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Master Thesis

影響投資者風險態度及其行為的因素分析－以印尼證券交易所（IDX）的實證研究

Factors Influencing the Investors' Risk Attitude and Their Behavior--An Empirical Study on the Indonesian Stock Exchange (IDX)

方利森

Richson

指導教授：袁淑芳 博士

Advisor: Shu-Fang Yuan, Ph.D.

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研 究 生： 方利森 RICHSON

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本校企業管理學系管理科學碩士班研究生＿＿＿方利森＿＿＿君在本系修業 2 年，已經完成本系碩士班規定之修業課程及論文研究之訓練。

1、在修業課程方面：＿＿＿方利森＿＿＿君已修滿＿＿36＿＿學分，其中必修科目：：＿研究方法、＿＿＿管理科學＿＿＿等科目，成績及格(請查閱碩士班歷年成績)。

2、在論文研究方面：＿＿＿方利森＿＿＿君在學期間已完成下列論文：

(1)碩士論文：影響投資者風險態度及其行為的因素—對印尼證券交易所（IDX）的實證研究

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本人認為＿＿＿方利森＿＿＿君已完成南華大學企業管理學系管理科學碩士班之碩士養成教育，符合訓練水準，並具備本校碩士學位考試之申請資格，特向碩士資格審查小組推薦其初稿，名稱：影響投資者風險態度及其行為的因素—對印尼證券交易所（IDX）的實證研究，以參加碩士論文口試。

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南華大學管理學院企業管理學系管理科學碩士班

110 學年度第 2 學期碩士論文摘要

論文題目：影響投資者風險態度及其行為的因素分析－以印尼證券交易所（IDX）的實證研究

研究生：方利森　　　　　　　　　　　指導教授：袁淑芳　博士

摘要

　　投資者的行為可能受到多種因素的影響，風險態度是其中之一。由於風險態度是本研究中的一個重要因素，因此研究決定投資者風險態度的因素非常重要。即，人口統計變量、個性和信息獲取。本文還將運用前景理論研究風險態度如何影響投資者的行為。結果表明，性別和風險態度之間存在顯著差異。性格和信息獲取對風險態度也有顯著影響和正向影響。

　　本研究還發現，如果投資者的風險態度相對較低，投資者的行為會更符合前景理論。由於投資者有很多偏見，並且可能會做出不理性的行為。因此，學習投資的心理也很重要，讓投資者可以以更理性的方式進行投資，而不是僅僅使用直覺，因為有時它不理性，可能導致投資者有賠錢的危險。

關鍵詞：風險態度、投資者行為、人口變量、個性、信息獲取、前景理論

Title of Thesis: Factors Influencing the Investors' Risk Attitude and Their Behavior--An Empirical Study on the Indonesian Stock Exchange (IDX)

Department: Master Program in Management Sciences, Department of Business Administration, Nanhua University

Graduate Date: June 2022   Degree Conferred: M.B.A

Name of Student: Richson   Advisor: Shu-Fang Yuan, Ph.D.

ABSTRACT

Investor behavior could be affected by many factors, and one of the factors is risk attitude. Since risk attitude is an important element in this study, therefore it is important to study the factors that determine investors' risk attitude. Namely, demographic variables, personality, and information acquisition. This paper will also examine how does the risk attitude impact on the investors' behavior by applying prospect theory. The results has shown that there is a significant difference between gender and risk attitude. There are also a significant impact and positive influence of personality and information acquisition towards risk attitude.

This study also found that if investors' risk attitude is relatively lower, investors' behavior will be more consistent with the prospect theory. Since investors are having many bias and could do an irrational behavior. For this reason, it is also important to learn the psychology in investing, so that investors could invest in a more rational way rather than just using intuition because sometimes it will not be rational and could cause the investors in danger of losing money.

Keywords: Risk Attitude, Investor Behavior, Demographic Variables, Personality, Information Acquisition, Prospect Theory
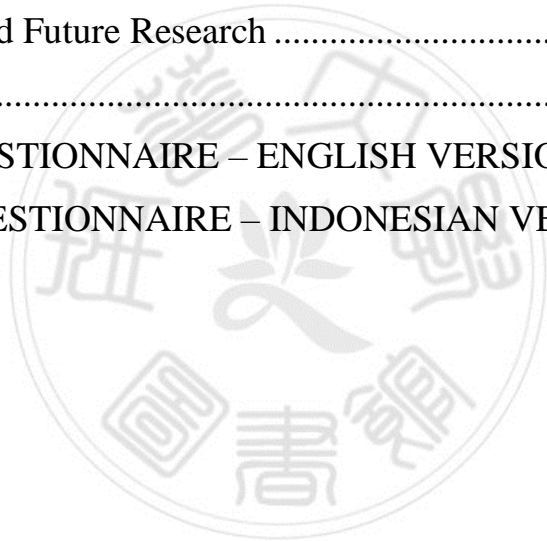
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CHAPTER 1
INTRODUCTION

1.1 Motivation

This study aims to examine how does the individual investors' risk attitude impact on investors' behavior in new emerging market. And we take Indonesia Stock Exchange (IDX) as an example due to it is a well-known new emerging market with higher growth in Asia.

For emerging markets, a market feature that is completely different from mature markets is the high proportion of individual investors. Since the behavior of individual investors differs widely from the institutional investors, our empirical results will provide more information for many emerging markets, such as Vietnam, Thailand and the Philippines that has similar properties to the Indonesia Stock Exchange (IDX) market in terms of being dominated by individual investors.

1.2 Introduction of Stock Market in Indonesia

The Indonesia Stock Exchange (Indonesian: Bursa Efek Indonesia) is an Indonesian stock exchange situated in Jakarta. It was previously known as the Jakarta Stock Exchange (JSX) before changing its name in 2007 following a merger with the Surabaya Stock Exchange (SSX).

Indonesian Stock Exchange has grown rapidly in the past 10 years. As of June 2021, the Indonesia Stock Exchange had 735 listed companies compared to 2015 with only 521 listed companies which denotes a good increased in number of 41%.

Meanwhile, the total retail investors were 2.5 million compared to 2015 with only 434 thousands retail investors which showed a tremendous growth of individual investors in Indonesia with 479% increased. Currently Indonesia Stock Exchange has a total market capitalization of IDR 7,107 trillion.

Listed Companies

420 — 24% → 521 — 41% → **735**

2010   2015   Jun-21

Number of Equity Investors (SID)

280k — 55% → 434k — 479% → **2.5mn**

2012*   2015   Jun-21
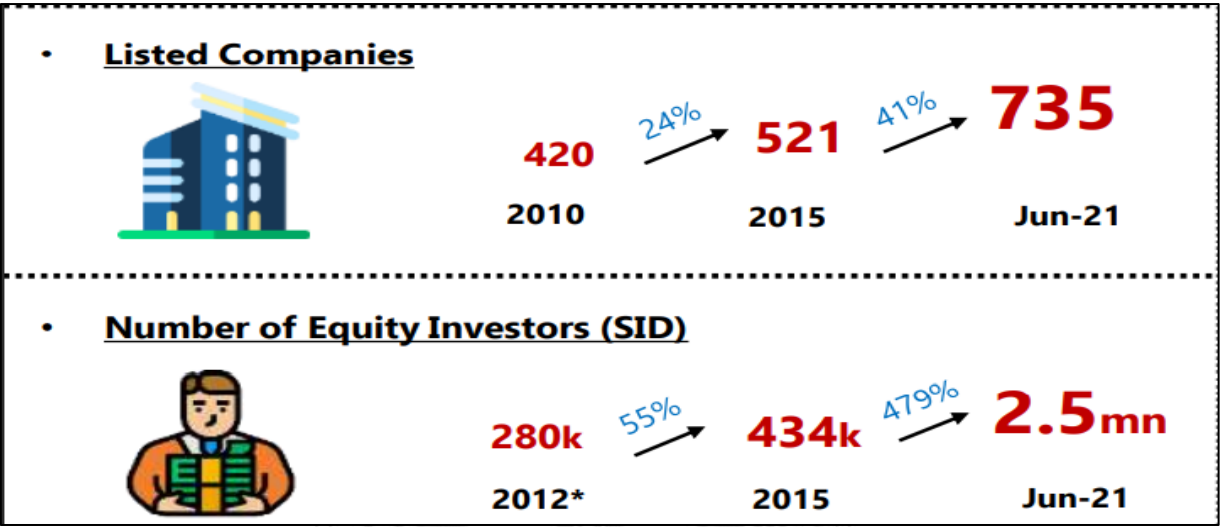
Source: Indonesia Stock Exchange (IDX), Indonesia Central Securities Depository (KSEI)

Figure 1.1 shows the growth of listed companies and equity investors

Indonesia Stock Exchange is considered to be a great market for investment. The figure has shown a potential growth of Indonesia Stock Exchange (IDX) which the liquidity in the stock market has increased over the past years, where eventually it will attract more big funds or investors to join in the market and provide more liquidity in the future.

June 2021

Average Daily Trading Volume
million shares
+17.82% p.a

5,484 5,928 7,827 11,953 10,568 14,540 11,374 18,759
2014 2015 2016 2017 2018 2019 2020 2021

Average Daily Trading Turnover
IDR billion
+11.30% p.a

6,006 5,764 7,498 7,603 8,500 9,106 9,210 13,408
2014 2015 2016 2017 2018 2019 2020 2021

Average Daily Number of Trades
times
+26.30% p.a

212,635 221,583 264,127 312,485 386,804 468,804 677,430 1,225,152
2014 2015 2016 2017 2018 2019 2020 2021

Market Capitalization
IDR trillion
+4.18% p.a

5,228 4,873 5,754 7,052 7,023 7,265 6,970 7,107
2014 2015 2016 2017 2018 2019 2020 2021

Source: IDX   35

Figure 1.2 shows the average of daily trading activities

In 2021, the Indonesia Stock Exchange succeeded in increasing the number and involvement of investors, setting a new milestone for the stock exchange's 29-year history. The Indonesia Stock Exchange also saw a surge in the number of listed companies, including the most company listings in ASEAN. The Association of Southeast Asian Nations (ASEAN) is a collection of ten Southeast Asian countries that work together to promote economic and cultural growth. Other ASEAN countries besides Indonesia include Vietnam, Malaysia, the Philippines, Singapore, and Thailand.
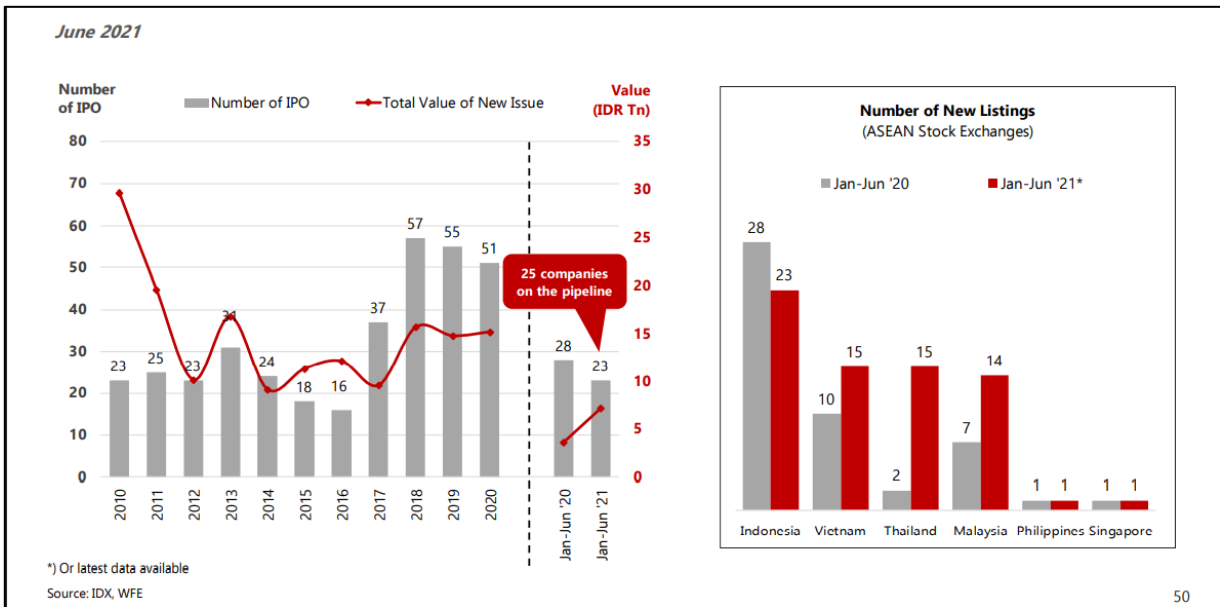
Figure 1.3 shows the number of IPO

The IDX (Indonesia Stock Exchange) has worked hard to establish itself as a reputable and well-known global stock exchange. The IDX's strategic objectives are listed in its 2019 annual report as follows:

- Becoming a focal point for securities trading and assistance for Indonesia's capital markets

- Growth the number of exchange members and investor involvement; in 2019, there were only 1.26 million investors on the Indonesia Stock Exchange; by 2021, the investors had risen to 2.5 million, a 50.4 percent increase in just two years

- An increase in the quality and quantity of listed companies, the Indonesian Stock Exchange has always strived to improve, and the quality and quantity of listed companies have always increased from year to year. Furthermore, there will be a spectacular listing of a new company named Bukalapak in

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August, which will be the first listing of a unicorn company in Indonesia. Where it will entice more private investors to enter the market

- Continue to strengthen the exchange's infrastructure development

Figure 1.4 shows the growth of Indonesian Stock Exchange (IDX)

To sum up the above statement, the number of active investors on the Indonesian Stock Exchange has grown exponentially, following an annual increase of 5.27% in trading volume, with an increase of 304% in 2020. This shows that the Indonesian stock exchange has a bright future for investors. Therefore, due to the accessibility of education provided by the Internet or social media, more people are expected to join the Indonesian stock exchange, and we expect the market to become more mature in the future.

1.3 Studying Content & Contribution

There are 3 studying content in this study illustrate in the following,

1. To explore the factors that determine investors' risk attitude

2. To examine how does the risk attitude impact on the investors' behavior

3. To analyze the irrational behavior of individual investors in the Indonesian Stock Exchange (IDX)

The risk attitude of individual investors in Indonesia would be the main focus since the contribution of retail investors has increased rapidly over the last five years which now has more impact on the trading value than domestic and foreign institution. With significant percentage 61.2% traded by retail investors, and only 38.8% traded by domestic and foreign institution.
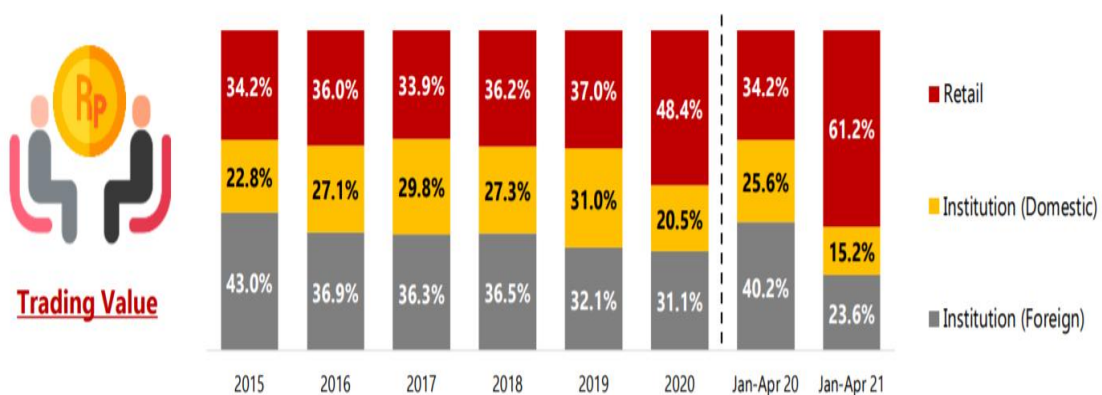
Source: Indonesian Stock Exchange, Indonesia Central Securities Depository (KSEI)

Figure 1.5 shows the trading value between retail and institutional investors

Prospect theory will be performed to test the irrational behavior of individual investors by using certainty effect, reflection effect and isolation effect. And ultimately, to test how is the involvement of individual investors such as their gender, age and knowledge affect in the stock market.

By knowing these components of individual investors' behavior, this paper could bring benefit to Indonesian government, securities company and get more information about individual investors' behavior in Indonesia.

This study will only focus on the stock market since stock market has a huge benefit for the country. by having a lot of individual investors, it will provide a ways to finance and expand company which eventually will create more job opportunities and make the country to be prosperous. and also, by knowing the stock market, individual investors could also learn on how to manage money by always set aside a certain percentage of amount investors planning to invest.

CHAPTER 2
LITERATURE REVIEW

In addition to returns, risk is one of two key factors to measure investors' utility. Investors' preference toward risk is considered to be their risk attitude which is closely related to their investment behavior. Though most of studies believe that investors have their particular risk preference, however, the individual investors perform more irrational but interesting than institutional investors. For emerging markets like the Indonesian market, the proportion of individual investors far exceeds that of institutional investors, such market price is closer to the individual behavior. Therefore, investigating individual investors' risk attitudes and their behavior towards risk is worth studying for understanding the development of emerging markets. Thus, one of the study's purpose is to explore the factors that determine the investors' risk attitude and further to examine how does the risk attitude impact on the investors' behavior. With reference to previous studies, many researchers have concentrated on the impact of risk attitudes and investor behavior on developed countries, such as Wärneryd (1996), Clark-Murphy and Soutar (2004), Wood and Zaichkowsky (2004), among others, but limited studies have focused on emerging countries. For complete the less-studied research, the paper takes the Indonesia Stock Exchange (IDX) as an example for providing more knowledge on the investors' risk attitude as well as investors' behavior in the emerging countries. This Chapter is devoted to introduce the related study about the investors risk attitude and investor behavior.

2.1 Risk Attitude

By referring the past studies, risk attitude is defined as stable personality trait (Weber, 1993). However, many literatures had a different view point. Such as, Kahneman and Tverskey (1979) discovered that investors exhibit lower risk attitude behavior when it comes to profit and higher risk attitude behavior when it comes to loss. Sarin and Weber (1993) state that two people will evaluate the danger of an investment opportunity differently based on their personal and environmental qualities. Traditional risk-return models are based on the assumption that risk attitude are identical, with minor attitude differences. Many researchers, however, established through tests that are considerable differences in risk perception and return anticipation, which explains erratic risk-taking behavior. Furthermore, Singh and Bhawal (2010) claimed that risk perception is Controllable if investors are fully aware of all risk components and volatility in risk levels. And eventually, Anderson, Henker, and Owen (2005) discovered that those who makes the most orders and complete the most transactions get higher profits than those who place less orders and complete less transactions.

Many literatures have been undertaken on risk attitude, however many of the literatures have been primarily focused on develop countries. Therefore, this study will analyze the individual investors based on the definition of Weber (1993) where it is investors personality, since every individuals will have a different personality and risk attitude.

According to common belief, investors have varied levels of risk attitude and several factors that influence investor behavior (Grinblatt, Keloharju, and Linnainmaa, 2011). The risk attitudes of individuals are crucial in making

investment decisions (Barsky, Juster, Kimball, and Shapiro, 1997; Dimmock and Kouwenberg, 2010; Kumar, Page, and Spalt, 2011; Giannetti and Wang, 2016). For example, the study of Dimmock and Kouwenberg (2010) showed that individuals who are risk-averse is associated with a lower probability of participation in stock market. Although risk attitudes can generally be regarded as a stable personality trait (Weber, 1997), it is still time-varying and sensitive to demographic variables and personality (Bashir, Shaheen, Batool, Butt, and Javed, 2014; Chattopadhyay and Dasgupta, 2014). Such as, the study from Chattopadhyay and Dasgupta (2015) found that demographic variables have a significant impact on risk attitude. The following section gives more statements about these variables which are suggested to be strongly related to investors' risk attitudes.

2.2 Demographic Variables

Demographic variables are one of the factors that has an impact on risk attitude. Demographic variables including gender, age or maturity level, level of education, past experience and lastly, cultural background. The following part provides more statements about these variables which are highly correlated to investors' risk attitude. First is gender, which believed it has a high correlation to risk attitude. Numerous researches concluded that gender is a significant variable to impact on the investors' risk attitudes. For example, Estes and Hosseini (1988) showed that women's confidence in investment tasks is lower than men's, even if all additional variables and qualities that are important are controlled, consisting of the number investment decisions themselves. Furthermore, it was discovered that men and women may have different underlying attitudes or utility functions

when it comes to risk. Men may be at greater risk than women due to cultural, societal, or psychological factors (Eckel and Grossman 2008). The 1989 Consumer Finance Survey report showed consistent results, according to the study, 57 percent of women were afraid to accept financial risks in comparison to 41 percent of males. (Also see Jianakoplos and Bernasek, 1998).

Several studies in the literature also imply that gender disparities in risk bearing may be attributable to differences in economic status (Estes and Hosseini 1988; Charness and Gneezy 2007; Bajtelsmit and Bernasek 1996). For example, women often have less wealth than men due to lower wages obtained during their interrupted work lives (due to reproduction, childrearing, and/or caring for elderly people) and lower employment levels. Then, if higher-earning workers are more likely to take risks, men would take greater risks as a result of these wealth and income disparities (Bajtelsmit and Bernasek 1996; Hinz, McCarthy, and Turner, 1997).

Moreover, Women's has a longer life expectancies and higher likelihood of live longer than their partners, which may influence their readiness to take financial risk. If women had a longer time frame and a greater willingness to take risk, they would be predicted to retain portfolios with greater risk than males (Hinz, Carthy, and Turner 1997). However, because practically all governments around the world provide just a modest degree of financial support during retirement, it is reasonable to assume that women will pursue a less risky investment approach. Therefore, to sustain their quality of living during their retirement years, women require additional financial resources that they cannot risk (Bajtelsmit and Bernasek 1996; Coleman 2003).

Ultimately, risk-taking discrepancies between men and women may be attributable to disparities in knowledge and confidence in their financial literacy. For example, compared to males, women are less knowledgeable about investing and are less secure in their understanding of investments (Estes and Hosseini 1988; Barber and Odean 2001). As a result, women invest with greater caution and in smaller sums than men (Eckel and Grossman 2008; Charness and Gneezy 2007; Becker-Blease and Soul 2008). In short, men and women respond to risk in different ways, a number of studies have shown that women are more risk-averse than men. (For example, Estes and Hosseini 1988; Jianakoplos and Bernasek 1998; Coleman 2003; Atkinson et. al. 2003; Charness and Gneezy 2007). This study uses gender as a variable to explain investors' risk attitudes.

Secondly, the age or maturity level of an individual is one of the factors that determine investors' risk attitude. Young investors lack the analytical abilities needed to accurately assess risk (Mann, Harmoni and Power, 1989). As a result, an inability to think abstractly and deeply makes it difficult for young investors to look at things in a broader context, as a result of higher risk attitudes (Steinberg, 2004). Several research has shown there exist an inverse relationship between maturity and risk tolerance, i.e., younger age investors' equals to higher risk attitude, and vice versa (Frijns, Koellen, and Lehnert, 2008).

Furthermore, the risk attitude of an investor is significantly influenced by the level of education. It has an impact on how risk is perceived by investors. People with a low educational level are more alert to risks, whereas educated people are more willing to take more risk (Grimes and Snively, 1999). Higher-educated investors are more likely to invest in riskier assets, implying that

education has an impact on an individual's willingness to take risks (Chen and Tsai, 2010).

Moreover, Haam, Grimes, Popkin, and Smith (2001) believe that past experience plays an important role in making investment decisions. This conclusion is consistent with the empirical results of Hayward, Shepherd, and Griffin (2006) believes that personal risk-taking behavior is affected by the individual's previous experience. The greater the degree of risk-taking experience, the greater the risk that investors bear.

In addition to these characteristics, the investors' cultural background has a significant impact on their risk attitude. As a result, while examining an individual investor's risk attitude, ethnic and religious history must be considered, as well as familial context, in order to fully comprehend the risk attitude (Noon, 2000). Several researchers did cross-border research in this period of globalization and discovered that individual investors behave differently when investing in different types of culture and society (Ricciardi, 2006).

In sum, this study will include the factors of demographic variables of individual investors, which consists of gender, age or maturity level, level of education, past experiences, cultural background and at last, personal tendencies to explain the investors' risk attitude.

2.3 Personality

By referring the past studies, Personality is described as the quality or combination of qualities that distinguishes a person as a distinct individual; a person's distinct personal or individual character, especially of a marked or

exceptional kind (Durand, Newby, and Sanghani, 2008). Moreover, it has a consistent meaning with other literature where personality traits, according to Dole and Schroeder (2001) and Smith (1999), are a combination of cognitive, emotional, and motivational factors that influence an individual's response to the environment and decision making in specific scenarios. Individual personality factors have been shown to influence individuals' risk attitudes toward financial risk and, as a result, investment decisions (Krishnan and Beena, 2009; Mayfield, Perdue, and Wooten, 2008; Smith, 1999; Zaleskiewicz, 2001).

Based on the precedent literatures, it has been shown that individuals have their own types of personality and it makes everyone to become unique. Since individuals have a different types of personality, therefore, individuals will also have a different types of risk attitude (Becker, Deckers, Dohmen, Falk, and Kosse, 2012). The factors of personality could impact on their risk attitude such as psychological patterns, and confidence level. Individuals also have particular type of psychological patterns, such as optimism or pessimism. Optimistic people are more willing to take risks than pessimists. They have a tendency to disregard some risk elements and oversimplify the risk environment (Bowling and Ebrahim, 2001). The social factors that influence an investor's decision-making process are important, since it could impact the investor rationally, the decision process of individual investors, and determine the investment alternative.

Moreover, several empirical studies have found that those who are willing to take chances are more likely to purchase stocks than those who are risk averse. (Clark-Murphy & Soutar, 2004; Tigges, Riegert, Jonitz, Brengelmann, and Engel 2000; Wa¨rneryd, 2001; Wood & Zaichkowsky 2004) The willingness

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to take risks, on the other hand, may contribute to risky investment behavior (Gürdal, Kuzuba, and Saltoglu 2017). The literature has verified that there is a substantial relationship between specific investment risk attitude, risk tendency in investing, and riskiness of investment portfolios (Wa¨rneryd, 1996).

Ultimately, the study of Barber and Odean's (1999) has found that investors' confidence also one of the factors that impact on their risk attitude. Investor confidence indicates a condition where the selected action is very effective. The majority of researchers and academics believe that investors' confidence plays a critical part in determining risk attitude and investment decision making.

The conventional school of thought suggests that when stocks prices are rising, investors ought to be more confident and when stocks prices are falling, investors will be less confident. Positive price shocks elicit a different response from investors than negative price shocks. The tolerance of volatility in stock prices indicates that investor have confidence with the decision making (Ray & Sturm, 2003). So therefore, Investors' confidence has an impact on risk attitude. Which is when investors are on the high confidence level, it encourages investors to trade more often and leads to more frequent trading activity (Barber and Odean's, 1999).

In short, this study will include the factors of personality of individual investors, which consists of personal tendencies, and confidence level to study the investors' risk attitude.

2.4 Information Acquisition

Information is key factor to determinate the investor attitude to the market, numerous studies had agreed the trading performance of informed traders are dominate to the uninformed traders, in which informed trader are usually regarded as the sophisticated investors not only due to they usually have many experiences in investment but also, they have superior ability in information acquisition . Such advantage in information acquisition will result these sophisticated investors' attitude to investment risk are quite different to the individual traders (i.e., uninformed traders).

In addition, Siebenmorgen and Weber (2004) has investigated the investment horizon and its impact on risk attitude, and the findings indicate that the investment horizon has a direct influence on the attitude of the individual investor. Time horizon is a period of time during which an individual investor expects to invest his wealth. Some of the research and studies have undertaken a more in-depth debate on the link between investment time horizon and risk attitude. An empirical study revealed that individual investors who invest for a longer length of time tend to choose riskier investments, and vice versa (Klos, Langer, and Weber, 2003). This result could be explained by factor of information acquisition. Since a longer investment period gives traders more opportunities to obtain real market information than short-term investors, the risk tolerance of long-term investors should be higher than that of short-term investors.

Thus, the ability of information acquisition is the primary component that influences risk attitude. Many behavioral studies have discovered a correlation between individual risk attitude and the ability of information acquisition. An

investors who trade frequently and regularly monitor their investments have a high degree of control over their investing decisions, it indicate the information he is attainable is much more than another uninformed trader. Hence, investor engagement and control boost investor confidence and decision-making (Langer and Roth, 1975). In addition, other literature has also found that the risk attitude of these sophisticated investor are different from those who uninformed traders. (See also Ryan and Zaichkowsky, 2010) which is consistent with this study inference that the information acquisition can be used to explain the investors' risk attitude.

According to the precedent researchers, the factors of sophisticated investors and time horizon would have an influence on investors risk attitude. Therefore, this study will analyze the investors risk attitude based on those factors.

2.5 Investor Behavior

An individual decision-making behavior is influenced by their attitude toward risk as well as how risky the investment is subjectively seen by the individual investor. Such as, an investor decision-making behavior is influenced by stocks. Therefore, individual investors' risk perception and risk attitude influence their risk-taking behavior (Sitkin and Pablo, 1992; Sitkin and Weingart, 1995). Chen and Tsai (2010) explored the empirical relationship between risk attitude and investment decision-making, focusing on individual investor characteristics, and literature has found that asset allocation is a critical component of an individual investor's decision-making process if the investor expects a higher return on investment and a lower risk of loss. (Veld and Markoulova, 2008)

Many academics and professionals did research on basic investment decisions, while some psychologists and researchers conducted research and made decisions under ambiguity. According to some experts, investing decisions are heavily influenced by an individual's financial risk tolerance (Grable et al, 1999) and risk forbearance (Veld and Veld Markoulova, 2008). For that reason, individual investors must be aware of the critical aspects that influence portfolio selection, particularly when individual investors perceive risk (Grable et al, 1999: Hallahan et al, 2004). Tolerance of risk is an individual's approach to decision making, and it is a crucial factor used by management and other service providers when making investments. In this component, an individual investor trades off between risky and risk-free assets in his portfolio, and then invests in the asset that provides the investor with the highest return based on his needs (Hallahan et al, 2004). If the impact on risk attitude and tolerance differs, the individual investor thinks differently about the investment, based on the economic situation and psychology. As a result, different investors with different risk attitudes make different investment decisions.

Additionally, several studies also have confirmed that investor behavior is influenced by investors' risk attitude (Wärneryd, 1996; Tigges, Riegert, Jonitz, Brengelmann, and Engel, 2000; Clark-Murphy and Soutar, 2004; Wood and Zaichkowsky, 2004; Nosic and Weber ´, 2010; Wanyana, Nabeta, and Ntayi, 2011; Zhang and Li, 2011; Noussair, Trautmann, and Van De Kuilen, 2013). More assertions regarding to this factor, which is highly related to investor behavior are provided in the next section.

Many literature has showed that risk attitude has a significant impact on the

investor behavior (Hyll and Irrek, 2015). But when investors are confronted with a risky scenario, numerous people will respond in different ways. It is because attitude refers to a psychological reaction. Some investors attempt to avoid the negative consequences of the scenario, and some will take advantage of the circumstances, i.e., the investor may consider manipulating the situation to their benefit. In addition, risk seeking or the proclivity to take risk is a risk-taking attitude, whereas risk avoidance is sometimes referred to as risk aversion (Rohrmann, 2008).

Weber (2003) defines risk attitude as a reaction to one's personal assessment of risks. Some people view risk as pleasurable and want to capitalize on it by putting themselves in risky circumstances. They attempt to appreciate the ambiguity and are curious about what may happen as a result of this unpredictable scenario. Others may wish to avoid such a circumstance, therefore choosing a safe spot and avoiding the risks. In his traditional portfolio theory, Markowitz (1952) claimed that investors are paid for assuming systematic risk. As a result, risk attitude is determined by whether a person wishes to improve profits by assuming a specific level of risk.

In conclusion, this paper will include the factor of risk attitude to study the investor behavior. Many literature has shown that the factor have a significant impact on investor behavior (Wärneryd, 1996; Wood and Zaichkowsky, 2004; Hyll and Irrek, 2015; Barber and Odean, 1999; Siebenmorgen and Weber, 2004; Ryan and Zaichkowsky, 2010). However, most of the empirical studies was focusing on the developed countries. Therefore, the paper in this study will be focusing on the emerging country.

2.6 Prospect Theory

Investors' decisions that are made by investors and the behaviors in the stock market are difficult to be totally predicted and rational due to the risk preference, information acquisition and other considerations that individual investor have, hence the "rational investor" assumption of traditional finance theory is not realistic. This claim is supported by numerous studies using two approaches. Where the first approach studies individual and institutional investors by using surveys experiments (e.g., Olsen, 1997; Toshino and Suto, 2004; Luchtenberg and Seiler, 2014). Meanwhile the second approach is based on empirical studies on real-world financial market data (e.g., Shapira and Venezia, 2001; Teo and O'Connell, 2003; Locke and Mann, 2005; Brown, Chappel, Rosa, and Walter, 2006; Zhong and Wang, 2018). These studies demonstrate the validity of prospect theory that reflects individual investors' irrational risk-taking behavior, where differ substantially of an expected utility theory prediction. As a result, by applying traditional financial theory to analyze investor behavior will have an unfavorable effect (Barberis and Thaler, 2003). Therefore, based on behavioral economics, this paper will expound the theoretical basis of prospect theory and analyze the individual investors' behavior by using prospect theory.

Prospect theory outlines an intuitive thought process associated with how investor assess risk while making investing decisions. It is well-known as one of the most effective descriptive hypotheses to represent individual decision-makers' behavior since the inventive work of Kahneman and Tversky (1979) and Tversky and Kahneman (1992). Prospect theory evidenced as the theory that can explains many financial market puzzles. Such as, the equity premium puzzle (Benartzi and

Thaler, 1995), IPO (Initial Public Offering) Stocks' long-term performance (Ma and Shen, 2003), disposition effect (Frazzini, 2006; Weber and Camerer, 1998), and stock momentum returns (Menkhoff and Schmeling, 2006).

According to Kahneman and Tversky (1979) there are three effects that focus on people's decision-making processes. Namely, Certainty effect, reflection effect, and isolation effect. The following section will illustrate these three effects respectively,

(1) Certainty effect

Where people place a premium on outcomes that are considered certain, as opposed to ones that are merely probable. Kahneman and Tversky (1979) devised a simple experiment to detect the preceding argument. Assume that *A* indicates 2,000 NTD can be obtained with 100 percent chance, while *B* means 2,600 NTD can be obtained with 80 percent possibility. According to expected utility theory, if the utility of *B* is 2,080, which is greater than the utility of *A*, the rational decision maker should choose B, yet 82% of individuals choose *A*. This demonstrates that decision-makers will prioritize the certainty outcomes and neglect the uncertainty things.

(2) Reflection effect

It refers to the opposite of the people's preferences when it comes to profit and loss. Where people tend to be more risk aversion when the performance is in the positive range of profit; and people tend to be more risk seeking when the performance is in the negative range of loss. As same as previous experiment by Kahneman and Tversky (1979), however only changed the income to the loss. The

A represents a 100 percent chance of losing 2,000 NTD, whereas the B represents an 80 percent chance of losing 2,600 NTD. Surprisingly, 92% of individuals choose for the B option. It shows that prospects with a high expected value and a small variance are preferred (see also, e.g., Allais, 1953; Markowitz, 1952; Tobin, 1958) and when decision-makers are dealing with profit and loss, their attitude to risks change dramatically.

(3) Isolation effect

It occurs when people focus on differences between options rather than similarities. This is done to minimize the cognitive load on our brains and to make decision-making easier. However, since a pair of prospects can be decomposed into common and separate components in more than one way, and different decompositions occasionally result in different preferences, this approach to selection issues may produce inconsistent preferences (Kahneman and Tversky, 1979).

The present research on investor behavior in equities with regard to prospect theory is primarily focused on the US market (for example, Kumar, 2009; Boyer, Mitton, and Vorkink 2010; Bali, Cakici, and Whitelaw, 2011; Conrad, Dittmar, and Ghysels, 2013). Barberis, Mukherjee, and Wang (2016), for example, investigate the prediction of prospect theory in 46 worldwide markets. They discovered that certain markets do not recognize prospect theory's main predictions. Therefore, in this paper, the study will investigate the applicability of prospect theory toward individual investors in Indonesian Stock Exchange (IDX) and to find out whether the individual investors in Indonesia are supported by the main predictions of prospect theory or not.

CHAPTER 3
RESEARCH METHODOLOGY

The main purpose of this chapter is to introduce the research framework model and hypotheses, as well as to measure five research constructs. Furthermore, it also pertains with the development of research methods to hypothesis testing, such as designing and distributing questionnaire, providing sampling plan, collecting and analyzing data.

3.1 Research Framework

The purpose of this study is to study the factors determine risk attitude and to investigate the relationship between the risk attitude and the investor behavior. And in this part, there will be two process to design the empirical work. Firstly, this study infers that there are 3 factors, namely demographic variables, personality, and information acquisition that provide the explanatory information to risk attitude, in which the questionnaire survey is employed to collect data to conduct the empirical study. Secondly, it employs the prospect theory suggested by Kahneman and Tversky (1979) to connect the relationship between the risk attitude and investors' behavior.

Based on the results from the literature review that have been discussed in chapter two, this study proposes a research framework model, as shown in Figure 3.1 below. It is suggested that the factors of demographic variables, personality and information acquisition could have an impact on individual investors' risk attitude. Since there will be a studying on investors' behavior, therefore, this study also proposes the 4 types of prospect theory metrics to analyze investors' behavior.
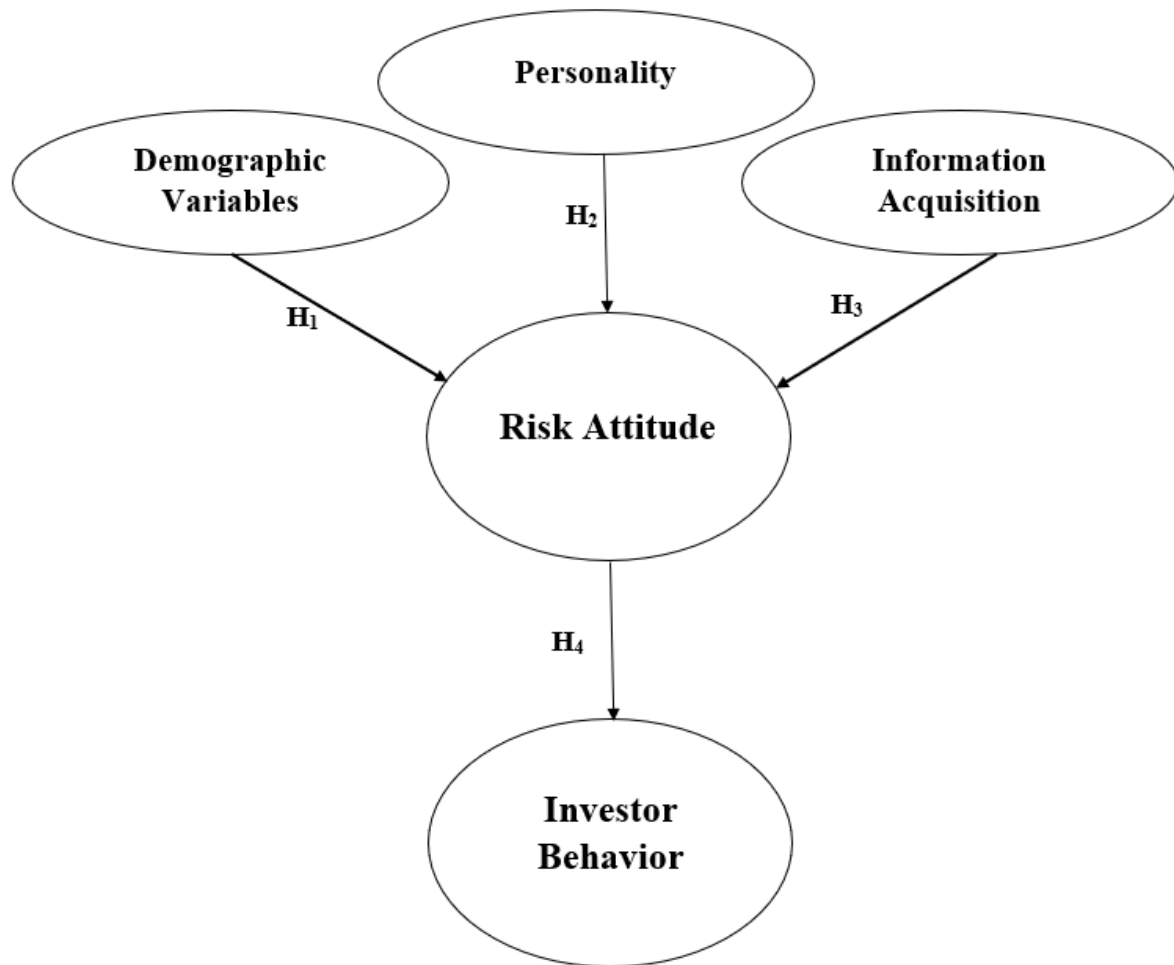
Figure 3.1 Research Framework Model

According to the research model, the hypotheses for this study are:

Hypothesis 1: There is a significant difference among investors' demographic variables on investors' risk attitude (H_1).

Hypothesis 2: There is a significant impact of investor's personality towards investors' risk attitude (H_2).

Hypothesis 3: There is a significant impact of the information acquisition by investor towards investors' risk attitude (H_3).

Hypothesis 4: There is a significant impact of investors' risk attitude towards investor behavior (H$_4$).

3.2 Research Design

This study utilizes quantitative research to test the hypotheses. This quantitative research approach is mostly related to the forms of surveys that researchers were proposed in collecting, analyzing, and interpreting data. The survey in this study included a questionnaire about the relevant variables that were distributed to individuals who might interested in investing in the securities market. By conducting a sample survey of each respondent, information about investors' demographic variables, personality, risk attitude and other constructs will be displayed to test the hypotheses and achieve the purpose of the study. Respondents answered questions using a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Survey participants were asked to rate the survey.

3.3 Research Instrument and Questionnaire Design

3.3.1 Research Instrument and Measurement

Firstly, this study identified the factors impacted on the investors' risk attitude and examined the relationships between them. The research structure is RA(Risk Attitude), P(Personality), IA(Information Acquisition), and IH(Investment Horizon). The operational concept and measurement items are also defined for each structure. A survey has been created to collect data for research variables.

The final extensive questionnaire was first completed in English, then carefully translated into Indonesian. Each construct's specific questionnaire is

shown below. The translator is a bilingual person who has a bachelor degree and has participated in many international seminars, the translator also is the native people of Indonesia and proficient in translating Indonesian to English, as well as translating from English to Indonesian and therefore could avoid errors caused by incorrect semantics.

Table 3.1: Research Instrument and Measurement

Items	Definition	Constructs	References
Risk Attitude	Risk attitudes are an individual's attitudes toward risk-taking and are classified into two types. i.e., risk aversion and risk-seeker. Risk aversion is the behavior of individuals when confronted uncertainty, individual attempt to reduce the uncertainty. A risk-seeker is someone who enjoys taking risks.	[RA1] Taking risks makes life more interesting [RA2] My friends would describe me as a risk taker [RA3] I enjoy taking risks in most aspects of my life [RA4] I frequently make risky decisions [RA5] I am a believer of taking chances [RA6] I am attracted to risk rather than avoid it	(Nadeem, Qamar, Nazir, Ahmad, Timoshin, and Shehzad, 2020)
Personality-Confidence	Refers to a belief in one's ability to undertake a specific action to achieve an	[P1] I am an experienced investor [P2] When I purchase a winning investment, I believe that my actions and knowledge had an impact on the outcome	(Chemers, Watson, and May, 2000; Wood and

		[P3] I expect my investment to perform better than the stock market	Zaichkowsky, 2004)
		[P4] I feel more confident in my own investment opinions than the opinions of financial analysts and advisors.	
		[P5] I feel more confident in my own investment opinions than the opinions of friends and colleagues	
Information Acquisition	Consists of the techniques, strategies and sources used by an investor to gather information for investment decisions	[IA1] I oftenly acquire information regarding to stock market [IA2] I have a community where they share private information regarding to stock market [IA3] I spent an extra time on collecting stock market information [IA4] I feel more confident in the information that I gathered myself [IA5]After I have spent a long time researching on information, I am more likely to act on this information (buy or sell)	(Farrukh and Taib, 2021)

Investment Horizon	a period of time during which an individual investor expects to invest his wealth	[IH1] I am unconcerned about stock market fluctuations [IH2] If one of my investments fell 20% in six months and coincided with a stock market crash, I would keep that investment in the belief that it would recover [IH3] I make investing decision based on the result of fundamental analysis [IH4] I more likely to do a long-term investment rather than a short-term one	(Siebenmorgen and Weber, 2004; Wood and Zaichkowsky, 2004)

3.3.2 Questionnaire Design

According to the Figure 3.1, the questionnaire for this study includes four constructs: (1) Risk attitude(RA, hereafter), (2) Personality(P, hereafter), (3) Information acquisition(IA, hereafter), and (4) Investment horizon(IH, hereafter). The questionnaire of this study has 4 sections and divided into 20 items. Respondents are asked to give their opinions on RA, P, IA, IH in each section. These are the several methods that researchers can use to collect data, one of which will include the usage of a scale. Likert scales are frequently employed in measurement. For objective reasons, the data will be gathered by online survey methods. Following the collection of responses, the data will be calculated to produce study results. In each section, Respondents were asked to rate how

strongly they agreed or disagreed with a statement. To measure the data for this study, a five-point Likert scale with values ranging from 1 (strongly disagree) to 5 (strongly agree) was used. SPSS 26.0 was used to evaluate the questionnaire responses in terms of the weight of the Likert scale.

3.3.3 Questionnaire Translation

Since this study is evidenced on Indonesian people, the questionnaire is designed in English, then translated into Indonesian by a qualified bilingual person who is enable to comprehend English and Indonesian fluently in Medan City, Indonesia. The questionnaire was then translated back into English to check for errors, and any mistakes were removed before the distribution. The final revision of the questionnaire in Indonesian was completed after careful examination and discussion. The questions have been translated back into Indonesian so that the respondent can better comprehend and respond to the questions. The benefits of translation, it helps respondents comprehend the meaning and structure of the answers fully. The definition of the question and the structure have been checked by the translator to match between the English and Indonesian versions.

3.3.4 Sample and Data Collection

In addition to the inferred factors that can be used to explain Risk Attitudes, i.e., RA, IA, IH, this study also considers the possible influence of respondent Demographic Variables (denoted as DV), therefore, in the first part of the empirical work, it will examine the relationship among these constructs: DV, P, IA, IH and Risk Attitude (hereafter denoted RA). After confirming the relationship between these inferred factors and RA, the second part of the empirical work will study the relationship between RA and Investor Behavior (hereafter referred to as

IB).

The surveys will be distributed to 312 individual stock investors in Medan City[1], who will provide evaluative responses for the research. The respondents have various positions, ages, educational backgrounds, monthly income, and working experience as well as demographic factors, which ensures the diversity of sample. Due to the objective reasons, the information would be collected by the online survey method. After gathering all the information, the data would be computed to generate the research findings.

Five steps were involved in data collecting. First, identify related research variables through a review of the literature and advice from the thesis advisor. The second step was to complete the drafting of the survey questionnaire. The third step is to translate the research questionnaires into Indonesian and then back into English to double-check that the meaning of the items has remain the same. Fourth, a pre-test of the Indonesian questionnaires will be conducted to ensure that α (alpha), reliability and validity test match the criteria. If the consistency reliability coefficient of each item could not be fulfilled, the questionnaire was adjusted once more to achieve higher consistency. The final step was to distribute the Indonesian questionnaire to Indonesian respondents indirectly. When all of the data was gathered, it would be analyzed in the next step.

This study collected response data from 312 individual stock investors in Medan City of Indonesia. The sample design was created to ensure that the specific characteristics of respondents are included in this study. The survey took

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[1] Medan is one of the four main central cities of Indonesia, alongside Jakarta, Surabaya, and Makassar.

about two months to complete (from December to January 2021). In total, 312 survey questionnaires were distributed to individual stock investors.

3.3.5 Pilot Test

Reliable and valid questionnaires bring consistent results from repeating patterns and different researchers over time. As a result, this study conducted a pilot study to guarantee that all respondents interpreted the questions in the same way, resulting in the data's accuracy, validity, and reliability. Pilot testing is a crucial process that should be addressed in a small-scale study to reveal design problems before conducting comprehensive testing. The researchers use this test to determine whether the surveys are problematic and to thoroughly revise it before studying the wider observations.

The pilot test was conducted in the Indonesian version to improve the questionnaire's effectiveness. The pilot test was conducted over the internet with 41 respondents to test the execution time, questions quality, reliability and validity, as well as to remove unrelated questions. To assure feedback evaluation, the chosen respondents have varying monthly income, ages, background of education and job experience.

The following sections will elaborate more about the methods used within reliability and validity test.

(1) Reliability test

The term reliability refers to a measurement that produces consistent, equal-valued outcomes (Blumberg, Cooper, and Schindler, 2005). It evaluates study's consistency, precision, repeatability, and validity (Chakrabartty, 2013). It also

denotes the degree to which it is bias-free (error-free), ensuring consistent measurement throughout time and across the various items in the instruments (the observed scores).

In quantitative research, dependability refers to the consistency, stability, and repetition of results; that is, a researcher's results are considered dependable if consistent results are obtained in identical but distinct circumstances. However, it is characterized in qualitative research as when a researcher's technique is consistent across numerous researchers and projects. (Twycross, and Shields, 2004).

There are many types of reliability test, however, this study will apply inter-rater reliability. Where the most often used internal consistency metric is Cronbach's alpha (α). It is often thought to be the mean of all feasible split half coefficients and determined by the average inter-correlations of the scale's items and scale's number of items. It is commonly utilized in the business, social sciences and other fields. Cronbach's alpha was discovered by Lee Joseph Cronbach in 1951. Below is the formula for the Cronbach's alpha:

$$\alpha = \frac{N\overline{c}}{\overline{v} + (N-1)\overline{c}} \tag{1}$$

Where N is equal to the number of items, $\overline{c}$ is the average inter-item covariance among the items and $\overline{v}$ equals the average variance.

The values of α above 0.7 are generally regarded as satisfactory and acceptable, those above 0.8 as rather good, and those above 0.9 as indicating exceptional internal consistency (Cronbach, 1951) and the acceptable range of

alpha value estimations in the social sciences is 0.7 to 0.8 (Nunnally, and Bernstein, 1994).

(2) Validity test

The term validity refers to the extent which an instruments measures what it claims to measure (Blumberg, Cooper, and Schindler, 2005). It refers to the degree to which the results are accurate. As a result, a research instrument (questionnaire) is required to accurately measure the concepts under the study (Pallant, 2011). It includes the full experimental concept and determines whether the obtained results meet all of the requirements of the scientific research method. The validity test itself is divided into 2 parts, namely, convergent validity and discriminant validity.

Convergent validity is a subtopic of construct validity (Gregory, 2007). Based on the convergent validity, tests with the equivalent constructs should substantially connected and to test convergent validity, two methods are commonly used. One method is to compare the score of two evaluation tools or tool subdomains that thought to assess the same concept. Two intelligence tests are expected to distribute certain broad aspects of intelligence and to be moderately related to one another in intelligence research. Then, the moderate to high relationship indicates convergent validity (Gregory, 2007).

When assessments of constructs that should not be highly connected to each other are found to be unrelated, evidence for discriminant validity is presented. The concept of "discriminant validity" comes from validity theories that concentrate on the construct (e.g., Cronbach & Meehl, 1955). Validity is approached in a trinitarian, convergent and discriminant validity constitute proof

of construct validity (Hubley & Zumbo, 1996). The purpose of discriminant validity evidence is to differentiate between measures of different constructs. Although it is not a commonly used term, the concept of "divergent validity" is the term that is used interchangeably with discriminant validity and has been utilized by several notable measurement authors (e.g., Nunnally & Bernstein, 1994).

It advisable to interpret discriminant validity coefficients when the convergent validity calculated using the identical sample. It is beneficial to conceive of convergent and discriminant metrics as being present on a scale (Hubley & Zumbo, 2013). Correlations between theoretically comparable measures (convergent validity) should therefore be "very high," but correlations between theoretically dissimilar measures (discriminant validity) should be "relatively low."

This study will utilize Kaiser-Meyen-Olkin (KMO) Measure of Sampling Adequacy. The KMO index, in particular, is recommended when the cases to variable ratio are less than 1:5. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis (Hair, Anderson, Tatham, and Black, 1995; Tabachnick, and Fidell, 2007). Below is the formula for the KMO test:

$$KMO_j = \frac{\Sigma_{i \neq j}\ r_{ij}^2}{\Sigma_{i \neq j}\ r_{ij}^2 + \Sigma_{i \neq j}\ u_{ij}^2} \tag{2}$$

Where r_{ij}^2 and u_{ij}^2 respectively are the correlation coefficient and the partial correlation coefficient for variable i and j, in which $i \neq j$., the aforementioned formula, when applied to all combinations, yields the overall KMO measure of

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sample adequacy.

According to Connelly (2008), the number of pilot samples should be at least ten percent of the sample expected for the research. The pilot test was conducted online with 41 respondents to test word and question quality, layout, execution time, reliability and validity, Cronbach's α, KMO's factor loading and lastly to remove unrelated questions.

As a result, the reliability test analyzes this test data to determine the internal consistency of each item and component. In this study, the acceptable consistency levels will be represented by values greater than 0.7 and KMO's factor loading greater than 0.5. Cronbach's α results suggest that the questionnaire has a relatively higher coefficient of 0.7 for each variable and KMO's factor loading higher than 0.5.

3.4 Data Analysis Procedure

SPSS 26.0 software will be used to analyze the data and to accomplish the goals of this research and test the theories in this study. The following data analyses are shown below:

1. Descriptive Statistic Method

2. Difference test: T-test, ANOVA and Scheffé test

3. Regression Analysis

4. Chi-square (χ^2) test

5. Binomial Test

3.4.1 Descriptive Statistic Method

Descriptive statistics were used as the first level of analysis to provide comprehensive statistical information about the data collected in this study. The analyses of sample distribution by demographic variables, converge tendency (measured by average value), and diverge tendency (measured by standard deviation) are employed by this study for the descriptive statistics analysis. The following section give more statement about these above methods.

1) Sampling Distribution

Sampling distribution is a probability distribution of a statistic resulting from the selection of random samples from a specific population. It is also known as the finite-sample distribution since it shows the distribution of frequencies on how far apart various outcomes will be for a certain population. Because populations are often enormous, it is critical to employ a sampling distribution to randomly select a portion of the overall population. When conducting research or gathering statistical data, this helps to eliminate unpredictability. It also makes data easier to organize and sets the foundation for statistical inference, which leads to generating population-wide generalizations. Understanding statistical inference is important because it allows people to understand the distribution of frequencies and how different outcomes appear within a dataset.

In short, the main goal of sampling distribution in this study is to take a look at the data collection, and to provide information to let the reader knows about the sample distribution such as the difference on the percentage between male and female, younger and older generation, and so on.

2) Convergent tendency analysis

Mean referred to the total of a set of data divided by the numbers of data. Mean could be a useful tool when comparing different sets of data. The formula for mean will be shown below:

$$\overline{X} = \frac{\Sigma X}{N} \tag{3}$$

Where $\bar{X}$ denotes the sample mean, and ΣX denotes sum of each value in the sample and lastly N denotes number of each values in the sample .

3) Diverge tendency

Standard deviation is a statistic that calculates as the square root of the variance and measures the dispersion of a dataset relative to its mean. If the data points are further from the mean, there is a higher deviation within the data set; consequently, the higher the standard deviation, the more spread out the data. More precisely, it is a measure of the average distance between the values of the data in the set and the mean. A low standard deviation implies that the data points are close to the mean; a high standard deviation suggests that the data points are spread out throughout a wide range of values. Standard deviation informs us about the structure of our distribution, namely how far apart the individual data values are from the mean value. Moreover, Standard deviation provide us on how close our sample mean is to the true mean of the overall population. The formula of standard deviation for sample will be shown below:

$$S = \sqrt{\frac{\sum(X - \overline{X})^2}{N - 1}} \qquad (4)$$

Where *S* indicates the sample standard deviation, *X* indicates each value, $\overline{X}$ as the sample mean and *N* as number of observations in the sample.

3.4.2 Difference test

This study will do the difference test and two methods are used to conduct the empirical work. Namely, T-test and analysis of variance (ANOVA) test. The definition and purpose of the two methods will be explain in the following section.

1) T-test

The T-test is an inferential statistic used to determine whether there is a significant difference in the means of two groups that are connected in some way. The T-test is a hypothesis test that allows us to test a population assumption. In this study, the t-test was employed to analyze the differences in four factors between male and female individual stock investors.

A t-test needs the calculation of three critical data variables. They are the mean difference (the difference between the mean values from each data set), the standard deviation of each group, the number of data values in each group, and the t-value, which is the outcome of the t-test. The t-value is calculated as a ratio of the mean difference between the two sample sets and the variation within the sample sets. Higher t-values, also known as t-scores, indicate that the difference between the two sample sets is significant. The higher the similarity between the

two sample sets, the lower the t-value.

2) Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) is a statistical analysis tool that divides observed aggregate variability within a data set into two parts: systematic components and random factors. Where random factors have no statistical influence on the given data set, whereas systematic factors do. The purpose of ANOVA test is to determine whether a significant difference between the means of more than two independent groups is related to a variable.

The results of performing an ANOVA test are F-value and P-value. The F-value is the ratio of the mean square treatment to the mean squares error. The larger the F-value, the greater the variation between sample means in comparison to variation within samples. As a result, the larger F-value, the more evidence that there is a difference between the group means. Whereas, the purpose of P-value is to determine whether the difference between group means is statistically significant or not. According to Hair, Anderson, Babin, and Black (2010), If the F-value is greater than 4 and the p-value is less than 0.05, it indicates the results are significant.

3) Scheffé test

Although planned comparisons are advised and frequently beneficial, the fact is that experimental design and data collecting are often unpredictable, and things do not always go as expected. Unplanned comparisons may not contain all pairwise pairs; nonetheless, unplanned comparisons frequently do. Unplanned comparisons for parametric data are by far the most widely used in multiple

comparison tests, as well as the category that offers the greatest variety of multiple comparison tests.

Some advocate using Scheffé test as a starting point for unplanned parametric multiple comparison tests (Ruxton & Beauchamp, 2008). A Scheffé test is a post-hoc statistical test used in analysis of variance (ANOVA). It was named after Henry Scheffé, an American statistician. According to Scheffé (1956), the Scheffé test is used to make unplanned comparisons among group means rather than pre-planned comparisons in an analysis of variance (ANOVA) experiment.

An unplanned comparison is one made inside a data set after an ANOVA test has been run, so the comparison parameters are not built into the ANOVA experiment. The Scheffé test can be used to see if individual means differ or if the average of one set of means differs from the average of another group of means. While the Scheffé test has the advantage of allowing the researcher to test any comparison that appears intriguing, the consequence of this flexibility is that the test has lower statistical power than tests intended for pre-planned comparisons.

3.4.3 Regression Analysis

Regression Analysis is a statistical technique that uses equations to express the relationship between two or more variables (Bowerman and O'Connell, 1990). Its primary goal is to create a mathematical model that connects dependent variables to independent variables. In general, a regression model is typically defined as a single algebraic equation of the form (Draper and Smith, 1981). There will be two regression analysis used in this study. Namely, simple regression analysis and multiple regression analysis. The definition and purposes of these regression analysis will be explained in the following part.

1) Simple Regression Analysis

Simple regression analysis is employed by this study to do the single factor analysis, three factors are used by this study, namely, demographic variables, personality, and information acquisition to explain the investor risk attitude. Each independent variable is individually used to examine whether it is related to investors risk attitude. The formula for a simple linear regression is shown below.

$$y = \beta_0 + \beta_1 X_1 + \varepsilon \tag{5}$$

Where y refers to the dependent variable and X is the explanatory or independent variable. In this study, the dependent variables are regarded as the investors' risk attitude, and the X individually represented as the demographic variable, personality and information acquisition. The parameters of the linear regression analysis are represented by the expression of β_0 and β_1. The β_0 parameter is considered as an intercept term, while the β_1 parameter is considered as the slope parameter. These parameters are referred to as regression coefficients in general. The term 'ε' represents the unobservable error that accounts for the inability of the data to stay on the straight line. It also denotes the variation between the observed and true realizations of 'y'.T-test is used to tell whether the regression coefficients are significant or not to help us to make the conclude for the hypothesis design by this study. Finally, R^2 is used to demonstrate the explaining ability of demographic variable, personality and information acquisition to risk attitude. According to Hair et al. (2010), When the square of R is greater than 0.1, the correlation is greater than 0.3, F value is greater than 4, VIF is less than 3, Durbin-Watson Statistic (DW) index is between 1.5 and 2.5, and p-

value is less than 0.05, the analysis results are significant.

2) Multiple Regression Analysis

Multiple regression analysis is used to investigate the relationship between a single dependent variable and a number of independent variables. Another purpose of multiple regression analysis is to optimize the predictability of the independent variables as indicated in the variance. Multiple regression analysis can also achieve the purpose of comparing the predictability of two or more independent variables. The formula for a multiple regression analysis is:

$$y = \beta_0 + \beta_1 X_1 + \ldots + \beta_n X_n + \varepsilon \qquad (6)$$

All explaining variables are used to explain the investors risk attitude.

3.4.4 Types of Prospect Theory Metrics

This study will use the behavior metrics proposed by Kahneman and Tversky (1979), which is prospect theory. The metrics will be used in this study are certainty effect where people show a strong preference for the option with certainty. And the next one is the isolation effect where people tend to loss focus on their final wealth or income and care more on the relative gains or losses that people will get. Ultimately, the reflection effect, where people tend to place more weight on the losses rather than gains made by taking a particular option. The main purpose of this study by prospect theory metrics is to analyze the relationship between the risk attitude and investor behavior. And the Binomial test and Chia-square are used to test whether the respondents investing behavior can be explained by prospect theory, and whether the risk attitude are related to investing

behavior. The following section are devoted to state these two method.

(1) Chi-Square (χ²) Test

A chi-square (χ²) test is a test that determines how well a model matches real observed data. There are various versions of chi-square tests, and the conventional formula for calculating chi-square is as follows:

$$\chi^2 = \sum \frac{(f_0 - f_e)^2}{f_e} \tag{7}$$

Where f_o denotes the observed frequency in a given cell, f_e is the expected frequency in the cell, and $\sum$ is an overall sum of the cells. Variations of the chi-square statistic have garnered a lot of attention in the biological and statistical literature, but they aren't immediately relevant to the discussion that follows. In their description of the chi-square test, Lewis and Burke (1949) note that "the two most basic requirements in any application of the chi-square test are (1) independence across distinct measures and (2) theoretical frequencies of tolerable size." The chi-square test is based on the assumption that the observations or responses are independent data points. The data might be of any degree of measurement, but it is usually categorized. Furthermore, no cell in the table should have a frequency estimate of less than 5. Because, according to Daniel (1978) and Siegel (1988), when chi-square values for data with cell frequencies of 5 or less are computed, the resulting χ² value is inflated, making interpretation problematic.

(2) Binomial test

Binary outcomes are widespread in psychology, education, business, and other applied fields, including metrics such as passing or failing a test item,

recovering or not recovering from a disorder, or succeeding versus failing in a business. If one outcome is classified as successful, then the probability of discovering success in randomly selecting a single observation from some specified population may be designated as π, with the probability of failure being 1 - π. The binomial formula gives the probability of r success in N samples. Where the formula will be shown below.

$$P(r) = \frac{N!}{r!(N-r)!}\pi'(1-\pi)^{N-r} \tag{8}$$

The T statistic is used to test whether the null hypothesis is supported. In this study, we expect that risk attitudes will determine investor behavior, and that investors with relatively low risk tolerance have behavior that can be well explained by prospect theory. If the investor's behavior is not related to risk attitudes, the investor has a 50-50 chance of choosing the behavior implied by the expectation theory. Therefore, the null hypothesis of P = 0.5 is intended to counter our inference, as shown in Equation (9)

H0:P=0.5

$$t = \frac{\hat{P} - P}{\sqrt{\frac{P(1-P)}{n}}} \tag{9}$$

in which P^ is the sample proportion and n is the sample size.

CHAPTER 4
DATA ANALYSIS AND RESULTS

The study's findings will be presented in this chapter. The first section was a descriptive analysis of the respondents, which included demographics, respondent characteristics, and variable measurement data. Continued by the findings of the factor loading, independent T-test, ANOVA, and Scheffe test.

4.1 Descriptive Analysis

In order to gain a better understanding of the characteristics of study structure and demographic variables, descriptive statistics analysis was performed in this section to illustrate the mean and standard deviation for all research variables as well as the frequency for demographic variables.

4.1.1 Characteristics of Respondent

Table 4.1 below indicates the basic attributes of the sample responses. There are five major points in this study: (1) Gender, (2) Age, (3) Highest level of education, (4) Monthly income, and lastly (5) Background of occupation.

Looking in the table below, there are more male respondents than female, which stand at 61.9%. Besides, the majority of respondents are millennials and gen Z, which for millennials are 49% and for gen Z are 41.4%. Most of the respondents highest level of education are bachelor degree, which is 60.9%. And for monthly income, most of the respondents are from middle to high income. Where for middle income is 37.1% and high income is 36.9%. However, most of the respondents are working in the non-financial sector with the total 84%.

Table 4.1 Characteristics of the Respondents (N= 312)

Classification	Respondents	
	Frequency	Percentage (%)
Gender		
Male	193	61.9%
Female	119	38.1%
Age		
17-24 (Gen Z)	129	41.4%
25-40 (Millennials)	153	49%
41-56 (Gen X)	24	7.7%
>56 (Boomers)	6	1.9%
Highest Level of Education		
Junior high school	4	1.3%
Senior high school	92	29.5%
Bachelor degree	190	60.9%
Master degree	26	8.3%
Monthly Income		
Low income	81	26%
Middle income	116	37.1%
High income	115	36.9%
Background of Occupation		
Financial sector	50	16%
Non-financial sector	262	84%

4.1.2 Descriptive Statistics of Questionnaire Items

Table 4.2 below shows the descriptive statistics results of questionnaire items for 312 respondents. This study includes 20 questionnaire items with mean values and standard deviations for each item, presenting the tendency of respondents' selection for a particular construct. There are 6 items of Risk Attitude, 5 items of Personality, 5 items of Information Acquisition, and 4 items of Investment Horizon. The majority of the mean values are greater than 3 for all of the items in this framework's study constructs, indicating that respondents have a high level of agreement.

As shown in Table 4.2, for Risk Attitude, the sample cases show a range of item's mean value from 3.36 to 4.14 in the 5 – point Likert scale. Moreover, Item RA5 has highest mean value in factor which is 4.14 which indicates that the majority of respondents have the high agree levels with the statements. In term of Personality, the highest mean value is P2 which is 4.24, while the lowest mean value are P1, where only 2.78 indicating that the majority of respondents have the low agree levels with the statements.

Moreover, a range of item's mean value from 3.37 (IA2) to 4.24 (IA5) in 5 – point Likert scale of factor Information Acquisition. Eventually, in factor of Investment Horizon, there are a similarity between items' mean value, which are IH3 (4.10) and IH4 (4.10). While IH1 has the lowest mean value which is 3.27.

Table 4.2 below also shown that in term of Risk Attitude, item RA2 has the highest standard deviation of 1.054 indicating the responses are more dispersed. Meanwhile, RA5 has the lowest standard deviation indicating the less dispersed in responses with 9.30. For the construct of Personality, item P2 has the lowest

standard deviation with only 8.40 with high value of mean indicating that most of the respondents are agree with the statements.

Furthermore, item IA2 has the highest standard deviation value of 1.301 compared to other items, indicating that the statement has the most variety of responses. In terms of Information Acquisition, the standard deviation has the range of 1.003 – 1.302 which means all of the statements has the high variety in responses.

Table 4.2: Descriptive Statistics for Questionnaire Items

Items	Descriptions (5 – point Likert scale)	Mean	Standard deviation
Risk Attitude			
RA1	Taking risks makes life more interesting	3.80	0.963
RA2	My friends would describe me as a risk taker	3.36	1.054
RA3	I enjoy taking risks in most aspects of my life	3.54	1.001
RA4	I frequently make risky decisions	3.42	1.005
RA5	I am a believer of taking chances	4.14	0.930
RA6	I am attracted to risk rather than avoid it	3.45	1.010
Personality			
P1	I am an experienced investor	2.78	0.968
P2	When I purchase a winning investment, I believe that my actions and knowledge had an impact on the outcome	4.24	0.840
P3	I expect my investment to perform better than the stock market	3.88	0.969
P4	I feel more confident in my own investment opinions than the opinions of financial analysts and advisors	3.32	1.002
P5	I feel more confident in my own investment opinions than the opinions of friends and colleagues	3.97	1.057
Information Acquisition			

IA1	I oftenly acquire information regarding to stock market	4.16	0.940
IA2	I have a community where they share private information regarding to stock market	3.37	1.301
IA3	I spent an extra time on collecting stock market information	3.82	1.062
IA4	I feel more confident in the information that I gathered myself	4.19	0.945
IA5	After I have spent a long time researching on information, I am more likely to act on this information (buy or sell)	4.24	0.859
Investment Horizon			
IH1	I am unconcerned about stock market fluctuations	3.27	1.302
IH2	If one of my investments fell 20% in six months and coincided with a stock market crash, I would keep that investment in the belief that it would recover	3.86	1.246
IH3	I make investing decision based on the result of fundamental analysis	4.10	1.003
IH4	I more likely to do a long-term investment rather than a short-term one	4.10	1.109

4.2 Factor Analysis and Reliability Tests

To verify the dimensionality and reliability of the constructs, several data purification procedures are conducted in this research, including as factor analysis, correlation analysis, and coefficient alpha analysis. For factor analysis, is to investigates the fundamental structure of the data. And for correlation analysis, is to establishes the multi-collinearity among variables, and coefficient (Cronbach's) alpha assesses the internal consistency of each variable.

For each research construct, factor analysis is used to identify the items with the highest factor loading and then compare with the theoretically suggested items. After the factor analysis, coefficient alpha, and correlation matrix are computed to provide internal consistency measurements for each construct.

Confirmatory Analysis was conducted for all constructs as the data were taken and adapted from former research and following criterions that were followed for the factor analysis:

- Factor loading: Higher than 0.5

- Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO): Higher than 0.5 & Bartlett's test Sig below than 0.05

- Explained variance (accumulative): Higher than 0.5

- Cronbach's coefficient alpha (α): Higher than 0.6

The results of the factor analysis and reliability for each variable are shown in Table 4.3 to 4.5

4.2.1 Risk Attitude -1

There are a total of 5 items in this construct to explain the Risk Attitude, as shown in Table 4.3 below. Since the results of the initial running test for this factor already met all of the criteria for factor analysis, therefore, none of the items were removed during the factor analysis test.

In general, the KMO value for Risk Attitude is .901, hence it represents the data in the factor are well suitable to perform factor analysis. All items have factor loadings higher than 0.5. Between each item, item RA3 *" I enjoy taking risks in most aspects of my life"* has the highest factor loading of .865, which indicates the highest relation to the construct of Risk Attitude.

Besides that, this factor explained up to 63.621% of the variance in this construct. And reliability test showed that Cronbach's alpha value (α) is .883,

which is higher 0.7. It can be said that all items are highly reliable.

Table 4.3: Results of factor analysis and reliability check on Risk Attitude

Research Construct		Research Items	Factor Loading	Accumulative Explained	Cronbach's α
Risk Attitude	KMO= .901	Risk Attitude		63.621	.883
		[RA3] I enjoy taking risks in most aspects of my life	.865		
		[RA6] I am attracted to risk rather than avoid it	.838		
		[RA1] Taking risks makes life more interesting	.827		
		[RA4] I frequently make risky decisions	.802		
		[RA2] My friends would describe me as a risk taker	.800		
		[RA5] I am a believer of taking chances	.631		

4.2.2 Personality -1

There are a total of 5 items in this construct to explain Confidence, as shown in Table 4.4 below. Since the results of the initial running test for this factor already met all of the criteria for factor analysis, therefore, none of the items were removed during the factor analysis test.

In general, the KMO value for Confidence is .775, hence it represents the data in the factor are well suitable to perform factor analysis. The factor loadings of all the variables are higher than 0.5. Among all the items, item P4 *"I feel more confident in my own investment opinions than the opinions of financial analysts and advisors"* had the highest factor loading of .775, indicating this item had highest relation to Confidence.

Reliability test showed all variables in component are significant since the Cronbach's alpha value (α) is .776, thus representing a high internal consistency within Confidence.

Table 4.4: Results of factor analysis and reliability check on Personality

Research Construct		Research Items	Factor Loading	Accumulative Explained	Cronbach's α
Personality	KMO= .775	Confidence		52.838	.776
		[P4] I feel more confident in my own investment opinions than the opinions of financial analysts and advisors	.775		
		[P5] I feel more confident in my own investment opinions than the opinions of friends and colleagues	.770		
		[P3] I expect my investment to perform better than the stock market	.731		
		[P2] When I purchase a winning investment, I believe that my actions and knowledge had an impact on the outcome	.688		
		[P1] I am an experienced investor	.664		

4.2.3 Information Acquisition -1

There are a total of 6 items used to explain Information Acquisition construct. This construct is divided into 2 factors for further analysis purposes and items of each factor are demonstrated in Table 4.5 below. (5 items in factor 1, namely Information Acquisition and 4 items in factor 2, namely Investment Horizon). Factor loadings of all the variables are higher than 0.5. Among all items, item IA3 *" I spent an extra time on collecting stock market information "* had the highest factor loading of .806, indicating this item had highest relation to the factor 1, which Information Acquisition. Meanwhile, item IH4 *" I more likely to do a*

long-term investment rather than a short-term one " had the highest factor loading of .802, indicating this item had the highest relation to factor 2, which Investment Horizon.

Reliability test showed all variables in factor 1 and 2 are significant since the Cronbach's alpha value (α) is .785 and .731, thus representing a high internal consistency within Information Acquisition factor 1 and factor 2. The two components had accumulated a total 110.017% of explained variance which show these are important underlying factors for this construct.

Table 4.5: Results of factor analysis and reliability check on Information Acquisition

Research Construct	Research Items	Factor Loading	Accumulative Explained	Cronbach's α
Information Acquisition, KMO= .768	Information Acquisition		54.253	.785
	[IA3] I spent an extra time on collecting stock market information	.806		
	[IA4] I feel more confident in the information that I gathered myself	.781		
	[IA5] After I have spent a long time researching on information, I am more likely to act on this information (buy or sell)	.754		
	[IA1] I oftenly acquire information regarding to stock market	.749		
	[IA2] I have a community where they share private information regarding to stock market	.569		
Investment Horizon, KMO= .706	Investment Horizon		55.764	.731
	[IH4] I more likely to do a long-term investment rather than a short-term one	.802		
	[IH2] If one of my investments fell 20% in six months and coincided	.792		

	with a stock market crash, I would keep that investment in the belief that it would recover			
	[IH3] I make investing decision based on the result of fundamental analysis	.769		
	[IH1] I am unconcerned about stock market fluctuations	.607		

4.3 Independent Sample T-test

Independent sample t-test was used in this study to compare means for gender and background of occupation from the four constructs, namely Risk Attitude, Personality, Information Acquisition, and Investment Horizon in this study. The difference is considered as significance whether p-value < 0.05 and absolute t-value >= 1.96.

4.3.1 Gender

The independent sample t-test results were presented in Table 4.6 below. It showed that there is a significance difference between male and female in the construct of the Risk Attitude(RA) and Personality(P). Since the p value is < 0.05 and t-value is >= 1.96.

However, it also showed that there is no significance difference between male and female in the constructs of Information Acquisition(IA) and Investment Horizon(IH).

Male respondents have a higher mean than female respondents, it indicates the male is more likely agree with the question statements in terms on the constructs of Risk Attitude and Personality.

Table 4.6 Results of the differences between groups of Gender

Constructs	Male	Female	t-value	p-value
	N=193	N=119		
RA	3.8238	3.2787	5.970***	<0.001
P	3.7482	3.4655	3.506***	<0.001
IA	3.9741	3.9277	.505	>0.05
IH	3.7578	3.9475	-1.893	>0.05

Note: RA is variable of Risk Attitude; P is variable of Personality

4.3.2 Background of Occupation

The independent sample t-test results were presented in Table 4.7 below. It showed that there is a significance difference between the occupation who is working in financial sector and non-financial sector in the construct of Personality(P) and Information Acquisition(IA). Since the p value is < 0.05 and t-value >= 1.96.

However, it also showed that there is no significance difference between the occupation who is working in the financial sector and non-financial sector in the construct of Risk Attitude(RA) and Investment Horizon(IH). Since the p-value and the t-value is not met the required criteria.

Moreover, the mean of financial sector is higher than the non-financial sector regarding to the construct of Personality and Information Acquisition, indicating that financial sector is more likely to agree with the question statements.

Table 4.7 Results of the differences between groups of Background of Occupation

Constructs	Financial Sector	Non-financial Sector	t-value	p-value
	N=50	N=262		
RA	3.5800	3.6228	-.350	>0.05
P	3.8680	3.5969	2.516[*]	<0.05
IA	4.1560	3.9183	.2080[*]	<0.05
IH	3.9950	3.7987	1.473	>0.05

Note: P is variable of Personality; IA is variable of Information Acquisition

4.4 One-way Analysis of Variance (ANOVA)

In this study, one-way ANOVA was used to identify whether there was a significant difference between two or more groups of respondents' ages, highest level of education, and monthly income based on the mean score of each construct in each group. The one-way ANOVA produces a one-way analysis of variance of a quantitative dependent variable by a single factor as known as the independent variable.

4.4.1 Age

A one-way ANOVA was performed to compare the effect of respondents' age on Risk Attitude(RA), Personality(P), Information Acquisition(IA) and Investment Horizon(IH). Since the sample size of Boomers (>56 years old) are only 6, therefore, it will be combined with the Gen X (41-56 years old).

A one-way ANOVA revealed that there was a statistically difference in

Personality, Information Acquisition, and Investment Horizon between respondents' age with F-value 12.599, 6.107, and 4.038, respectively. And also, with a p-value of < 0.05.

A one-way ANOVA also revealed that there was not a statistically difference in Risk Attitude between respondents' age since the F value is only .702 and p-value is >0.05.

It is also shown in the Table 4.8 below, that the mean of 41 – 56 years old (Gen X) has the highest mean compared to others regarding to the construct of Personality, and Investment Horizon indicating that the Gen X is more likely to agree to the question statement.

Table 4.8 Results of the differences between groups of Age

Constructs	17 – 24 years old N=129 (1)	25 – 40 years old N=153 (2)	41- 56 years old N=30 (3)	F-value	p-value	Differences between group	Scheffé test
RA	3.5543	3.6525	3.6944	.702	>0.05	N.S	N.A
P	3.4186	3.7673	3.9467	12.599***	<0.001	S	1>2, 1>3
IA	3.7845	4.0850	4.0400	6.107**	<0.01	S	1>2
IH	3.6667	3.9379	3.9833	4.038*	<0.05	S	N.A

Note: *** $p < 0.001$, ** $p<0.01$, * $p< 0.05$
S = Significant
N.S = Not Significant
N.A = Not Available

4.4.2 Highest Level of Education

A one-way ANOVA was performed to compare the effect of highest level of education on Risk Attitude(RA), Personality(P), Information Acquisition(IA) and Investment Horizon(IH). Since the sample size of Junior high school are only 4, therefore, it will be combined with nearest category which are the senior high school.

A one-way ANOVA revealed that there was a statistically difference in Personality, Information Acquisition, and Investment Horizon between highest level of education with F-value 10.019, 6.431, and 5.662, respectively. And also, with a p-value of < 0.05.

A one-way ANOVA also revealed that there was not a statistically difference in Risk Attitude between highest level of education since the F value is only .749 and p-value is >0.05.

The Table 4.9 below also shown that Master degrees has the highest mean compared to others, which means that the respondents that the highest level of education are Master degree, has the highest level of agreement relating to the question statement in terms of the construct of Risk Attitude, Personality, Information Acquisition, and Investment Horizon.

Table 4.9 Results of the differences between groups of Highest Level of Education

Constructs	Senior high school N=96 (4)	Bachelor degree N=190 (5)	Master degree N=26 (6)	F-value	p-value	Differences between group	Scheffé test
RA	3.6337	3.5842	3.7821	.749	>0.05	N.S	N.A
P	3.4625	3.6632	4.1308	10.019***	<0.001	S	4>6, 5>6
IA	3.7687	4.0042	4.3000	6.431**	<0.01	S	4>6
IH	3.5911	3.9224	4.0385	5.662**	<0.01	S	N.A

Note: *** $p < 0.001$, ** $p<0.01$, * $p< 0.05$

S = Significant

N.S = Not Significant

N.A = Not Available

4.4.3 Monthly Income

A one-way ANOVA was performed to compare the effect of respondents' monthly income on Risk Attitude(RA), Personality(P), Information Acquisition(IA) and Investment Horizon(IH).

A one-way ANOVA revealed that there was a statistically difference in Personality, Information Acquisition, and Investment Horizon between respondents' monthly income with F-value 15.158, 7.735, and 6.075, respectively. And also, with a p-value of < 0.05.

A one-way ANOVA also revealed that there was not a statistically difference in Risk Attitude between respondents' monthly income since the F value is only 1.738 and p-value is >0.05.

It is also shown in the Table 4.10 below that the high income has the highest mean compared to the others, indicating that high income is more likely to agree with the question statement regarding to the construct of Personality, Information Acquisition, and Investment Horizon.

Table 4.10 Results of the differences between groups of Monthly Income

Constructs	Low income N=81 (1)	Middle income N=116 (2)	High income N=115 (3)	F-value	p-value	Differences between group	Scheffé test
RA	3.5844	3.5330	3.7217	1.738	>0.05	N.S	N.A
P	3.3975	3.5483	3.9043	15.158***	<0.001	S	1>3, 2>3
IA	3.8395	3.8276	4.1687	7.735***	<0.001	S	1>3, 2>3
IH	3.5741	3.8362	4.0043	6.075**	<0.01	S	1>3

Note: *** p < 0.001, ** p<0.01, * p< 0.05

S = Significant

N.S = Not Significant

N.A = Not Available

4.5 Scheffé Test

Since the overall p-value of the ANOVA in this study is statistically significant, therefore, this study will conduct post-hoc multiple comparisons between groups, namely Scheffé test. Scheffé test was performed in this study to make all possible contrasts between group means, which are respondents' age, highest level of education and monthly income.

4.5.1 Age -1

Scheffé test for multiple comparisons found that the mean value of

Personality was significantly different between age 1 (Gen Z) and age 2 (Millennials) with p-value .000. It also found that the mean value of Personality was significantly different between age 3 (Gen X) and age 1 (Gen Z) with p-value .000. There was no statistically difference between age 2 (Millennials) and age 3 (Gen X) with p-value .384.

Table 4.11 Results of Scheffé test on age of Personality

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.34872*	.08119	**.000**	-.5399	-.1575
	3	-.52806*	.13767	**.000**	-.8523	-.2038
2	1	.34872*	.08119	**.000**	.1575	.5399
	3	-.17935	.13562	.384	-.4987	.1400
3	1	.52806*	.13767	**.000**	.2038	.8523
	2	.17935	.13562	.384	-.1400	.4987

*. The mean difference is significant at the .05 level.

Scheffé test for multiple comparisons found that the mean value of Information Acquisition was significantly different between age 1 (Gen Z) and age 2 (Millennials) with p-value .002.

There was no statistically difference between age 1 (Gen Z) and age 3 (Gen X). Similarly, between age 2 (Millennials) and age 3 (Gen X) since the p-value is equal to .949.

Table 4.12 Results of Scheffé test on age of Information Acquisition

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.30047*	.08754	**.002**	-.5066	-.0943
	3	-.25550	.14845	.199	-.6051	.0941

2	1	.30047*	.08754	**.002**	.0943	.5066
	3	.04497	.14623	.949	-.2994	.3894
3	1	.25550	.14845	.199	-.0941	.6051
	2	-.04497	.14623	.949	-.3894	.2994

*. The mean difference is significant at the .05 level.

4.5.2 Highest Level of Education -1

Scheffé test for multiple comparisons found that the mean value of Personality was significantly different between highest level of education 4 (Senior high school) and highest level of education 6 (Master degree) with p-value .000. It also found that the mean value of Personality was significantly different between highest level of education 5 (Bachelor degree) and highest level of education 6 (Master degree) with p-value .003.

There was no statistically difference between highest level of education 4 (Senior high school) and highest level of education 5 (Bachelor degree) with p-value .052.

Table 4.13 Results of Scheffé test on Highest Level of Education of Personality

(I) Highest Level of Education	(J) Highest Level of Education	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
4	5	-.20066	.08571	.052	-.4025	.0012
	6	-.66827*	.15133	**.000**	-1.0247	-.3119
5	4	.20066	.08571	.052	-.0012	.4025
	6	-.46761*	.14313	**.003**	-.8047	-.1305
6	4	.66827*	.15133	**.000**	.3119	1.0247
	5	.46761*	.14313	**.003**	.1305	.8047

*. The mean difference is significant at the 0.05 level.

Scheffé test for multiple comparisons found that the mean value of Information Acquisition was significantly different between highest level of education 4 (Senior high school) and highest level of education 6 (Master degree) with p-value .003.

There was no statistically difference between highest level of education 5 (Bachelor degree) and highest level of education 6 (Master degree) with p-value .131.

Table 4.14 Results of Scheffé test on Highest Level of Education of Information Acquisition

(I) Highest Level of Education	(J) Highest Level of Education	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
4	5	-.23546*	.09161	.029	-.4512	-.0197
	6	-.53125*	.16175	**.003**	-.9122	-.1503
5	4	.23546*	.09161	.029	.0197	.4512
	6	-.29579	.15299	.131	-.6561	.0645
6	4	.53125*	.16175	**.003**	.1503	.9122
	5	.29579	.15299	.131	-.0645	.6561

*. The mean difference is significant at the 0.05 level.

4.5.3 Monthly income -1

Scheffé test for multiple comparisons found that the mean value of Personality was significantly different between monthly income 1 (Low income) and monthly income 3 (High income). In the same way, monthly income 2 (Medium income) and monthly income 3 (High income) with both of the p-value are .000.

There was no statistically difference between monthly income 1 (Low income) and monthly income 2 (Medium income), since the p-value is .305.

Table 4.15 Results of Scheffé test on Monthly Income of Personality

(I) Monthly Income	(J) Monthly Income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.1507	.09760	.305	-.3908	.0893
	3	-.5068*	.09778	**.000**	-.7473	-.2663
2	1	.1507	.09760	.305	-.0893	.3908
	3	-.3561*	.08870	**.000**	-.5742	-.1379
3	1	.5068*	.09778	**.000**	.2663	.7473
	2	.3561*	.08870	**.000**	.1379	.5742

Based on observed means.
 The error term is Mean Square(Error) = .454.
*. The mean difference is significant at the .05 level.

Scheffé test for multiple comparisons found that the mean value of Information Acquisition was significantly different between monthly income 2 (Medium income) and monthly income 3 (High income) with p-value of .002. In the same way, monthly income 1 (Low income) and monthly income 3 (High income) with p-value of .008.

There was no statistically difference between monthly income 1 (Low income) and monthly income 2 (Medium income), since the p-value is .994.

Table 4.16 Results of Scheffé test on Monthly Income of Information Acquisition

(I) Monthly Income	(J) Monthly Income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound

1	2	.0119	.10551	.994	-.2476	.2714
	3	-.3292[*]	.10570	**.008**	-.5892	-.0692
2	1	-.0119	.10551	.994	-.2714	.2476
	3	-.3411[*]	.09589	**.002**	-.5770	-.1053
3	1	.3292[*]	.10570	**.008**	.0692	.5892
	2	.3411[*]	.09589	**.002**	.1053	.5770

Based on observed means.

 The error term is Mean Square(Error) = .531.

*. The mean difference is significant at the .05 level.

Scheffé test for multiple comparisons found that the mean value of Investment Horizon was significantly different between monthly income 1 (Low income) and monthly income 3 (High income) with p-value of .003.

There was no statistically difference between monthly income 2 (Medium income) and monthly income 3 (High income), since the p-value is .326.

Table 4.17 Results of Scheffé test on Monthly Income of Investment Horizon

(I) Monthly Income	(J) Monthly Income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.2621	.12327	.106	-.5653	.0411
	3	-.4303[*]	.12349	**.003**	-.7340	-.1265
2	1	.2621	.12327	.106	-.0411	.5653
	3	-.1681	.11203	.326	-.4437	.1074
3	1	.4303[*]	.12349	**.003**	.1265	.7340
	2	.1681	.11203	.326	-.1074	.4437

Based on observed means.

 The error term is Mean Square(Error) = .725.

*. The mean difference is significant at the .05 level.

4.6 Regression Analysis -1

Regression Analysis was used in this study to test the relationship and impact between "Personality" and "Information Acquisition" towards "Risk Attitude". There are 3 steps that are used in this regressions analysis to measure the results. The first one is the result of F-value to measure the fitness of the model. Second is the R^2 to get the explaining ability for the model. And lastly, the information to get regression coefficient, whether regression coefficient is significant and whether the coefficient had a positive or negative influence. Regression analysis results will be presented in Table 4.18 below.

The results of Table 4.18 showed the F-value of Model 1, Model 2 and Model 3 are a regression model that is a good fit for the data. Since the F- value are 20.935, 21.636, and 13.005, respectively. For the Model 1, Personality has a positive influence and significant impact on Risk Attitude (β= .283, p <.001) with R^2 is .063 indicating that Personality only explains 6.3% the variability of Risk Attitude. As well as Model 2, Information Acquisition has a positive influence and significant impact on Risk Attitude (β= .272, p <.001) with R^2 .065 indicates that Information Acquisition only explains 6.5% the variability of Risk Attitude.

Model 3 also has a positive influence and impact between Personality and Information Acquisition towards Risk Attitude. For Personality (β= .166, p <.05). Meanwhile, Information Acquisition (β= .169, p <.05) with R^2 are .078 indicating that Personality and Information Acquisition only explains 7.8% the variability of the Risk Attitude. In sum, all of the model have a low R^2. However, Personality and Information Acquisition has a positive influence and significant impact on Risk Attitude $F(2, 309) = 13.0005$, p < .001.

As presented in Table 4.18 below, regression analysis that are used for model 1 and model 2 are simple regression analysis, and for model 3 is multiple regression analysis. The results showed that on model 3, when Personality and Information Acquisition are run through multiple regression analysis it has a different and lower value compared to single regression analysis which means that the information of independent variables can be completely replaced by the others. At the same time as the R^2, the value of model 3 is higher than the model 1 and model 2 indicating that there are no factors redundant.

Table 4.18 Regression Analysis Results

Independent Variables (Personality, Information Acquisition)	Dependent Variables (Risk Attitude)		
	Model 1	Model 2	Model 3
	Beta (β)	Beta (β)	Beta (β)
Personality (P)	.283***	-	.166*
Information Acquisition (IA)	-	.272***	.169*
R^2	.063	.065	.078
Adj-R^2	.060	.062	.072
F-value	20.935	21.636	13.005
P-value	< 0.001	< 0.001	< 0.001

Note: *** p < 0.001, ** p<0.01, * p< 0.05

4.7 Chi-square (χ^2) test

Chi-square (χ^2) test was used in this paper to study the impact of Risk Attitude towards Investing Behavior. This study uses quartile 1 and quartile 3 to determine the low risk attitude investor and high risk attitude investor. The low risk attitude investor are the investors that have a mean equal or lower than 3.167 from a 5-point Likert scale, and for high risk attitude investor, are the investors that have a mean equal or higher than 4.167. Moreover, this study also compare the quartile 1 and non-quartile 1 that select the prospect theory, and also, quartile 3 and non-quartile 3 that select prospect theory to study the impact towards Investing Behavior. The non-quartile 1 and 3 are the others that are not belong to quartile 1 and quartile 3. The measurement to study investors' behavior is by using prospect theory and the metrics that will be used are certainty effect, reflection effect and isolation effect.

Table 4.19 below illustrates that there are significant χ^2 of low risk and high risk attitude, where χ^2 of low risk is 57.873 and χ^2 of high risk is 50.611. This indicates that Risk Attitude is significantly impact on Investing Behavior and the low risk and high risk attitude can be studied by prospect theory. However, the result also showed that Risk Attitude cannot be studied by certainty effect since it has the insignificant χ^2 of low risk and high risk attitude which are 2.554 and 0.664, respectively.

Table 4.19 Chi-Square analyses to examine Risk Attitude differences

	Low Risk N=87	Others N= 225	χ^2	High Risk N=68	Others N=244	χ^2
Theoretical	43.5	112.5		34	122	
Certainty effect	54	111	2.554	34	131	.664
Reflection effect	52	181	43.370	56	177	39.030
Isolation effect	61	136	11.949	41	156	10.917
χ^2		57.873			50.611	

4.8 Binomial Test

Binomial Test was used to compare the differences between quartile 1 and others, as well as quartile 3 and others towards the prospect theory. There are certainty effect, reflection effect, and isolation effect. The statistic that will be used in this test are t-value to measure whether it has a significantly differences or not.

Following Table 4.20 presents that Low risk's behavior is significantly different from investors that are belong to others Since the t-value of certainty effect and reflection effect are significant with 2.061 and -3.513, respectively. Except for the isolation effect, since the t-value is insignificant with only 1.614 which means, that there are not much differences between the low risk's behavior and others

As for the high risk, it shows that high risk behavior is insignificantly different from investor that are belong to others due to the insignificant t-value of certainty effect -0.538 and isolation effect with only -0.545. However, it is found that the reflection effect of high risk attitude and others are slightly different at 10% level which is higher than 1.645. In sum, Low risk's behavior is more in line with that prospect theory suggests than the high risk's behavior.

Table 4.20 Results of the differences between low risk and high risk towards Investor Behavior

	Low Risk vs. Others			High Risk vs. Others		
	N=87	N=225	t-value	N=68	N=244	t-value
Certainty effect	62.1%	49.3%	2.061	50.0%	53.7%	-.538
Reflection effect	59.8%	80.4%	-3.513	82.4%	73%	1.805
Isolation effect	70.1%	60.4%	1.641	60.3%	63.9%	-.545

4.9 Hypotheses Testing

In this part, it is devoted to summarize the results of the research hypotheses that is obtained from the research framework. The results were summarized in the Table 4.21 The Results of Research Hypotheses as below:

Table 4.21 Results of Research Hypotheses

	Research Hypotheses	Results
H1	There is a significant difference between investors' Demographic Variables and investors' Risk Attitude	Partially Supported
H2	There is a significant impact of investors' Personality towards investors' Risk Attitude	Supported
H3	There is a significant impact of the Information Acquisition by investors' towards investors' Risk Attitude	Supported
H4	There is a significant impact of investors' Risk Attitude towards Investor Behavior	Supported

The first hypothesis stated that there is a significant difference between investors' Demographic Variables and investors' Risk Attitude. In this study, there are five variables of Demographic Variables. Namely, gender, age, highest level of education, monthly income, and background of occupation. However, from all of the five variables of Demographic Variables, there is only one variable that has a significant difference towards Risk Attitude. Which is investors' age. As shown in the Table 4.6 that there is a significant difference between gender and Risk Attitude. Also, male has a higher Risk Attitude compared to female with average mean value is 3.8238, compared to female with only 3.2787. Therefore, this study result is partially supported the hypothesis.

The second hypothesis stated that there is a significant impact of investors' Personality towards investors' Risk Attitude. As presented in the Table 4.18 that

Personality has a significant impact towards Risk Attitude since the F-value is 20.935, p <.001. Personality also has a positive influence and impact towards Risk Attitude (β= .283, p <.001) which means that for each one of the Personality increased, which is the investors' confidence level. There is also an increase in investors' Risk Attitude by 28.3%. Therefore, this study result is supported the hypothesis.

The third hypothesis stated that there is a significant impact of the Information Acquisition by investors' towards investors' Risk Attitude. The result of this hypothesis is supported. As indicated in the Table 4.18, Information Acquisition has a significant impact towards Risk Attitude with F-value 21.636, p <.001. Information Acquisition also has a positive influence and impact towards Risk Attitude (β= .272, p <.001) which means for each one of the information that investors' acquired, there is also an increase in investors' Risk Attitude by 27.2%.

The fourth hypothesis stated that there is a significant impact of investors' Risk Attitude towards Investor Behavior. As illustrated in Table 4.19, investors' Risk Attitude is significantly impact on investor' Investing Behavior since the χ² of low risk and high risk are 57.873 and 50.611, respectively. However, investors' Risk Attitude cannot be studied by the certainty effect since it has insignificant χ² of low risk and high risk which are 2.554 and .664, respectively. Therefore, this study conclude that this hypothesis is supported.

CHAPTER 5
CONCLUSIONS

This chapter contains two parts: Conclusion and suggestion. The conclusion part will summarize briefly regarding to the research purpose, methodology and the conclusion. Limitations of the study and the suggestion for future research are also included.

5.1 Research Conclusion

The main point of this part is to briefly summarize in relation to the research purpose, and methodology that is used throughout this study and the conclusion of this study.

5.1.1 Research purpose

The major objective of this paper is to study the factors that determine Risk Attitude and Investing Behavior. This objective is examined based on three factors: Demographic Variables, Personality, and Information Acquisition to study the Risk Attitude. As well as the impact of Risk Attitude towards Investor Behavior. And finally, to analyze the irrational behavior of individual investors.

5.1.2 Research methodology

There are five statistics test that are used throughout this study. Namely, (1) Descriptive statistic method to get the mean, standard deviation and factor analysis of the questionnaire items. (2) Difference test which include t-test to study the differences between gender, background of occupation and Risk Attitude. ANOVA test to study the differences between age, highest level of education,

monthly income and Risk Attitude. And there is Scheffé test was performed in this study to make all possible contrasts between group means, which are respondents' age, highest level of education and monthly income. (3) Regression analysis which include simple regression analysis and multiple regression analysis to study the impact and influence of Personality and Information Acquisition towards Risk Attitude. Moreover, (4) Chi-square (χ^2) test was used in this paper to study the impact of Risk Attitude towards Investing Behavior. Lastly, (5) Binomial Test which was used to compare the differences between quartile 1 and others, as well as quartile 3 and others towards the prospect theory. There are certainty effect, reflection effect, and isolation effect. The statistic that will be used in this test are t-value to measure whether it has a significantly differences or not.

5.1.3 Research conclusion

In general, every investors in the world will have a different kind of Risk Attitude, due to many factors such as; Demographic Variables, Personality and Information Acquisition. Therefore, it is important for investors to study their risk attitude before investing, to know deeper about themselves and find the most suitable investment tool for their investment. Such as low risk attitude investors could choose mutual fund and government bond for their investment, and high risk attitude investors could choose stock, real estate and even cryptocurrencies for their alternative investment.

Moreover, this study also found that if investors' risk attitude is relatively lower, investors' behavior will be more consistent with prospect theory. Therefore, without our consciousness, investors are having many bias and could do an irrational behavior. For this reason, it is also important to learn the psychology in

investing, so that investors could invest in a more rational way rather than just using intuition because sometimes it will not be rational and can cause the investors in danger of losing money.

5.2 Limitations and Future Research

Despite the contribution that this study gave, it still has several limitations. Research limitation that are expected for this study are as follows.

This study just used 312 respondents as the sample of this empirical research. Since the focus of this study is in Indonesian Stock Exchange (IDX). Therefore, the sample was collected from Medan, Indonesia. Besides, most of the respondents are gen Z and millennials, so that opinion of the respondents may not represent Indonesians' opinion. It suggested to add more samples, different city and even different nationalities, to get more empirical validation.

Ultimately, this study did not consider current economic condition. Therefore, Future research could examine additional factors that may impact Risk Attitude such as exogeneous variable. Namely, Covid-19, financial crisis and inflation rate.

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APPENDIX I: QUESTIONNAIRE – ENGLISH VERSION

Dear respondent,

My name is Richson, and I am a Masters student majoring in Business Administration at Nanhua University. The main purpose of this questionnaire is to explore what factors that determine risk attitude, and how is the impact of risk attitude towards investor behavior and you are the right respondent for this questionnaire, so I really wish you could participate in this questionnaire by filling out this research questionnaire and providing answers to the statements based on your opinion. I hope no answer is left blank because there is no right or wrong answer. Your answers will be treated according to professional and ethical standards of research. Therefore, I will keep your identity confidential and I thank you very much for your willingness and participation in this research.

For my gratitude to all of the respondents who have participated in this questionnaire, there will be 3 winners of respondents who will be randomly selected to get BBRI shares with each person getting 100 shares when this questionnaire has ended and will be contacted by me via WhatsApp or Instagram.

Researcher,

Richson

Section 1: Personal information

Please tick on the box which best describes your situation:

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 17-24 ☐ 25-40 ☐ 41-56 ☐ >56
3. Highest Level of Education: ☐ Unschooled ☐ Elementary school ☐ Junior high school ☐ Senior high school ☐ Bachelor's degree ☐ Masters degree ☐ Doctorate degree
4. Monthly Income (IDR): ☐ <3million ☐ 3-7.5 million ☐ >7.5 million
5. Background of Occupation: ☐ Financial Sector ☐ non-financial sector

Section 2: Risk Attitude

Please **CIRCLE** the level of your agreement on each of the following statement based on your opinion	Levels of Agreement				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Risk Attitude					
1. Taking risks makes life more interesting	1	2	3	4	5
2. My friends would describe me as a risk taker	1	2	3	4	5
3. I enjoy taking risks in most aspects of my life	1	2	3	4	5
4. I frequently make risky decisions	1	2	3	4	5
5. I am a believer of taking chances	1	2	3	4	5
6. I am attracted to risk rather than avoid it	1	2	3	4	5

Section 3: Personality

Please **CIRCLE** the level of your agreement on each of the following statement based on your opinion	Levels of Agreement				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Personality - Confidence					
1. I am an experienced investor	1	2	3	4	5
2. When I purchase a winning investment, I believe that my actions and knowledge had an impact on the outcome	1	2	3	4	5
3. I expect my investment to perform better than the stock market	1	2	3	4	5
4. I feel more confident in my own investment opinions than the opinions of financial analysts and advisors	1	2	3	4	5
5. I feel more confident in my own investment opinions than the opinions than the opinions of friends and colleagues	1	2	3	4	5

Section 4: Information Acquisition

Please **CIRCLE** the level of your agreement on each of the following statement based on your opinion	Levels of Agreement				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Information Acquisition					
1. I oftenly acquire information regarding to stock market	1	2	3	4	5

2. I have a community where they share private information regarding to stock market	1	2	3	4	5
3. I spent an extra time on collecting stock market information	1	2	3	4	5
4. I feel more confident in the information that I gathered myself	1	2	3	4	5
5. After I have spent a long time researching on information, I am more likely to act on this information (buy or sell)	1	2	3	4	5
Investment Horizon					
1. I am unconcerned about stock market fluctuations	1	2	3	4	5
2. If one of my investments fell 20% in six months and coincided with a stock market crash, I would keep that investment in the belief that it would recover	1	2	3	4	5
3. I make investing decision based on the result of fundamental analysis	1	2	3	4	5
4. I am more likely to do a long-term investment rather than a short-term investment	1	2	3	4	5

Section 5: Prospect Theory

1. If you are faced with two doors, and you have to choose one:

☐ Choosing the right door, you will get IDR 500,000 for sure

☐ Choosing the left door, you will only have a 50% chance to get IDR 1,200,000 and 50% chance to get IDR 0

2. You are again faced with the next two doors, and you have to choose one:
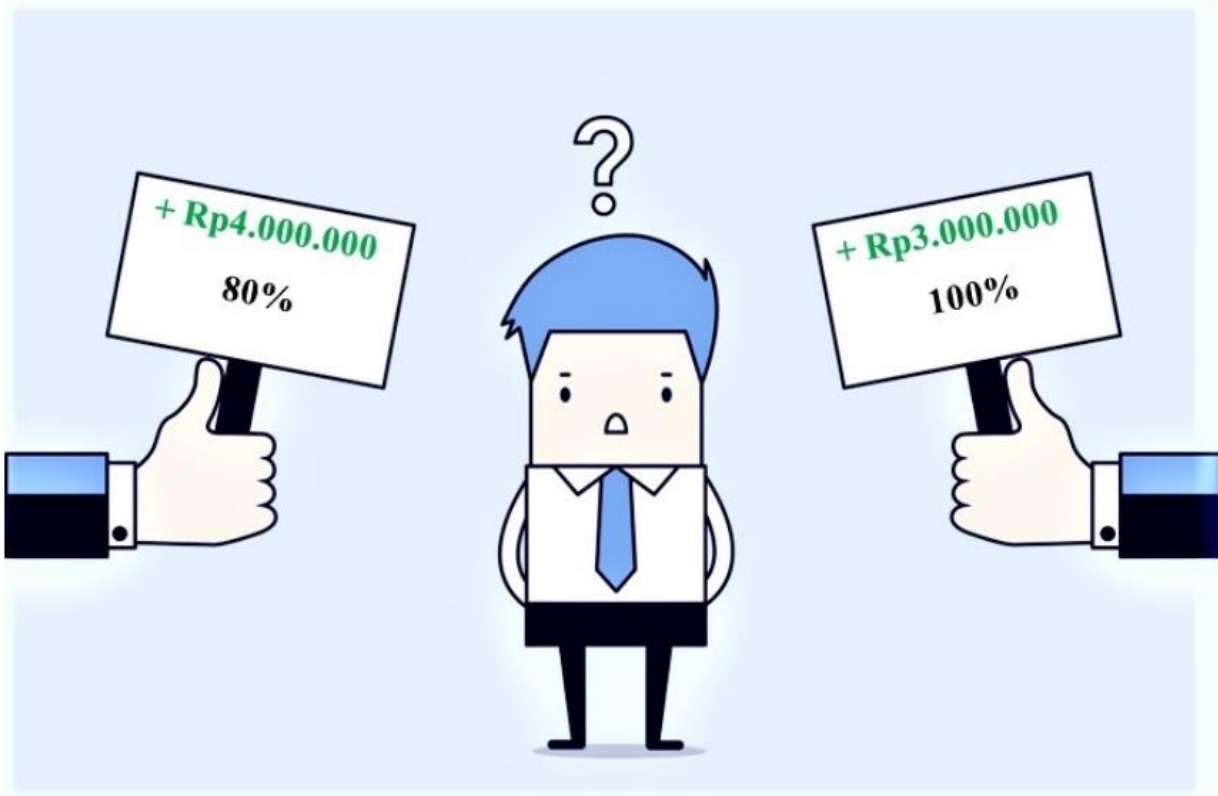
☐ Choosing the right door, you have to pay IDR 500,000 for sure

☐ Choosing the left door, you have a 50% chance to pay IDR 1,200,000 and 50% free

3. Consider the following two rounds of game:

a. First round

☐ There is a 75% chance to end the game without winning anything

☐ There is a 25% chance to enter the second round

b. Second round

☐ There is an 80% chance to get IDR 4,000,000 and 20% chance to get IDR 0

☐ Get IDR 3,000,000 for sure

APPENDIX II: QUESTIONNAIRE – INDONESIAN VERSION

Kepada responden yang terhormat,

Nama saya Richson, dan saya merupakan mahasiswa S2 Jurusan Administrasi Bisnis di Universitas Nanhua. Tujuan utama dari kuesioner ini adalah untuk mengeksplor faktor-faktor apa saja yang menentukan perilaku berisiko dan perilaku berinvestasi, dan bagaimana dampak dari perilaku berisiko terhadap perilaku berinvestasi tersebut. Anda merupakan responden yang tepat, sehingga saya sangat mengharapkan partisipasi Anda dengan mengisi kuesioner penilitian ini serta memberikan jawaban atas pernyataan yang diajukan. Saya mengharapakan tidak ada jawaban yang dikosongkan karena di sini tidak ada jawaban benar ataupun salah. Jawaban Anda akan diperlakukan sesuai dengan standar profesionalitas dan etika penilitian. Oleh sebab itu, Saya akan menjaga kerahasiaan identitas Anda. Saya ucapkan banyak terima kasih atas kesediaan dan partisipasi Anda dalam penelitian ini.

Atas rasa terima kasih saya kepada teman-teman semua yang telah berpartisipasi dalam kuesioner ini, maka akan ada 3 orang yang terpilih secara acak untuk mendapatkan saham BBRI dengan masing-masing orang mendapatkan 1 lot pada saat kuesioner ini telah berakhir dan akan dikontak oleh saya melalui WhatsApp ataupun Instagram.

Peneliti,

Richson

Bagian 1: Informasi Pribadi

Harap centang kotak yang paling menggambarkan situasi Anda:

1.   Jenis Kelamin: ☐ Laki-laki   ☐ Perempuan

2.   Umur: ☐ 17-24   ☐ 25-40   ☐ 41-56   ☐ >56

3.   Pendidikan terakhir: ☐ Tidak Sekolah ☐ SD ☐ SMP ☐ SMA ☐ S1 ☐ S2 ☐ S3

4.   Penghasilan (IDR): ☐ <3 juta ☐ 3-7.5 juta ☐ >7.5 juta

5.   Pekerjaan: ☐ Sektor Finansial ☐ Lainnya

Bagian 2: Perilaku Berisiko

Mohon **LINGKAR** tingkat persetujuan Anda pada setiap peryataan berikut berdasarkan pendapat Anda	Tingkat Persetujuan				
	Sangat tidak setuju	Tidak setuju	Netral	Setuju	Sangat setuju
Perilaku Berisiko					
1. Mengambil resiko membuat hidup saya lebih menarik	1	2	3	4	5
2. Teman-teman saya mendeskripsikan saya sebagai seorang pengambil risiko	1	2	3	4	5
3. Saya menikmati pengambilan risiko disebagian besar aspek kehidupan saya	1	2	3	4	5
4. Saya sering membuat keputusan yang berisiko	1	2	3	4	5
5. Saya selalu optimis dalam mengambil setiap peluang yang ada	1	2	3	4	5

6. Saya lebih tertarik dengan hal yang berisiko daripada berusaha menghindarinya	1	2	3	4	5

Bagian 3: Kepercayaan Diri

Mohon **LINGKAR** tingkat persetujuan Anda pada setiap pernyataan berikut berdasarkan pendapat Anda	Tingkat Persetujuan				
	Sangat tidak setuju	Tidak setuju	Netral	Setuju	Sangat setuju
Kepercayaan Diri					
1. Saya ada seorang investor yang berpengalaman	1	2	3	4	5
2. Ketika saya mendapatkan keuntungan yang cukup besar, saya percaya bahwa tindakan dan pengetahuan saya berdampak pada hasil tersebut	1	2	3	4	5
3. Saya mengekspektasikan bahwa investasi saya akan lebih baik daripada indeks pasar saham	1	2	3	4	5
4. Saya merasa lebih yakin dengan opini investasi saya daripada opini analis dan penasihat keuangan	1	2	3	4	5
5. Saya merasa lebih yakin dengan opini investasi saya daripada opini teman dan kolega	1	2	3	4	5

Bagian 4: Akuisisi Informasi

Mohon **LINGKAR** tingkat persetujuan Anda pada setiap peryataan berikut berdasarkan pendapat Anda	Tingkat Persetujuan				
	Sangat tidak setuju	Tidak setuju	Netral	Setuju	Sangat setuju
Akuisisi Informasi					
1. Saya sering mendapatkan informasi mengenai pasar saham	1	2	3	4	5
2. Saya memiliki komunitas saham dimana mereka membagikan informasi privat mengenai pasar saham	1	2	3	4	5
3. Saya menghabiskan waktu ekstra untuk mencari informasi mengenai pasar saham	1	2	3	4	5
4. Saya merasa lebih percaya diri dengan informasi yang saya kumpulkan sendiri	1	2	3	4	5
5. Setelah saya menggunakan waktu yang cukup lama untuk menganalisa suatu informasi, saya cenderung untuk mengambil keputusan berdasarkan informasi tersebut (beli atau jual)	1	2	3	4	5
Horison Investasi					
1. Saya tidak peduli dengan fluktuasi pasar saham	1	2	3	4	5
2. Jika salah satu investasi saya turun 20% dalam enam bulan dan bertepatan dengan jatuhnya pasar saham, saya akan mempertahankan investasi saya dengan keyakinan bahwa investasi saya akan pulih	1	2	3	4	5
3. Saya membuat keputusan investasi berdasarkan hasil analisa fundamental	1	2	3	4	5

4. Saya lebih cendurung untuk melakukan investasi jangka Panjang daripada investasi jangka pendek	1	2	3	4	5

Bagian 5: Prospect Theory

1. Jika anda dihadapkan dengan dua pintu, dan anda harus memilih salah satu:

☐ Memilih pintu kanan, anda akan mendapatkan Rp500.000 dengan pasti

☐ Memilih pintu kiri, anda hanya akan memiliki kesempatan sebesar 50% untuk mendapatkan Rp1.200.000 dan 50% kemungkinan mendapatkan Rp0

2. Anda dihadapkan lagi dengan dua pintu berikutnya, dan anda harus memilih salah satu:

☐ Memilih pintu kanan, anda harus membayar Rp500.000 dengan pasti

☐ Memilih pintu kiri, anda berkesempatan 50% untuk membayar Rp1.200.000 dan 50% gratis

3. Pertimbangkan dua babak permainan berikut ini:

a. Babak pertama

☐ Ada kemungkinan 75% untuk mengakhiri permainan tanpa memenangkan apapun

☐ Ada kemungkinan 25% untuk masuk babak kedua

b. Babak kedua

☐ Ada kemungkinan 80% untuk mendapatkan Rp4.000.000 dan 20% kemungkinan
mendapatkan Rp0

☐ Mendapatkan Rp3.000.000 dengan pasti