept private. My university Tun Abdul Razak, will receive copy of the projects. The collected data will be examined as a whole using statistical

method. If you decide to take part in this study, please answer all questions honestly and submit the completed survey using Microsoft form as soon as feasible. Participation is entirely voluntary, and you have the right to decline at any moment.

At the start of each component of the questionnaire, specific instructions are given. Please complete the survey by answering all of the questions in each area. I would like to express my gratitude in advance for your cooperation and participation in this research. Thank you.

Researcher;
Gow Celia Devi Krishnan (M20711022)
Contact Number: 0123722304
Master of Business Administration (Majoring in Finance)
Graduate School of Business
University Tun Abdul Razak Kuala Lumpur
Supervisor: Prof. Dr. Barjoyai Bardai

Choose only one answer

Section A: Personal Information

1. Indicate your gender *

Mark only one oval.

- Male
- Female

2. Which state do you come from? *

Mark only one oval.

- Penang
- Perak
- Kuala Lumpur
- Negeri Sembilan
- Selangor

3.Indicate your age *

Mark only one oval.

- 18-50
- 51 & above

4. Marital status *

Mark only one oval.

- Single
- Married

- Divorced

5. Indicate your highest academic/ professional qualification *

Mark only one oval.

- Below secondary
- Secondary/high school graduate/diploma
- Bachelor degree
- Post graduate/ professional

6. How many years of working experience? *

Mark only one oval.

- Below 5 years
- Above 5 years

7. What is your average monthly income? *

Mark only one oval.

- Below RM 5000
- Above RM 5001

8. Have you been investing? *

Mark only one oval.

- Yes
- No

9. Number of years you have been investing? *

Mark only one oval.

- Below 5 years
- Above 5 years
- 0 years

10. Your preferable range of investment? *

Mark only one oval.

- High Risk
- Moderate Risk
- Low Risk

11. Which rates do you want your investment to grow? *

Mark only one oval.

- Steadily
- At an Average Rate
- At Fast Rate

Section B: Big Five

Please rate your level of agreement (1) Extremely Disagree, (2) Highly Disagree, (3) Somewhat Disagree, (4) Somewhat Agree, (5) Highly Agree,
(6) Extremely Agree
Behavioural Traits Assessment (IV)

12. I see myself as someone who warms up quickly to others *

Mark only one oval.

1 2 3 4 5 6
Extremely disagree Extremely Agree

13. I see myself as someone who is joyful and brave *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

14. I see myself as a positive person *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

15. I love to make new friends *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

16. I see myself as someone who is energetic *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

17. I see myself as someone who often feel moody *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

18. I gives up easily when things go wrong *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

19. I'm someone who becomes stressed out easily *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

20. I often feel nervous and sensitive on emotion *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

21. I'm someone who does things I later regret *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

22. I often try new ideas in investment *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

23. I'm someone who is interested in new knowledge *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

24. I'm someone who tries to understand myself *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

25. I see myself as creative and enjoy in different field *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

26. I'm someone who is interested in abstract ideas *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

27. I see myself as someone who trust others *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

28. I'm someone who seldom get into arguments *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

29. I'm someone who is generous and kind *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

30. I'm someone who is willing to listen others advise *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

31. I'm someone who values cooperation over competition *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

32. I see myself as someone who completes task successfully *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

33. I see myself as someone who manage time well *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

34. I see myself as someone who works hard *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

35. I see myself as someone who does see the consequences of things *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

36. I see myself as someone who is tidy and clean *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

Section C: Investment decision information (DV)

Choose only 1 answer and Please rate your level of agreement (1) Extremely Disagree, (2) Highly Disagree, (3) Somewhat Disagree, (4) Somewhat Agree, (5) Highly Agree, (6) Extremely Agree

37. You believe your knowledge can outperform the market *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

38. You rely on your previous experience for your next investment *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

39. You forecast the changes in investment options based on recent prices * *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

40. You prefer low risk investment (saving/insurance) *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

41. You prefer moderate risk investment (balance mutual fund) *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

42. You prefer high risk investment (stock/share) *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

43. You consider friends and relatives information as the reliable reference to choose your investment *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

44. You are more risk seeking (daring) after a prior gain *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

45. You are more risk averse (careful) after a prior loss *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

46. You feel more sorrow holding losing investment than selling winning investment too soon *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

47. You tend to treat each element of your investment portfolio separately *

Mark only one oval.

1 2 3 4 5 6
Extremely Disagree Extremely Agree

Please rate your level of agreement (1) Extremely Disagree, (2) Highly Disagree, (3) Somewhat Disagree, (4) Somewhat Agree, (5) Highly Agree, (6) Extremely Agree

Section D: Mediating Effect on Investment

48. You still give preference to investment during covid-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

49. You prefer low risk investment (saving and insurance) during covid-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

50. You prefer moderate risk investment (balance mutual funds) during covid-19*

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

51. You prefer high risk investment (stock/share) during covid-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

52. Rate your satisfaction with the low risk (cash/insurance) return on investment during COVID-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

53. Rate your satisfaction with the moderate risk (mutual fund) return on investment during COVID-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

54. Rate your satisfaction with the high risk (Share) return on investment during COVID-19 *

Mark only one oval.

1 2 3 4 5 6

Extremely Disagree Extremely Agree

Appendix B

Factor Analysis Report

```
FACTOR
  /VARIABLES Extra1 Extra2 Extra3 Extra4 Extra5 Neuro1 Neuro2 Neuro3 Neuro4 Neuro5 Open1 Open2
    Open3 Open4 Open5 Agree1 Agree2 Agree3 Agree4 Agree5 Cons1 Cons2 Cons3 Cons4 Cons5
  /MISSING LISTWISE
  /ANALYSIS Extra1 Extra2 Extra3 Extra4 Extra5 Neuro1 Neuro2 Neuro3 Neuro4 Neuro5 Open1 Open2 Open3
    Open4 Open5 Agree1 Agree2 Agree3 Agree4 Agree5 Cons1 Cons2 Cons3 Cons4 Cons5
  /PRINT INITIAL DET KMO EXTRACTION ROTATION
  /FORMAT SORT BLANK(.5)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
```

Factor Analysis

Notes

Output Created		06-MAR-2022 18:19:32
Comments		
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	N of Rows in Working Data File	199
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.
Syntax		FACTOR /VARIABLES Extra1 Extra2 Extra3 Extra4 Extra5 Neuro1 Neuro2 Neuro3 Neuro4 Neuro5 Open1 Open2 Open3 Open4 Open5 Agree1 Agree2 Agree3 Agree4 Agree5 Cons1 Cons2 Cons3 Cons4 Cons5 /MISSING LISTWISE /ANALYSIS Extra1 Extra2 Extra3 Extra4 Extra5 Neuro1 Neuro2 Neuro3 Neuro4 Neuro5 Open1 Open2 Open3 Open4 Open5 Agree1 Agree2 Agree3 Agree4 Agree5 Cons1 Cons2 Cons3 Cons4 Cons5 /PRINT INITIAL DET KMO EXTRACTION ROTATION /FORMAT SORT BLANK(.5) /PLOT EIGEN /CRITERIA MINEIGEN(1) ITERATE(25) /EXTRACTION PC /CRITERIA ITERATE(25) /ROTATION VARIMAX /METHOD=CORRELATION.

Correlation Matrix[a]		
a. Determinant = 1.335E-6		

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.895
Bartlett's Test of Sphericity	Approx. Chi-Square	2554.309
	df	300
	Sig.	0.000

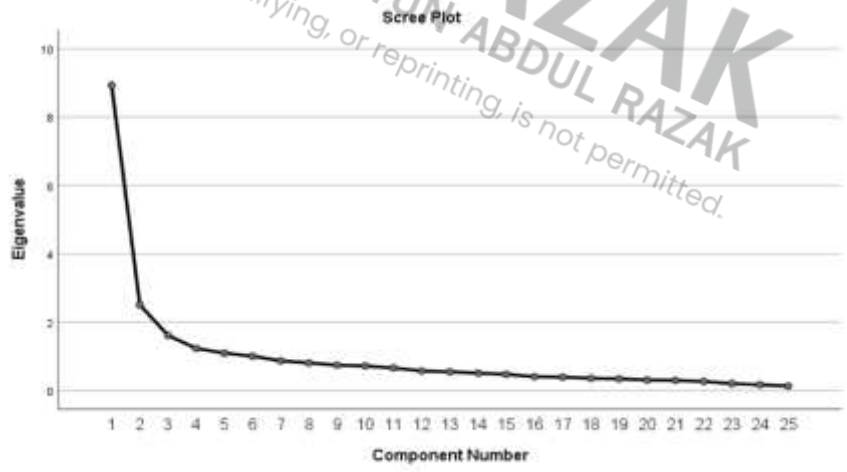
Communalities		
	Initial	Extraction
Extra1:I see myself as someone who warms up quickly to others	1.000	0.464
Extra2:I see myself as someone who is joyful and brave	1.000	0.618
Extra3:I see myself as a positive person	1.000	0.602
Extra4:I love to make new friends	1.000	0.524
Extra5:I see myself as someone who is energetic	1.000	0.628
Neuro1:I see myself as someone who often feel moody	1.000	0.555
Neuro2:I gives up easily when things go wrong	1.000	0.539
Neuro3:I'm someone who becomes stressed out easily	1.000	0.648
Neuro4:I often feel nervous and sensitive on emotion	1.000	0.552
Neuro5:I'm someone who does things I later regret	1.000	0.601
Open1:I often try new ideas in investment	1.000	0.726
Open2:I'm someone who is interested in new knowledge	1.000	0.568
Open3:I'm someone who tries to understand myself	1.000	0.588
Open4:I see myself as creative and enjoy in different field	1.000	0.615
Open5:I'm someone who is interested in abstract ideas	1.000	0.637
Agree1:I see myself as someone who trust others	1.000	0.494
Agree2:I'm someone who seldom get into arguments	1.000	0.611
Agree3:I'm someone who is generous and kind	1.000	0.622
Agree4:I'm someone who is willing to listen others advise	1.000	0.578
Agree5:I'm someone who values cooperation over competition	1.000	0.713
Cons1: I see myself as someone who completes task successfully	1.000	0.830
Cons2:I see myself as someone who manage time well	1.000	0.560
Cons3:I see myself as someone who works hard	1.000	0.645
Cons4:I see myself as someone who does see the consequences of things	1.000	0.740
Cons5:I see myself as someone who is tidy and clean	1.000	0.695

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.929	35.716	35.716	8.929	35.716	35.716	7.424	29.696	29.696
2	2.500	10.000	45.716	2.500	10.000	45.716	2.624	10.494	40.190
3	1.609	6.435	52.151	1.609	6.435	52.151	2.285	9.140	49.330
4	1.226	4.904	57.056	1.226	4.904	57.056	1.784	7.135	56.465
5	1.089	4.354	61.410	1.089	4.354	61.410	1.236	4.945	61.410
6	0.999	3.995	65.405						
7	0.862	3.446	68.852						
8	0.802	3.206	72.058						
9	0.734	2.937	74.995						
10	0.714	2.855	77.850						
11	0.653	2.611	80.461						
12	0.566	2.266	82.727						
13	0.541	2.164	84.891						
14	0.504	2.014	86.905						
15	0.468	1.871	88.777						
16	0.399	1.597	90.374						
17	0.385	1.540	91.914						
18	0.352	1.407	93.321						
19	0.337	1.347	94.667						
20	0.302	1.206	95.873						
21	0.289	1.158	97.031						
22	0.259	1.036	98.067						
23	0.196	0.785	98.853						
24	0.162	0.647	99.500						
25	0.125	0.500	100.000						

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component				
	1	2	3	4	5
Cons1: I see myself as someone who completes task successfully	0.868				
Cons4:I see myself as someone who does see the consequences of things	0.814				
Cons3:I see myself as someone who works hard	0.777				
Agree5:I'm someone who values cooperation over competition	0.774				
Cons5:I see myself as someone who is tidy and clean	0.770				
Extra3:I see myself as a positive person	0.746				
Cons2:I see myself as someone who manage time well	0.742				
Open3:I'm someone who tries to understand myself	0.739				
Open2:I'm someone who is interested in new knowledge	0.710				
Extra5:I see myself as someone who is energetic	0.706				
Extra2:I see myself as someone who is joyful and brave	0.691				
Extra4:I love to make new friends	0.655				
Agree4:I'm someone who is willing to listen others advise	0.647				
Agree3:I'm someone who is generous and kind	0.573				
Extra1:I see myself as someone who warms up quickly to others	0.537				
Open4:I see myself as creative and enjoy in different field	0.520		0.507		
Neuro3:I'm someone who becomes stressed out easily		0.695			
Neuro5:I'm someone who does things I later regret		0.666			
Neuro4:I often feel nervous and sensitive on emotion		0.611			
Neuro1:I see myself as someone who often feel moody		0.577			
Neuro2:I gives up easily when things go wrong		0.542			
Open5:I'm someone who is interested in abstract ideas			0.596		
Agree1:I see myself as someone who trust others					
Open1:I often try new ideas in investment					0.624
Agree2:I'm someone who seldom get into arguments					

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Cons1: I see myself as someone who completes task successfully	0.863				
Cons4:I see myself as someone who does see the consequences of things	0.829				
Agree5:I'm someone who values cooperation over competition	0.788				
Cons5:I see myself as someone who is tidy and clean	0.787				
Cons3:I see myself as someone who works hard	0.770				
Open3:I'm someone who tries to understand myself	0.734				
Extra2:I see myself as someone who is joyful and brave	0.681				
Open2:I'm someone who is interested in new knowledge	0.662				
Cons2:I see myself as someone who manage time well	0.657				
Extra3:I see myself as a positive person	0.632				
Extra5:I see myself as someone who is energetic	0.598				
Extra4:I love to make new friends	0.591				
Agree4:I'm someone who is willing to listen others advise	0.556			0.515	
Extra1:I see myself as someone who warms up quickly to others					
Agree3:I'm someone who is generous and kind					
Neuro3:I'm someone who becomes stressed out easily		0.755			
Neuro5:I'm someone who does things I later regret		0.753			
Neuro4:I often feel nervous and sensitive on emotion		0.723			
Neuro1:I see myself as someone who often feel moody		0.656			
Neuro2:I gives up easily when things go wrong					
Open5:I'm someone who is interested in abstract ideas			0.785		
Open4:I see myself as creative and enjoy in different field			0.703		
Agree2:I'm someone who seldom get into arguments				0.716	
Agree1:I see myself as someone who trust others				0.591	
Open1:I often try new ideas in investment					0.774

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 9 iterations.

Component Transformation Matrix					
Component	1	2	3	4	5
1	0.894	-0.208	0.300	0.254	0.056
2	0.014	0.896	0.346	0.254	0.110
3	-0.342	-0.324	0.785	-0.077	0.395
4	-0.286	-0.211	0.081	0.830	-0.422
5	-0.046	-0.060	-0.410	0.419	0.807

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix C

Reliability Analysis Report

```
RELIABILITY
  /VARIABLES=Cons4 Cons5 Cons3 Cons2 Agree5 Agree4 Agree3 Open3 Open2 Extra2 Extra3 Extra5 Extra4
    Extra1
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

Notes		
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Comments		
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	199
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Cons4 Cons5 Cons3 Cons2 Agree5 Agree4 Agree3 Open3 Open2 Extra2 Extra3 Extra5 Extra4 Extra1 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA /SUMMARY=TOTAL MEANS VARIANCE.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	199	100.0
	Excluded[a]	0	0.0
	Total	199	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.926	0.926	14

Item Statistics			
	Mean	Std. Deviation	N
Cons4:I see myself as someone who does see the consequences of things	4.63	1.252	199
Cons5:I see myself as someone who is tidy and clean	4.73	1.376	199
Cons3:I see myself as someone who works hard	4.82	1.188	199
Cons2:I see myself as someone who manage time well	4.51	1.222	199
Agree5:I'm someone who values cooperation over competition	4.83	1.266	199
Agree4:I'm someone who is willing to listen others advise	4.54	1.179	199
Agree3:I'm someone who is generous and kind	4.87	1.093	199
Open3:I'm someone who tries to understand myself	4.67	1.442	199
Open2:I'm someone who is interested in new knowledge	4.79	1.240	199
Extra2:I see myself as someone who is joyful and brave	4.76	0.995	199
Extra3:I see myself as a positive person	4.87	1.114	199
Extra5:I see myself as someone who is energetic	4.84	1.110	199
Extra4:I love to make new friends	4.72	1.160	199
Extra1:I see myself as someone who warms up quickly to others	4.34	1.207	199

Inter-Item Correlation Matrix

	Cons4:I see myself as someone who does see the consequences of things	Cons5:I see myself as someone who is tidy and clean	Cons3:I see myself as someone who works hard	Cons2:I see myself as someone who manage time well	Agree5:I'm someone who values cooperation over competition	Agree4:I'm someone who is willing to listen others advise	Agree3:I'm someone who is generous and kind	Open3:I'm someone who tries to understand myself	Open2:I'm someone who is interested in new knowledge	Extra2:I see myself as someone who is joyful and brave	Extra3:I see myself as a positive person	Extra5:I see myself as someone who is energetic	Extra4:I love to make new friends	Extra1:I see myself as someone who warms up quickly to others
Cons4:I see myself as someone who does see the consequences of things	1.000	0.698	0.630	0.597	0.719	0.479	0.440	0.643	0.585	0.468	0.564	0.547	0.428	0.294
Cons5:I see myself as someone who is tidy and clean	0.698	1.000	0.632	0.733	0.592	0.469	0.407	0.582	0.468	0.426	0.512	0.478	0.412	0.316
Cons3:I see myself as someone who works hard	0.630	0.632	1.000	0.600	0.520	0.402	0.409	0.555	0.513	0.532	0.517	0.580	0.461	0.398
Cons2:I see myself as someone who manage time well	0.597	0.733	0.600	1.000	0.489	0.472	0.394	0.451	0.493	0.366	0.522	0.502	0.405	0.338
Agree5:I'm someone who values cooperation over competition	0.719	0.592	0.520	0.489	1.000	0.568	0.393	0.595	0.583	0.554	0.565	0.351	0.481	0.370
Agree4:I'm someone who is willing to listen others advise	0.479	0.469	0.402	0.472	0.568	1.000	0.474	0.440	0.381	0.437	0.371	0.346	0.360	0.378
Agree3:I'm someone who is generous and kind	0.440	0.407	0.409	0.394	0.393	0.474	1.000	0.383	0.353	0.306	0.401	0.420	0.329	0.240
Open3:I'm someone who tries to understand myself	0.643	0.582	0.555	0.451	0.595	0.440	0.383	1.000	0.575	0.414	0.493	0.457	0.510	0.365
Open2:I'm someone who is interested in new knowledge	0.585	0.468	0.513	0.493	0.583	0.381	0.353	0.575	1.000	0.484	0.493	0.475	0.363	0.357
Extra2:I see myself as someone who is joyful and brave	0.468	0.426	0.532	0.366	0.554	0.437	0.306	0.414	0.484	1.000	0.497	0.524	0.481	0.563
Extra3:I see myself as a positive person	0.564	0.512	0.517	0.522	0.565	0.371	0.401	0.493	0.493	0.497	1.000	0.551	0.512	0.313
Extra5:I see myself as someone who is energetic	0.547	0.478	0.580	0.502	0.351	0.346	0.420	0.457	0.475	0.524	0.551	1.000	0.519	0.409
Extra4:I love to make new friends	0.428	0.412	0.461	0.405	0.481	0.360	0.329	0.510	0.363	0.481	0.512	0.519	1.000	0.476
Extra1:I see myself as someone who warms up quickly to others	0.294	0.316	0.398	0.338	0.370	0.378	0.240	0.365	0.357	0.563	0.313	0.409	0.476	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.710	4.337	4.874	0.538	1.124	0.025	14
Item Variances	1.460	0.989	2.080	1.090	2.102	0.079	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Cons4:I see myself as someone who does see the consequences of things	61.32	122.662	0.777	0.709	0.917
Cons5:I see myself as someone who is tidy and clean	61.21	121.662	0.732	0.679	0.918
Cons3:I see myself as someone who works hard	61.13	124.939	0.731	0.578	0.918
Cons2:I see myself as someone who manage time well	61.43	125.408	0.689	0.631	0.920
Agree5:I'm someone who values cooperation over competition	61.11	123.432	0.737	0.696	0.918
Agree4:I'm someone who is willing to listen others advise	61.40	128.454	0.596	0.454	0.923
Agree3:I'm someone who is generous and kind	61.08	131.424	0.525	0.334	0.925
Open3:I'm someone who tries to understand myself	61.27	121.421	0.701	0.567	0.920
Open2:I'm someone who is interested in new knowledge	61.15	125.876	0.660	0.508	0.921
Extra2:I see myself as someone who is joyful and brave	61.18	130.109	0.647	0.555	0.921
Extra3:I see myself as a positive person	61.07	127.470	0.678	0.515	0.920
Extra5:I see myself as someone who is energetic	61.10	128.020	0.657	0.571	0.921
Extra4:I love to make new friends	61.23	128.368	0.611	0.471	0.922
Extra1:I see myself as someone who warms up quickly to others	61.61	130.431	0.504	0.410	0.926

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
65.94	145.770	12.074	14

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		2061.599	198	10.412		
Within People	Between Items	64.217	13	4.940	6.404	0.000
	Residual	1985.426	2574	0.771		
	Total	2049.643	2587	0.792		
Total		4111.242	2785	1.476		

Grand Mean = 4.71

```
RELIABILITY
  /VARIABLES=Neuro3 Neuro5 Neuro4 Neuro1 Neuro2
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

Notes

Output Created		07-MAR-2022 11:38:19
Comments		
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	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Neuro3 Neuro5 Neuro4 Neuro1 Neuro2 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA /SUMMARY=TOTAL MEANS VARIANCE.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	199	100.0
	Excluded[a]	0	0.0
	Total	199	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.742	0.743	5

Item Statistics

	Mean	Std. Deviation	N
Neuro3:I'm someone who becomes stressed out easily	3.12	1.556	199
Neuro5:I'm someone who does things I later regret	2.84	1.372	199
Neuro4:I often feel nervous and sensitive on emotion	3.42	1.379	199
Neuro1:I see myself as someone who often feel moody	3.23	1.384	199
Neuro2:I gives up easily when things go wrong	2.91	1.556	199

Inter-Item Correlation Matrix

	Neuro3:I'm someone who becomes stressed out easily	Neuro5:I'm someone who does things I later regret	Neuro4:I often feel nervous and sensitive on emotion	Neuro1:I see myself as someone who often feel moody	Neuro2:I gives up easily when things go wrong
Neuro3:I'm someone who becomes stressed out easily	1.000	0.473	0.431	0.379	0.411
Neuro5:I'm someone who does things I later regret	0.473	1.000	0.361	0.437	0.429
Neuro4:I often feel nervous and sensitive on emotion	0.431	0.361	1.000	0.309	0.297
Neuro1:I see myself as someone who often feel moody	0.379	0.437	0.309	1.000	0.143
Neuro2:I gives up easily when things go wrong	0.411	0.429	0.297	0.143	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.105	2.839	3.417	0.578	1.204	0.055	5
Item Variances	2.108	1.883	2.422	0.539	1.286	0.082	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Neuro3:I'm someone who becomes stressed out easily	12.40	16.050	0.601	0.362	0.659
Neuro5:I'm someone who does things I later regret	12.68	17.197	0.604	0.378	0.662
Neuro4:I often feel nervous and sensitive on emotion	12.11	18.388	0.479	0.238	0.707
Neuro1:I see myself as someone who often feel moody	12.29	18.955	0.422	0.253	0.727
Neuro2:I gives up easily when things go wrong	12.61	17.825	0.435	0.259	0.726

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
15.52	25.958	5.095	5

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		1027.930	198	5.192		
Within People	Between Items	43.873	4	10.968	8.200	0.000
	Residual	1059.327	792	1.338		
	Total	1103.200	796	1.386		
Total		2131.130	994	2.144		

Grand Mean = 3.10

```
RELIABILITY
  /VARIABLES=Open5 Open4
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

Notes

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Comments		
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	N of Rows in Working Data File	199
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Open5 Open4 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA /SUMMARY=TOTAL MEANS VARIANCE.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	199	100.0
	Excluded[a]	0	0.0
	Total	199	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.686	0.686	2

Item Statistics

	Mean	Std. Deviation	N
Open5:I'm someone who is interested in abstract ideas	4.56	1.200	199
Open4:I see myself as creative and enjoy in different field	4.70	1.184	199

Inter-Item Correlation Matrix

	Open5:I'm someone who is interested in abstract ideas	Open4:I see myself as creative and enjoy in different field
Open5:I'm someone who is interested in abstract ideas	1.000	0.522
Open4:I see myself as creative and enjoy in different field	0.522	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.631	4.558	4.704	0.146	1.032	0.011	2
Item Variances	1.421	1.402	1.440	0.038	1.027	0.001	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Open5:I'm someone who is interested in abstract ideas	4.70	1.402	0.522	0.273	
Open4:I see myself as creative and enjoy in different field	4.56	1.440	0.522	0.273	

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
9.26	4.325	2.080	2

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		428.206	198	2.163		
Within People	Between Items	2.113	1	2.113	3.113	0.079
	Residual	134.387	198	0.679		
	Total	136.500	199	0.686		
Total		564.706	397	1.422		

Grand Mean = 4.63

```
RELIABILITY
  /VARIABLES=Agree2 Agree1 Agree4
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

Notes

Output Created		07-MAR-2022 11:45:51
Comments		
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	N of Rows in Working Data File	199
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Agree2 Agree1 Agree4 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR ANOVA /SUMMARY=TOTAL MEANS VARIANCE.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	199	100.0
	Excluded[a]	0	0.0
	Total	199	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.587	0.590	3

Item Statistics

	Mean	Std. Deviation	N
Agree2:I'm someone who seldom get into arguments	4.14	1.341	199
Agree1:I see myself as someone who trust others	4.18	1.195	199
Agree4:I'm someone who is willing to listen others advise	4.54	1.179	199

Inter-Item Correlation Matrix

	Agree2:I'm someone who seldom get into arguments	Agree1:I see myself as someone who trust others	Agree4:I'm someone who is willing to listen others advise
Agree2:I'm someone who seldom get into arguments	1.000	0.243	0.386
Agree1:I see myself as someone who trust others	0.243	1.000	0.344
Agree4:I'm someone who is willing to listen others advise	0.386	0.344	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.286	4.141	4.543	0.402	1.097	0.050	3
Item Variances	1.539	1.391	1.798	0.407	1.293	0.051	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Agree2:I'm someone who seldom get into arguments	8.72	3.789	0.383	0.163	0.512
Agree1:I see myself as someone who trust others	8.68	4.409	0.348	0.133	0.553
Agree4:I'm someone who is willing to listen others advise	8.32	4.005	0.464	0.215	0.389

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
12.86	7.586	2.754	3

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		500.687	198	2.529		
Within People	Between Items	19.729	2	9.864	9.444	0.000
	Residual	413.605	396	1.044		
	Total	433.333	398	1.089		
Total		934.020	596	1.567		

Appendix D

Regression		
Notes		
Output Created		20-MAR-2022 09:55:40
Comments		
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	Split File	<none>
	N of Rows in Working Data File	199
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /DESCRIPTIVES MEAN STDDEV CORR SIG N /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA CHANGE /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT Total_DV /METHOD=ENTER Total_Extra Total_Neuro Total_Open Total_Agree Total_Cons /SCATTERPLOT=(*SRESID ,*ZPRED) /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID) /SAVE PRED ZPRED ADJPRED RESID ZRESID DFBETA SDBETA DFFIT.
Resources	Processor Time	00:00:01.14
	Elapsed Time	00:00:00.48
	Memory Required	14368 bytes
	Additional Memory Required for Residual Plots	616 bytes
Variables Created or Modified	PRE_9	Unstandardized Predicted Value
	RES_9	Unstandardized Residual
	ADJ_9	Adjusted Predicted Value
	ZPR_9	Standardized Predicted Value
	ZRE_9	Standardized Residual
	DFF_9	DFFIT
	DFB0_9	DFBETA for (Constant)
	DFB1_9	DFBETA for Total_Extra
	DFB2_9	DFBETA for Total_Neuro
	DFB3_9	DFBETA for Total_Open
	DFB4_9	DFBETA for Total_Agree
	DFB5_9	DFBETA for Total_Cons
	SDB0_9	Standardized DFBETA for (Constant)
	SDB1_9	Standardized DFBETA for Total_Extra
	SDB2_9	Standardized DFBETA for Total_Neuro
	SDB3_9	Standardized DFBETA for Total_Open
	SDB4_9	Standardized DFBETA for Total_Agree
	SDB5_9	Standardized DFBETA for Total_Cons

Descriptive Statistics

	Mean	Std. Deviation	N
Total_DV	42.02	8.328	199
Total_Extra	23.54	4.276	199
Total_Neuro	15.52	5.095	199
Total_Open	22.16	4.372	199
Total_Agree	22.56	4.242	199
Total_Cons	23.54	5.271	199

Correlations

		Total_DV	Total_Extra	Total_Neuro	Total_Open	Total_Agree	Total_Cons
Pearson Correlation	Total_DV	1.000	0.471	-0.025	0.550	0.528	0.440
	Total_Extra	0.471	1.000	-0.287	0.648	0.589	0.695
	Total_Neuro	-0.025	-0.287	1.000	-0.122	-0.133	-0.305
	Total_Open	0.550	0.648	-0.122	1.000	0.550	0.582
	Total_Agree	0.528	0.589	-0.133	0.550	1.000	0.664
	Total_Cons	0.440	0.695	-0.305	0.582	0.664	1.000
Sig. (1-tailed)	Total_DV		0.000	0.363	0.000	0.000	0.000
	Total_Extra	0.000		0.000	0.000	0.000	0.000
	Total_Neuro	0.363	0.000		0.043	0.030	0.000
	Total_Open	0.000	0.000	0.043		0.000	0.000
	Total_Agree	0.000	0.000	0.030	0.000		0.000
	Total_Cons	0.000	0.000	0.000	0.000	0.000	
N	Total_DV	199	199	199	199	199	199
	Total_Extra	199	199	199	199	199	199
	Total_Neuro	199	199	199	199	199	199
	Total_Open	199	199	199	199	199	199
	Total_Agree	199	199	199	199	199	199
	Total_Cons	199	199	199	199	199	199

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Total_Cons, Total_Neuro, Total_Open, Total_Agree, Total_Extra[b]		Enter

a. Dependent Variable: Total_DV

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.621[a]	0.385	0.369	6.615	0.385	24.178	5	193	0.000

a. Predictors: (Constant), Total_Cons, Total_Neuro, Total_Open, Total_Agree, Total_Extra

b. Dependent Variable: Total_DV

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5289.367	5	1057.873	24.178	.000[b]
	Residual	8444.553	193	43.754		
	Total	13733.920	198			

a. Dependent Variable: Total_DV

b. Predictors: (Constant), Total_Cons, Total_Neuro, Total_Open, Total_Agree, Total_Extra

Coefficients[a]

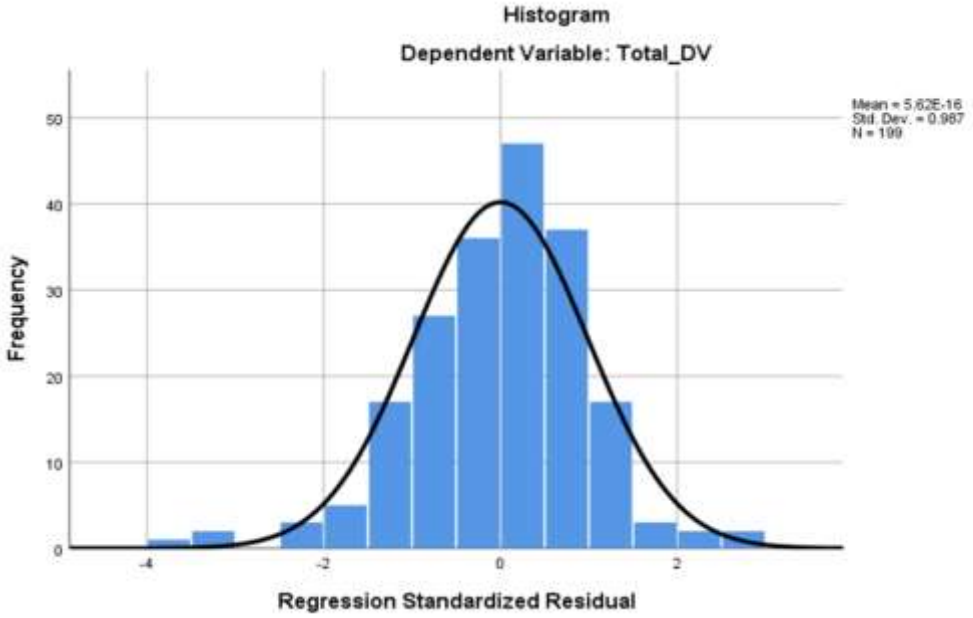
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.905	3.681		2.148	0.033
	Total_Extra	0.210	0.172	0.108	1.221	0.224
	Total_Neuro	0.142	0.099	0.087	1.441	0.151
	Total_Open	0.619	0.149	0.325	4.154	0.000
	Total_Agree	0.573	0.156	0.292	3.661	0.000
	Total_Cons	0.013	0.142	0.008	0.092	0.927

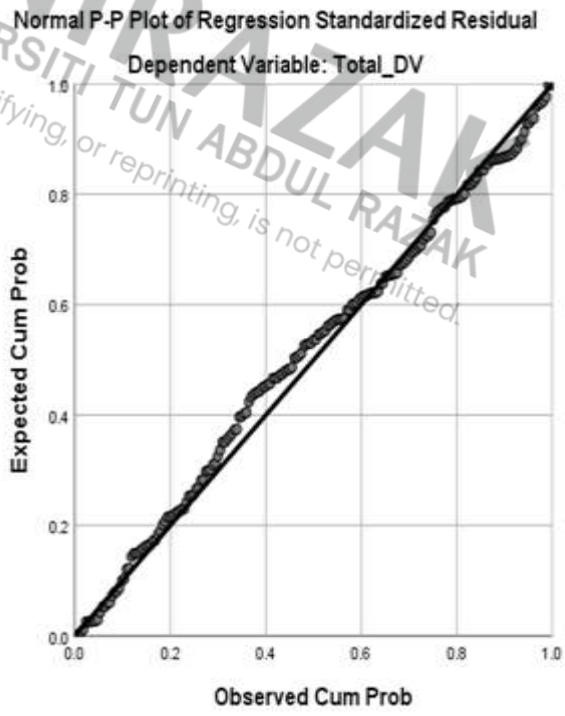
a. Dependent Variable: Total_DV

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	27.88	53.62	42.02	5.169	199
Std. Predicted Value	-2.736	2.244	0.000	1.000	199
Standard Error of Predicted Value	0.538	2.306	1.099	0.335	199
Adjusted Predicted Value	28.15	54.39	42.03	5.193	199
Residual	-26.248	17.453	0.000	6.531	199
Std. Residual	-3.968	2.639	0.000	0.987	199
Stud. Residual	-4.041	2.663	0.000	1.005	199
Deleted Residual	-27.225	18.145	-0.005	6.766	199
Stud. Deleted Residual	-4.213	2.707	-0.002	1.014	199
Mahal. Distance	0.317	23.069	4.975	3.756	199
Cook's Distance	0.000	0.101	0.006	0.014	199
Centered Leverage Value	0.002	0.117	0.025	0.019	199

a. Dependent Variable: Total_DV





Appendix E

Mediating Analysis Report

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Total_DV
    X  : Total_Ag
    M  : Total_Me

Sample
Size:  199

**************************************************************************
OUTCOME VARIABLE:
 Total_Me

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3898      .1519    27.5945    35.2901     1.0000   197.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   12.9480     2.0202     6.4091     .0000     8.9639    16.9321
Total_Ag     .5228      .0880     5.9406     .0000      .3492      .6963

Standardized coefficients
             coeff
Total_Ag     .3898

**************************************************************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7220      .5213    33.5432   106.7198     2.0000   196.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    8.4918     2.4486     3.4680     .0006     3.6627    13.3208
Total_Ag     .6279      .1054     5.9598     .0000      .4201      .8357
Total_Me     .7824      .0786     9.9608     .0000      .6275      .9374

Standardized coefficients
             coeff
Total_Ag     .3198
Total_Me     .5345

Test(s) of X by M interaction:
          F        df1        df2          p
      .8124     1.0000   195.0000     .3685

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5282      .2790    50.2666    76.2218     1.0000   197.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   18.6228     2.7267     6.8298     .0000    13.2455    24.0000
Total_Ag    1.0370      .1188     8.7305     .0000      .8027     1.2712

Standardized coefficients
             coeff
Total_Ag     .5282

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
      Effect         se          t          p       LLCI       ULCI       c_cs
      1.0370      .1188     8.7305     .0000      .8027     1.2712      .5282

Direct effect of X on Y
      Effect         se          t          p       LLCI       ULCI      c'_cs
       .6279      .1054     5.9598     .0000      .4201      .8357      .3198

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total_Me     .4091      .0939      .2422      .6107

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total_Me     .2083      .0412      .1327      .2920

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect output
when some variables in the data file have the same first eight characters. Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Total_DV
    X  : Total_Co
    M  : Total_Me

Sample
Size:  199

**************************************************************************
OUTCOME VARIABLE:
 Total_Me

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2976      .0886    29.6554    19.1469     1.0000   197.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    17.1819     1.7707     9.7033     .0000    13.6899    20.6739
Total_Co      .3213      .0734     4.3757     .0000     .1765      .4661

Standardized coefficients
              coeff
Total_Co      .2976

**************************************************************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7068      .4996    35.0641    97.8400     2.0000   196.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    11.0892     2.3408     4.7374     .0000    6.4729    15.7056
Total_Co      .4221      .0836     5.0475     .0000     .2572      .5870
Total_Me      .8485      .0775    10.9527     .0000     .6957     1.0013

Standardized coefficients
              coeff
Total_Co      .2671
Total_Me      .5797

Test(s) of X by M interaction:
          F        df1        df2          p
      .1339     1.0000   195.0000     .7148

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4397      .1933    56.2380    47.2105     1.0000   197.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    25.6686     2.4384    10.5266     .0000   20.8597    30.4774
Total_Co      .6947      .1011     6.8710     .0000     .4953      .8941

Standardized coefficients
              coeff
Total_Co      .4397

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_cs
      .6947      .1011     6.8710     .0000     .4953      .8941      .4397

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_cs
      .4221      .0836     5.0475     .0000     .2572      .5870      .2671

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total_Me     .2726      .0711      .1489      .4269

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total_Me     .1725      .0404      .0979      .2567

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect output
when some variables in the data file have the same first eight characters. Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Total DV
    X  : Total Ex
    M  : Total Me

Sample
Size:  199

**************************************************************************
OUTCOME VARIABLE:
 Total Me

Model Summary
          R        R-sq         MSE          F        df1        df2          p
      .3894      .1516    27.6050    35.2019     1.0000   197.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   12.5477     2.0891     6.0064     .0000     8.4279    16.6675
Total_Ex     .5181      .0873     5.9331     .0000      .3459      .6904

Standardized coefficients
             coeff
Total_Ex     .3894

**************************************************************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R        R-sq         MSE          F        df1        df2          p
      .6992      .4888    35.8174    93.7214     2.0000   196.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   10.1130     2.5883     3.9072     .0001     5.0085    15.2176
Total_Ex     .4928      .1080     4.5628     .0000      .2798      .7058
Total_Me     .8207      .0812    10.1130     .0000      .6607      .9808

Standardized coefficients
             coeff
Total_Ex     .2530
Total_Me     .5607

Test(s) of X by M interaction:
          F        df1        df2          p
      .5237     1.0000   195.0000     .4701

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R        R-sq         MSE          F        df1        df2          p
      .4713      .2221    54.2304    56.2515     1.0000   197.0000     .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   20.4113     2.9280     6.9710     .0000    14.6370    26.1857
Total_Ex     .9180      .1224     7.5001     .0000      .6767     1.1594

Standardized coefficients
             coeff
Total_Ex     .4713

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_cs
      .9180      .1224     7.5001     .0000      .6767     1.1594      .4713

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_cs
      .4928      .1080     4.5628     .0000      .2798      .7058      .2530

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total Me     .4253      .0940      .2542      .6150

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Total Me     .2183      .0413      .1381      .2980

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

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and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Total_DV
    X  : Total_Ne
    M  : Total_Me

Sample
Size:  199

**************************************************************************
OUTCOME VARIABLE:
 Total_Me

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0412      .0017    32.4824      .3355     1.0000   197.0000      .5631

Model
              coeff         se          t          p       LLCI       ULCI
constant    24.0290     1.2985    18.5056     .0000    21.4683    26.5897
Total_Ne      .0460      .0795     .5792     .5631     -.1107      .2028

Standardized coefficients
              coeff
Total_Ne      .0412

**************************************************************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6613      .4373    39.4308    76.1520     2.0000   196.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    19.3929     2.3674     8.1916     .0000    14.7241    24.0618
Total_Ne      -.0855      .0877     -.9748     .3309     -.2583      .0874
Total_Me      .9681      .0785    12.3323     .0000      .8133     1.1229

Standardized coefficients
              coeff
Total_Ne      -.0523
Total_Me      .6614

Test(s) of X by M interaction:
         F        df1        df2          p
   10.5910     1.0000   195.0000      .0013

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0250      .0006    69.6717      .1233     1.0000   197.0000      .7259

Model
              coeff         se          t          p       LLCI       ULCI
constant    42.6546     1.9017    22.4300     .0000    38.9043    46.4049
Total_Ne      -.0409      .1164     -.3511     .7259     -.2705      .1887

Standardized coefficients
              coeff
Total_Ne      -.0250

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_cs
      -.0409      .1164     -.3511     .7259     -.2705      .1887      -.0250

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_cs
      -.0855      .0877     -.9748     .3309     -.2583      .0874      -.0523

Indirect effect(s) of X on Y:
            Effect      BootSE    BootLLCI    BootULCI
Total_Me      .0446      .0784     -.1177      .1870

Completely standardized indirect effect(s) of X on Y:
            Effect      BootSE    BootLLCI    BootULCI
Total_Me      .0273      .0481     -.0690      .1189

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

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when some variables in the data file have the same first eight characters. Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Total_DV
    X  : Total_Op
    M  : Total_Me

Sample
Size:  199

**************************************************************************
OUTCOME VARIABLE:
 Total_Me

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4404      .1940    26.2269    47.4027     1.0000   197.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    12.0428     1.8801     6.4053     .0000     8.3350    15.7505
Total_Op      .5731      .0832     6.8850     .0000      .4090      .7373

Standardized coefficients
              coeff
Total_Op      .4404

**************************************************************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7197      .5180    33.7722   105.3319     2.0000   196.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     9.6923     2.3452     4.1329     .0001     5.0674    14.3173
Total_Op      .6130      .1052     5.8267     .0000      .4055      .8205
Total_Me      .7575      .0808     9.3687     .0000      .5980      .9169

Standardized coefficients
              coeff
Total_Op      .3218
Total_Me      .5175

Test(s) of X by M interaction:
         F        df1        df2          p
      .8820     1.0000   195.0000     .3488

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Total_DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5497      .3022    48.6479    85.3125     1.0000   197.0000     .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    18.8141     2.5606     7.3475     .0000    13.7644    23.8639
Total_Op     1.0472      .1134     9.2365     .0000      .8236     1.2707

Standardized coefficients
              coeff
Total_Op      .5497

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
      Effect         se          t          p       LLCI       ULCI       c_cs
      1.0472      .1134     9.2365     .0000      .8236     1.2707      .5497

Direct effect of X on Y
      Effect         se          t          p       LLCI       ULCI      c'_cs
       .6130      .1052     5.8267     .0000      .4055      .8205      .3218

Indirect effect(s) of X on Y:
            Effect      BootSE    BootLLCI    BootULCI
Total_Me     .4341      .0918      .2668      .6259

Completely standardized indirect effect(s) of X on Y:
            Effect      BootSE    BootLLCI    BootULCI
Total_Me     .2279      .0430      .1469      .3155

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect output
when some variables in the data file have the same first eight characters. Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

Direct Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0.145	-0.098	0.273	0.353	0.258	0
Total_DV	0	0.069	0.388	0.379	0.018	0.699

Standardized Direct Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0.129	-0.089	0.202	0.27	0.189	0
Total_DV	0	0.043	0.197	0.199	0.009	0.48

Total Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0.145	-0.098	0.273	0.353	0.258	0
Total_DV	0.101	0.001	0.58	0.626	0.198	0.699

Indirect Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0	0	0	0	0	0
Total_DV	0.101	-0.068	0.191	0.247	0.18	0

Standardized Total Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0.129	-0.089	0.202	0.27	0.189	0
Total_DV	0.062	0.001	0.294	0.328	0.1	0.48

Standardized Indirect Effects (Group number 1 - Default model)						
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media
Total_Media	0	0	0	0	0	0
Total_DV	0.062	-0.043	0.097	0.13	0.091	0

Standardized Residual Covariances (Group number 1 - Default model)							
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media	Total_DV
Total_Neuro	0						
Total_Cons	-0.941	0.33					
Total_Agree	-0.936	0.243	0.089				
Total_Open	-1.722	0.362	0.101	0			
Total_Extra	-1.065	0.388	0.237	0.312	0.33		
Total_Media	-0.771	0.09	-0.036	-0.151	0.057	-0.105	
Total_DV	-0.64	0.192	0.039	-0.031	0.164	-0.089	-0.028

Standardized Regression Weights: (Group number 1 - Default model)			
			Estimate
Total_Media	<---	Total_Extra	0.189
Total_Media	<---	Total_Neuro	0.129
Total_Media	<---	Total_Open	0.27
Total_Media	<---	Total_Agree	0.202
Total_Media	<---	Total_Cons	-0.089
Total_DV	<---	Total_Extra	0.009
Total_DV	<---	Total_Open	0.199
Total_DV	<---	Total_Agree	0.197
Total_DV	<---	Total_Cons	0.043
Total_DV	<---	Total_Media	0.48

Appendix F

SEM Analysis Report

Standardized Residual Covariances (Group number 1 - Default model)							
	Total_Neuro	Total_Cons	Total_Agree	Total_Open	Total_Extra	Total_Media	Total_DV
Total_Neuro	0						
Total_Cons	-0.941	0.33					
Total_Agree	-0.936	0.243	0.089				
Total_Open	-1.722	0.362	0.101	0			
Total_Extra	-1.065	0.388	0.237	0.312	0.33		
Total_Media	-0.771	0.09	-0.036	-0.151	0.057	-0.105	
Total_DV	-0.64	0.192	0.039	-0.031	0.164	-0.089	-0.028

Standardized Regression Weights: (Group number 1 - Default model)			
			Estimate
Total_Media	<---	Total_Extra	0.189
Total_Media	<---	Total_Neuro	0.129
Total_Media	<---	Total_Open	0.27
Total_Media	<---	Total_Agree	0.202
Total_Media	<---	Total_Cons	-0.089
Total_DV	<---	Total_Extra	0.009
Total_DV	<---	Total_Open	0.199
Total_DV	<---	Total_Agree	0.197
Total_DV	<---	Total_Cons	0.043
Total_DV	<---	Total_Media	0.48

Notes for Model (Default model)	
Computation of degrees of freedom (Default model)	
Number of distinct samp	28
Number of distinct para	26
Degrees of freedom (28	2
Result (Default model)	
Minimum was achieved Chi-square = 3.238 Degrees of freedom = 2 Probability level = .198	

Regression Weights: (Group number 1 - Default model)						
			Estimate	S.E.	C.R.	P
Total_Media	<---	Total_Extra	0.258	0.128	2.01	0.044
Total_Media	<---	Total_Neuro	0.145	0.073	1.981	0.048
Total_Media	<---	Total_Open	0.353	0.11	3.2	0.001
Total_Media	<---	Total_Agree	0.273	0.116	2.349	0.019
Total_Media	<---	Total_Cons	-0.098	0.106	-0.925	0.355
Total_DV	<---	Total_Extra	0.018	0.144	0.126	0.9
Total_DV	<---	Total_Open	0.379	0.127	2.99	0.003
Total_DV	<---	Total_Agree	0.388	0.133	2.918	0.004
Total_DV	<---	Total_Cons	0.069	0.118	0.588	0.556
Total_DV	<---	Total_Media	0.699	0.08	8.774	***

Model Fit Summary CMIN					
Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	26	3.238	2	0.198	1.619
Saturated model	28	0	0		
Independence model	7	628.725	21	0	29.939

RMR, GFI				
Model	RMR	GFI	AGFI	PGFI
Default model	0.952	0.995	0.935	0.071
Saturated model	0	1		
Independence model	11.73	0.434	0.246	0.326

Baseline Comparisons					
Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	0.995	0.946	0.998	0.979	0.998
Saturated model	1		1		1
Independence model	0	0	0	0	0

Parsimony-Adjusted Measures			
Model	PRATIO	PNFI	PCFI
Default model	0.095	0.095	0.095
Saturated model	0	0	0
Independence model	1	0	0

NCP			
Model	NCP	LO 90	HI 90
Default model	1.238	0	10.453
Saturated model	0	0	0
Independence model	607.725	529.596	693.267

FMIN				
Model	FMIN	F0	LO 90	HI 90
Default model	0.016	0.006	0	0.053
Saturated model	0	0	0	0
Independence model	3.175	3.069	2.675	3.501

RMSEA				
Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.056	0	0.162	0.348
Independence model	0.382	0.357	0.408	0

AIC				
Model	AIC	BCC	BIC	CAIC
Default model	55.238	57.428	140.864	166.864
Saturated model	56	58.358	148.213	176.213
Independence model	642.725	643.314	665.778	672.778

ECVI				
Model	ECVI	LO 90	HI 90	MECVI
Default model	0.279	0.273	0.326	0.29
Saturated model	0.283	0.283	0.283	0.295
Independence model	3.246	2.851	3.678	3.249

HOELTER		
Model	Hoelter 0.05	Hoelter 0.01
Default model	367	564
Independent model	11	13

Appendix G

APPROVAL PAGE

TITLE OF RESEARCH - THE MEDIATING ROLE OF COVID-19 ENVIRONMENT ON PORTFOLIO ALLOCATION DECISION: A CASE STUDY IN MALAYSIA.

NAME OF AUTHOR - GOW CELIA DEVI d/o KRISHNAN

The undersigned is pleased to verify that the aforementioned applicant has met the requirements of the project paper written in partial fulfilment of the Master of Business Administration degree.

APPROVED BY:

_____

Prof. Dr. Barjoyai Bardai
Supervisor
Date:

ENDORSED BY:

_____

Dean, Graduate School of Business
Date: