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The Role Of Risk Propensity In Mediating The Influence Of Financial Behavioral Bias On Investment Performance Moderated By Financial Literacy

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ABSTRACT

Financial behavioral biases including financial cognitive bias and financial emotional bias, risk propensity and financial literacy are important factors in improving investment performance. By considering the role of each of these factors, investors can make the right decisions and encourage the achievement of investment performance in investors who are active in the Indonesia Stock Exchange representative of Southeast Sulawesi. This study uses a quantitative approach using the SEM PLS analysis tool with Smart PLS 4.0. This study was conducted using a survey method using a questionnaire to 391 investors spread across 17 districts/cities in Southeast Sulawesi province. This study uses panel data, sampling through the probability random sampling method, then determining the sample size through the proportional allocation method. The results of the study indicate that: 1) financial behavioral bias, namely financial cognitive bias and financial emotional bias have a positive and significant effect on risk propensity and investment performance; 2) Risk propensity is proven to act as a mediator in the relationship between financial behavioral bias and investment performance; 3) Financial cognitive bias has a negative effect on investment performance; 4) Financial emotional bias has a positive effect on Investment Performance; 5) Risk propensity has a positive and significant effect on investment performance; 6) The role of financial literacy has a negative and insignificant effect in moderating the effect of risk propensity on investment performance; 7) Financial literacy has a positive and significant effect on investment performance. These findings emphasize the importance of understanding behavioral bias in investment decision making and the role of financial literacy in improving investment performance. This study provides policy implications for practitioners and individual investors.

Keywords: *Financial Behavioral Bias, Financial Cognitive Bias, Financial Emotional Bias, Risk Propensity, Financial Literacy, Investment Performance, Individual Investors.*

1. INTRODUCTION

Investment decisions are important for business survival, market competition and value creation (Baker & Nofsinger, 2010). However, investment decisions need to be formulated carefully because investment is determined by various factors, including: economic, monetary, market, and business operations factors (Schwartz, 1998). In addition, factors related to behavioral science and financial psychology play an important role in investment policy (Kahneman and Tversky, 1979; Barber and Odean, 2008; Hackbarth, 2009; Bachmann et al, 2018; Shefrin, 2000). Generally, the financial field has developed and implemented a conventional financial model that assumes that rational individuals are very different from irrational and less contributing individuals (Jensen & Meckling, 1976). Traditional financial theories such as Modigliani & Miller's arbitrage theory (1958), Markowitz's portfolio theory (1952), Sharpe's asset pricing model (CAPM) (1964), and Black & Scholes' option pricing model (1973), Merton (1969) were developed based on views believed to be supporters of modern finance. However, as a business analyst, one should act wisely when making investment decisions, and behave in investing, which is not only based on views from modern finance (Statman, 2012). The theory of investor financial behavior is seen as a grand theory, based on the premise of Barberis & Thaler (2003) behavioral finance theory, a solution to the development of conventional financial theory that mentally ignores the real behavior of humans in making financial decisions and individual makes different decisions in investing. Supporters of financial behavior continue to review this theory by proposing a hypothesis that believes that stock market prices are generally not fully influenced by the characteristics of the modern market; but security prices are influenced by investor practices and mental tendencies (Shefrin, 2000). Cognitive bias or errors or extreme emotional biases make investors make bad investment choices, and as a result investors will act irrationally in making their investment decisions (Shleifer, 2001).

In behavioral theory, humans respond and react to the information they receive positively and negatively, so investors respond and make the right decisions to optimize returns and pay attention to risks, so that human attitudes and actions are determining factors in investing (Lintner (1965:7). Optimizing returns encourages increased investment performance. Therefore, by understanding financial behavior, investors are optimistic about improving business performance (Shefrin, 1988, 1994, 2000). The stock market is beneficial for investors because it has the opportunity to create and increase their wealth. Investors generally have an interest in investing in the capital market. However, many obstacles are faced, especially for novice investors who are inexperienced, do not really understand how to invest or the risks faced. Kanagasabaia & Aggarwala (2020) Basic investment knowledge is the main thing that investors must know, which aims to prevent investors from irrational investment practices (gambling), follow-the-line culture, fraud and the risk of loss faced when investing in the capital market, such as stock investment instruments. For this reason, the role of financial literacy is needed to improve knowledge, experience, and business instincts in analyzing investments of interest, so that investment performance continues to increase.

Basically, rational investors always expect maximum profit with minimal risk. However, the assumption that investors will behave rationally is not entirely true due to limited thinking ability (bounded rationality), and is the reason for the emergence of behavioral finance. Behavioral finance theory generally discusses irrational investor behavior (behavioral bias). According to Kim & Nofsinger (2007), behavioral finance is the study of cognitive errors and emotional tendencies in financial decision-making by investors, which can cause investors' investment decisions to be bad. Olsen (1998) stated that behavioral finance tries to predict financial markets that focus on the application of psychological principles in economics, business, finance, and accounting as the development of financial decision-making processes that can improve investment performance.

Individual investors have an important role in activities in financial markets that provide basic preferences related to stock returns, business risk, liquidity, and other non-financial criteria. The rationality of investors in financial markets has been challenged in recent decades, and a paradigm shift can be witnessed among investors influenced by rational bias (cognitive) and psychological bias (emotional). This evolution is explained by two main factors, as new evidence illustrates the impact of psychological biases on the behavior of economic actors and the shortcomings of rational investment models in explaining the volume and returns of stock market trading (Daniel & Shleifer, 2015). The emergence of behavioral finance literature whose application is undeniable to date is used as a basis for explaining psychological principles in investment decision making (Kapoor & Prosad, 2017), and the implications of psychological factors for financial markets (Paule-Vianez et al., 2020) clarifies the puzzle of the conventional financial standard paradigm where there is a mismatch between optimal investment choices. This aspect can explain the actual investment choices.

Investment performance is the main driver of investors in investing in stocks. Previous research results state that investors get a fair return on their invested wealth (Campbell et al., 2019; Dai & Zhu, 2020). However, some investors consistently face poor performance due to the lack of theory and literacy related to the capital market, and the emergence of several behavioral biases in investing (Chhapra et al., 2018; Shah et al., 2018). Behavioral financial bias causes poor performance in the stock market and makes the capital market inefficient. Behavioral financial bias in this case plays an important role for investors against unfounded stock valuations and investors believe it confidently. Odean (1999) argues that investors who are confident in investing will cause the market to underreact to rational investor information. Investors believe that with the presence of financial market anomalies, investors can make excess returns (Entrop et al., 2016) by using their cognitive behavior (Tekce et al., 2016). Investors who behave in finance will be more involved in trading (Daniel & Shleifer, 2015) than other investors to get higher returns (Barber & Odean, 1999, 2000, 2001, 2008). However, findings show that investors who are confident often fail to get higher returns on their investments (Baker & Ricciardi, 2014).

Investors with financial behavior will respond to risk neutrally which causes the expected return to be higher than rational (Benos, 1998). Investors with their investment behavior not only provide positive returns from behavior outside their rationality but also obtain higher returns if investors think rationally (Kyle & Wang, 1997). Previous research shows that financial behavioral bias causes market volatility (Mushinada & Veluri, 2018). Therefore, it is important to study the financial behavioral bias of stock market investors that affects their investment performance (Pikulina et al., 2017; Trejos et al., 2019). Therefore, this research discusses the relationship gap and explores the variables of financial behavioral bias, risk propensity, financial literacy, and investor investment performance in the Indonesian capital market. To understand behavioral finance in depth, it is necessary to divide behavioral finance into two sub-topics, the first is behavioral finance micro (BFMI) and behavioral finance macro (BFMA). This study will focus more on behavioral finance micro. Behavioral finance micro identifies relevant psychological biases and investigates their influence on investor asset allocation decisions so that they can manage the impact of psychological biases that arise in their investment process (Pompian, 2006, 2012). Psychological factors appear in investor financial behavior due to the investment perceptions they take. Bias is an injustice or tendency to make temporary decisions that have been influenced by fundamental beliefs from the bottom of their hearts (Shefrin, 2001). In decision making, investors try to make rational decisions. However, investors with experience in the investment field or novice investors, the possibility of perception bias cannot be avoided, namely the psychological tendency of investors who lose objectivity in perception and situations caused by bias.

A person who is in a biased state, believes in his ability to evaluate events accurately and make judgments about the situation.

Investors are influenced by bias, influencing the investment decision-making process. There is a division of human self-perception bias, namely cognitive bias and emotional. Cognitive bias: the process of accepting with thoughts drives someone to behave something. Emotional bias: the urge to act involves deep activities and changes accompanied by strong feelings (Pompian, 2006). According to Pompian (2006), the role of emotional bias in novice investors is greater than cognitive bias. This is influenced by the limited knowledge and experience of novice investors so that the emotional side will play a greater role in decision-making than rationality. In behavioral finance micro, behavioral and psychological biases affect investor performance (Bachmann et al., 2018, Pompian, 2012, 2006). The components of cognitive bias and emotional bias are considered urgent and are the focus of this research, including: cognitive bias is: self-attribution, illusion of control, mental accounting, and representativeness bias. Emotional bias, including: optimism bias, loss aversion bias, regret aversion bias (herding), and affinity bias.

2. LITERATUR REVIEW

Behavioral Finance

Thaler (1980) stated behavioral finance as a theory of financial markets oriented to behavior, the subject applied to the fact that people will behave rationally only within certain limits. Behavioral finance is an integration of classical economic theory and financial studies that investigate psychology and financial decision making. Fromlet (2001) explained that through behavioral finance, individual attitudes and emotions can be involved in the investment decision-making process and market prices. Ritter (2003) behavioral finance complements financial theory, which introduces psychological dimensions in its decision-making process (Bikas et al., 2013). Sewell (2001) defines behavioral finance as "the study of the influence" of psychology on the behavior of financial practitioners and the subsequent effects on the market". Shefrin (2000), "behavioral finance is the applied application of the field of financial psychology related to financial behavior and the behavior of investment practitioners." Lintner G. (1998) behavioral finance as the study of the interpretation of human behavior and acting on the information obtained to make informed investment decisions. Olsen R. (1998) behavioral finance seeks to understand and predict the systematic financial market implications of psychological decision processes. Statman (1999), Behavioral Finance is a rapidly growing area related to the influence of psychology on the behavior of financial practitioners". Forbes (2009) behavioral finance as a science of psychology affects financial markets. This view emphasizes that individuals are influenced by psychological factors such as cognitive biases in their decision making, rather than being rational and maximizing wealth. Sewell (2001) states that behavioral finance challenges the theory of efficient markets by providing insight into why and how markets become inefficient due to irrationality in human behavior. Schindler (2007) provides an illustration of behavioral finance including: (a) Investor bias when making decisions, allowing their choices to be influenced by optimism, overconfidence, conservatism. (b) Experience and heuristics help make complex decisions. (c) The mind processes available information, matching it with the decision's own frame of reference, thus allowing investor framing to influence decisions. Behavioral finance is defined as a field of finance based on psychological theory to explain stock market anomalies. In behavioral finance, it is assumed that the information structure and characteristics of market participants systematically affect investment decision making and will also affect the rate of return on financial markets.

Macro And Micro Financial Behavior

Financial behavior in a broad sense is divided into macro financial behavior and micro financial behavior (Pompian, 2006). Micro Financial Behavior or Behavioral Finance Micro (BFMI) examines the behavior or bias of individual investors that distinguishes them from rational actors who are overshadowed by classical economic theory. Macro Financial Behavior or Behavioral Finance Micro (BFMA) detects and explains the anomalies of the efficient market hypothesis as a description of the behavioral model. As an asset management practitioner and investor, the main focus of Pompian (2006) micro financial behavior (BFMI), namely the study of financial behavior in individual investors. Specifically, identifying some relevant psychological biases and investigating their influence on asset allocation decisions, as well as to manage the effects of bias on the investment process. Macro-behavioral Finance reveals and illustrates the anomalies of the efficient market hypothesis that can be explained by the behavioral model of people. Micro-behavioral Finance analyzes the behavior and deviations of individual investors that separate people who are very rational, acting according to the stern mathematical-statistic model (Jureviciene et al. 2012). The definition of behavioral finance was put forward by Adam Smith in the early 19th century in the Theory of Moral Sentiments, which determines the mental (psychological) interaction, human emotions, and the basics of communication, and is based on behavioral elements such as pride, shame, insecurity, human egoism in pursuit of profit. However, since the early 19th century when the economy was dominated by neoclassical theory, psychological factors have been displaced from factors that influence economic discourse until the mid-20th century (Bikas et al, 2013). Stracca (2004) stated that the focus of behavioral finance is on the positive description of human behavior, especially when under risk and uncertainty, rather than on the normative behavioral analysis typical of the mainstream approach. Shefrin & Statman (2001), behavioral finance is a science that studies psychological factors that influence the decision-making process in financial markets. Psychology explores human judgment, behavior, well-being, providing facts about human action that differ from traditional economic assumptions. Weber et al (1990) in: "Behavioral finance combines behavior and market phenomena using knowledge drawn from the fields of psychology and financial theory." Behavioral finance is a young field, with its

formal beginnings in the 1980s. Today, behavioral finance is poised to replace neoclassical finance as the dominant paradigm of the discipline, and behavioral finance is gaining attention for its application in understanding investor behavior in investing in the public sector. Psychological and sociological factors are considered important in analyzing financial decisions and returns that will accelerate academic research and be practically applied in today's business world. Behavioral Finance is the study of psychological factors that influence financial decisions in households, markets, and organizations. Behavioral finance explains many reactions in financial markets that seem to contradict conventional theory and makes important contributions to avoid serious mistakes in deciding good investment strategies. Despite some interesting approaches, behavioral finance contributes to improving the performance of investor assets, but it is difficult to pick a single winner from the market (Fromlet 2001; De Bondt et al., 2008). Behavioral finance is an interdisciplinary research area combining insights from psychology with finance to better understand investor behavior and asset prices. It has successfully bridged the gap between theory and practice. Traditional finance has focused on the ideal scenario of a completely rational investor in an efficient market. According to Bachmann, (2018) The standard paradigm in finance, individuals rationally seek information and know all available actions serve their preferences, and are stable over time and robust to unexpected events.

Financial Behavioral Bias

Behavioral bias is based on the heuristic theory (1974) and prospect theory, developed by Kahneman and Tversky (1979). This theory states that psychological factors cause irrationality that affects investment decision making. This theory explains the process of human assessment and decision-making involving risk in uncertainty. In a position of gaining profit, investors will avoid risk, while in a condition of experiencing loss they will become risk takers. The irrationality of investment decisions causes psychological bias as a basic assumption of financial behavior. Irrational intuitions and beliefs in abilities, skills, and abilities that ignore facts are called biases. Several types of investor behavioral biases currently greatly influence financial decision making. Financial behavioral biases can hinder progress towards achieving financial goals. The mechanism for identifying and managing unwanted financial behavioral biases is presented in the investor personality type called the theory and Behavior Investors Types (BIT), identifying several basic types of investor behavioral biases that influence financial decisions, and diagnosing unique irrational behaviors, so that investors are in better condition (Pompian, 2012). Common dictionaries define "bias" as: a) a systematic statistical testing or sampling error that favors some outcomes over others; b) a preference or tendency that inhibits impartial judgment; c) a tendency or bias in favor of a particular viewpoint; d) a tendency of temperament or outlook, and an unreasonable personal judgment. In the context of behavioral finance, bias results in irrational decisions due to faulty cognitive reasoning, and emotional factors. This classification distinguishes between biases based on faulty cognitive reasoning (cognitive errors) and reasoning influenced by feelings (emotional biases). Behavioral biases are assumed to cause decisions to deviate from traditional rational financial decisions. Behavioral finance biases are classified as cognitive biases and emotional biases. This distinction is very useful in understanding types of investor behavior.

Cognitive Bias In Finance

Cognitive biases or errors stem from basic statistics, information processing, or memory errors; cognitive errors are thought to result from faulty reasoning. According to Pompian (2012) Cognitive bias is classified into two categories, namely a) “belief perseverance” bias; b) Bias related to the way a person processes information. The first category contains the “belief perseverance” bias in behavioral bias, which is the tendency to hold on to previously held or newly established beliefs irrationally (illogically). Investors continue to hold and justify beliefs because there is a bias in self-confidence or their own ideals or abilities. The belief perseverance discusses several cognitive biases, including: conservatism, confirmation, representativeness, illusion control, hindsight, cognitive dissonance. The second category of cognitive errors relates to the way a person processes information either illogically or irrationally in financial decision making. Seven errors in information processing in financial decision making include: anchoring and adjustment bias, mental accounting bias, framing bias, availability bias, self-attribution bias, outcome bias, and recency bias. Individuals are less likely to make cognitive errors if they remain alert to possible outcomes. A systematic process of describing problems and objectives; collecting, recording, and synthesizing information; and documenting decisions and the reasons behind them; and the next step of comparing actual results with expected results will help in reducing cognitive errors. By basing the heuristic theory in decision making, investors will find it easier, because it is based on rules of thumb. But heuristics can also cause various biases when situations change. So in this case heuristics can lead to suboptimal decisions (Ritter, 2003). This heuristic helps in decision making in situations when time is limited and decisions are limited to be taken immediately (Waweru, et al. 2008). There are several cognitive biases that have been studied, namely representative bias, availability bias, anchoring bias. (Kengatharan, 2014). Kahneman and Tversky (1973) introduced three heuristics, namely representative, availability bias, anchoring bias. Biases related to representative heuristics are one of the most-commonly used by investors in making investment decisions. Kahneman and Tversky (1984) proposed several biases resulting from the representativeness heuristic called base rate and sample size neglect, Conjunction, and gambler fallacy. Thaler (1985) introduced mental accounting as the main indicator of cognitive bias. According to Pompian (2012), cognitive bias include: conservatism, confirmation, representativeness, illusion of control, hindsight, cognitive dissonance, anchoring & adjustment, mental accounting, framing, availability, self-attribution, outcome, recency. Abdin, et. el (2022) cognitive bias indicators that significantly affect investment performance

consist of self-attribution and illusion of control. The cognitive bias indicators that are the focus of this study are limited to only a few biases, namely: Self-attribution, Illusion of Control, mental accounting, and representative.

Emotional Bias In Finance

Emotional bias comes from impulses or intuitions that are considered to be the result of reasoning and influenced by feelings. Behavioral bias is assumed to cause decisions to deviate from traditional rational financial decisions. Behavioral bias in finance is classified as cognitive and emotional bias. According to Pompian (2012) Emotional bias does not have a single universally accepted definition; however, emotions are considered mental states that arise spontaneously through conscious effort. Emotional feelings are basically unwanted by the individual who feels them; although there is a desire to control emotions and is unable to respond to emotions. Theoretically, emotional bias is more difficult to correct because it comes from conscious impulses or intuitions. Empirically in some cases, emotional bias can only be recognized by adapting correctly. Emotional bias causes investors to make suboptimal decisions because emotional factors are rarely identified and recorded in the financial decision, because they are related to feelings and ways of thinking. Behavioral finance literature has developed in recent decades, adding insight into understanding investor behavior and expanding the financial literature. This is an interesting part of the financial field, extensively explaining investor economic decisions from the perspective of emotional behavior, and investment decision making is conventional. To expand the science of behavioral finance, it is necessary to study the overall emotional bias of investors to be confident in investing. Types of emotional bias in financial decision making, including: loss aversion, overconfidence, optimism, self-control, disposition, status quo, endowment, regret aversion, herding, and affinity. Measurement of Financial Emotional Bias, where emotions are considered spontaneous reactions rather than conscious thinking. Emotional bias is seen as a mental state that arises due to intuitive decisions from unreasonable judgments. This bias is difficult for investors to adjust properly because it comes from intuition or impulses that although investors may want to control it, they cannot. Emotions are related to perceptions or beliefs about objects or relationships in the world. In the prospect theory developed by Kahneman and Tversky (1979), one of the emotional biases has basically been introduced, namely the loss aversion bias as an indicator of measuring emotional bias. Furthermore, several experts have proposed several biases as indicators of emotional bias. According to Pompian (2012), indicators of emotional bias can be reflected in several biases including: optimism, overconfidence, loss aversion, disposition effect, status quo, regret aversion, herding, and affinity bias. Abdin (2022) found that optimism bias significantly affects investment performance. Emotional investment causes investors to make less than optimal decisions. In this study, the emotional bias indicator was adopted from the opinions of experts, including Pompian (2006, 2012) and Abdin (2022), by choosing the four most biases that can represent and reflect emotional bias including: optimism, loss aversion, regret aversion, affinity.

Risk Propensity

Risk propensity is highly determined by investor behavior. Investors are considered risk takers because they are driven by the investor's own attitude and behavior (Ahmad & Maochun, 2019). Investor risk propensity can theoretically and empirically affect investment performance. Willingness to invest shows that investors are generally risk takers which ultimately affects their investment performance. Investors perceive a high level of risk to get high returns from stock market performance. Investments have a smaller or greater risk. Risk and uncertainty will be perceived subjectively and involve psychological and emotional factors. Loewenstein et al (2001) noted that an important role to play in forward-looking decision making that avoids risk. the role of mood and emotion in influencing rational or analytical system decisions is very interesting, both for behaviorists and rationalist economists. Risk is an inseparable part of the growth factor of an organization or company, whether it comes from internal or external factors. Risk can be associated with the possibility of events or circumstances that threaten the achievement of organizational goals. Indonesian dictionary, risk is an unpleasant (disadvantageous, dangerous) consequence of an action. Every daily life activity always contains risk, which arises due to conditions of uncertainty, where no activity is free from risk, so the mindset that everything happens according to plan (AGAP or All Goes According to Plan) must be changed with the WHIF (What Happens If) approach pattern, which is a pattern that questions what happens if something does not go according to plan (Flanagan and Norman, 1993). According to Vaughan (1978) Risk is the opportunity for loss, Risk is the possibility of loss, Risk is uncertainty. Uncertainty can be subjective and objective. Subjective uncertainty is an individual's assessment of a risk situation based on knowledge or attitudes that are considered risky. Objective uncertainty is explained in two definitions of risk, namely: a) Risk is the dispersion of actual results from expected results, and Risk is the probability of any outcome different from the one expected. Risk is the possibility of loss, the opportunity for loss due to uncertainty, where uncertainty is a condition that causes the growth of risks originating from various activities. Risk propensity is the tendency of investors to take risks and make risky decisions. Alleyne (2011) stated that Risk propensity is defined as an individual's readiness to take risks. Combrink & Lew (2020) risk propensity measures the tendency to take risks in the current period. Some experts define risk propensity as the tendency of investors to take risky decisions in the current period in their financial decisions and the tendency to measure risk takers in the current period. Risk propensity is the extent to which individuals are willing to take investment risks and make risky decisions. Managers with high-risk propensity tend to experiment more with new ideas, gamble with new products, and take the organization in different new directions. However, it can be detrimental to the health of the organization if the decisions taken are risky and have bad consequences. Managers with low-risk propensity cause the

organization to stagnate and be too conservative, but can help the organization overcome chaos in uncertain conditions by maintaining stability and calm.

Investment Performance

Sonnentag & Frese (2005) stated that in designing the performance concept, experts must distinguish between the action (behavior) aspect and the performance result aspect (Campbell, 1990; Campbell, 1990 et al, 1993; Kanfer, 1990;). Roe ,1999). The behavioral aspect refers to individual activities in work situations. Not every individual behavior is considered a performance concept, but only some behaviors are relevant to organizational goals: "Performance is the purpose of the organization hiring someone to do well" (Campbell et al., 1993: 40), which is based on the behavioral aspect in the performance concept. Performance according to KBBI is something that is achieved; achievements shown; or work ability (about equipment). Performance is the result of work in terms of quality and quantity achieved in carrying out his duties in accordance with the responsibilities given to him. According to Stolovitch et al (1992), performance is a set of results that someone wants to achieve and refers to the act of achieving and implementing a requested job. Chen et al (1994) performance is a level of success of a person in carrying out tasks and the ability to achieve predetermined goals. Performance is multidimensional and very dynamic, with three main perspectives in studies related to performance, namely the individual difference perspective, the situational perspective, and the performance regulation perspective. Each of these perspectives is related to specific performance improvement interventions. The literature review shows that integration of the three different perspectives on performance. Integration is needed to understand the characteristics of certain individuals and situational factors that produce high performance. Investment performance is defined from the perspective of "expected utility theory", as a basis for analyzing more optimal capital allocation estimates (Zakamouline and Koekebakker, 2009). Measurement of Investment Performance according to the expected utility perspective, then investment performance is evaluated using a measure of risk at the basic value of risk (VaR) (Dowd, 2000) or the ratio of profits in relation to some limiting loss thresholds (Keating & Shadwick, 2002). However, this approach has certain weaknesses such as each investor has a unique utility function and the measure of investment performance, highly dependent on investor preferences or experience in risk and return expectations. Although investors obtain good investment performance, they do not have a systematic analysis of variables that can affect it. For that, the expected rate of return and risk preferences of individual investors as indicators of investment performance. Hoffmann et al. (2013) analyzed the relationship between investor confidence and investor investment behavior. According to Vlaev et al. (2009) examined the positive impact of risk tolerance, risk perception and determinants of investment performance, with indicators of return expectations on investment preferences such as capital appreciation, returns above expectations and isolation from economic uncertainty. Parmitasari et al. (2018) stated that standard financial experts measure investment performance with indicators: risk level, return on investment (ROI), economic value added (EVA), Balanced Scorecard, and tend to ignore the measure of financial satisfaction felt by investors. According to Javed et al (2017) Investment performance measurement uses the level of satisfaction, which is called perceived investment performance, namely self-analysis of investment returns on individual investor performance. According to Abdin et al (2022) Investment performance indicators include measures of return level, risk level, and level of investment satisfaction. There is a need to examine investment performance in relation to the level of satisfaction, risk level and level of investment return. Akhtar (2020) in his research on Investment performance (perceived) is measured by indicators including: Return expectation (RE), Ability to beat inflation (BI), and financial satisfaction (FS). Qudoos (2020) in his research uses the investment performance measurement indicator is adapted from the study of Phuoc Luong (2011). VanderPal (2021) stated that one of the important aspects of making the right investment decisions is the analysis of the financial and non-financial aspects of securities. Investment performance analysis focuses on the expected return indicators (investment efficiency), and the ability of the investment to generate the required profits (investment effectiveness). Sharma & Lyall (2021) measure investment performance is determined from the investment patterns carried out and felt by investors. Investor investment patterns in financial investment, which reflect the volume, frequency and experience of financial investment.

Financial Literacy

Financial literacy is related to a person's in-depth knowledge of financial instruments, which includes all aspects related to savings, insurance, investment and other financial devices. The theoretical basis of financial literacy is Learning Theory. Learning theory states that in order to improve insight, knowledge, and literacy skills, a person needs to learn by going through various stages of education and learning, both formal and non-formal. Several experts have developed learning and literacy theories, including: a) The Cognitive Development Theory by Piaget (1929–1980) emphasizes cognitive structure. According to his research, the stages of individual intellectual development and age changes greatly affect an individual's ability to observe science; b) Theory of Zone of Proximal Development by Vygotsky (1896-1934) put forward the concept of the Zone of Proximal Development (ZPD), which is interpreted as the Nearest Development Area (DPT), namely the development of a person's abilities is divided into two levels, namely the actual development level and the potential development level; c) Scaffolding Talk & Routine Theory by Bruner (1915 – 2016). Scaffolding is a term in the world of education as a modern constructivist learning theory. Scaffolding plays an important role in the development of student learning; d) Knowledge theory is a fact, truth or information data obtained through experience or learning, called a posteriori, or through introspection called a priori. Knowledge is information that is known or realized by someone. Knowledge is not

limited to the space of descriptions, hypotheses, concepts, theories, principles and procedures that are Bayesian Probability true or useful. Knowledge is also interpreted as various symptoms that have been encountered and obtained by humans through observation of reason; e) Social exchange theory has become one of the main theoretical perspectives in the field of social psychology since the early writings of Homans (1961), Blau (1964) and Emerson (1962, 1972). This theoretical orientation is based on previous philosophical and psychological orientations derived from utilitarianism on the one hand and behaviorism on the other. These two theoretical foundations remain evident as the basis for the development of the current version of social exchange theory. In investment decisions, individuals are driven by financial literacy factors, this can be seen from the way they manage their finances (Baihaqqy et al., 2020).

Individuals are said to have high and deep financial literacy if they can manage and plan their finances for the future. Financial literacy is important for investors who do not have basic knowledge or complex knowledge. Grohmann (2018) stated that literacy in a broad and general sense means the practical application of social relations related to knowledge, language, and culture including how a person communicates and interacts in society to build their socio-economic relations. According to Lusardi & Mitchell (2014) the importance of financial literacy is in line with the increase in financial products and the number of financial products, as well as the importance of choosing financial products by households. When someone makes an investment decision, the individual is expected to have good financial literacy. The Dictionary of the Indonesian, literacy is a person's knowledge of financial instruments. Chen and Volpe (1998) literacy is the ability to manage finances so that life can be more prosperous in the future. Huston (2010) states that literacy is related to the skills and abilities possessed by individuals to manage their income in order to achieve increased financial well-being. Atkinson & Messy (2010) financial literacy is a combination of awareness, knowledge, skills, attitudes, behaviors needed to make healthy financial decisions aimed at achieving financial well-being. Fornero & Monticone (2011) financial literacy is a skill that must be mastered by every individual to improve their standard of living by understanding the planning and allocation of appropriate and efficient financial resources. Lusardi & Mitchell (2014) explain that financial literacy is all the knowledge that a person has about financial instruments. The financial instruments referred to in the study of financial literacy include knowledge of savings, insurance, investment and other financial instruments. Financial literacy in the economic and financial perspective, according to Chen and Volpe (1998) states that financial literacy is the ability to manage one's finances so that life becomes more prosperous in the future. Chen and Volpe (1998) have categorized the level of literacy, which is divided into several categories, namely: a) Category less than 60% means that the individual has a low level of financial literacy. b) Category 60% - 79% means that the individual has a moderate level of financial literacy. c) Category more than 79% means that the individual has high financial literacy.

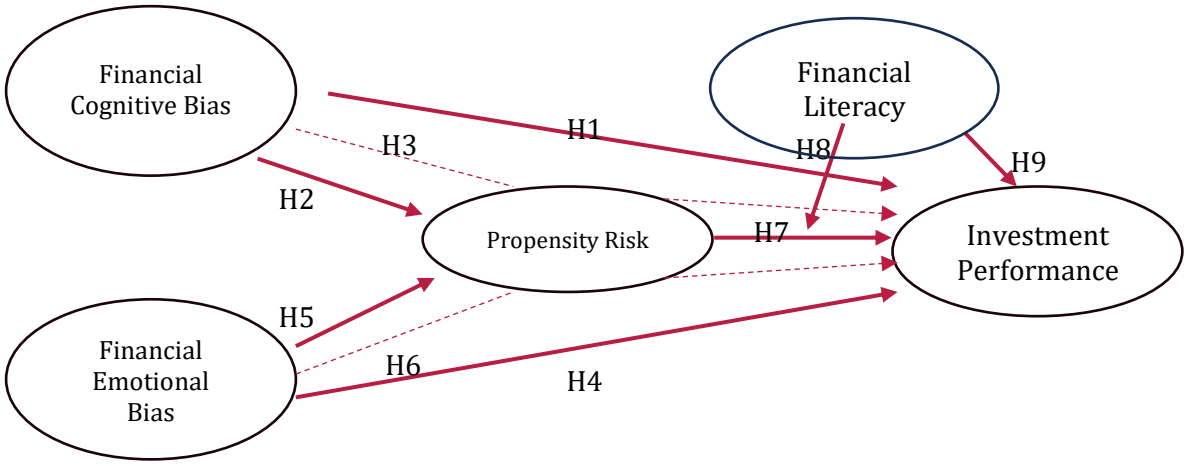

Figure 1 Conceptual Framework

Research Hypothesis

H1: Financial cognitive bias has a positive and significant effect on investment performance

H2: Financial cognitive bias has a positive and significant effect on propensity risk

H3: Financial cognitive bias has a positive significant effect on performance through propensity risk.

H4: Financial emotional bias has a positive and significant effect on investment performance.

H5: Financial emotional bias has a positive and significant effect on propensity risk

H6: Financial emotional bias has a positive significant effect on performance through propensity risk.

H7: Propensity risk has a positive and significant effect on investment performance.

H8: Financial literacy has a positif and significant effect in moderating the effect of risk propensity on investment performance.

H9: Financial literacy has a positive and significant influence on investment performance

3. RESEARCH METHODS

This study was conducted on investors registered with the Indonesia Stock Exchange Representative Office of Southeast Sulawesi with the consideration that individual investors are considered the most sensitive in understanding their behavioral attitudes and giving rise to irrational thoughts (irrational intuition) and beliefs that ignore individual abilities, skills, and abilities in investing in stocks. The population of this study is all investors investing in the Southeast Sulawesi Region, registered with the Indonesia Stock Exchange Representative Office of Southeast Sulawesi, until the end of December 2023 reaching 18,653 investors registered with the Indonesian Central Securities Depository (KSEI) and the Financial Services Authority (OJK). Based on the number of investors in the Southeast Sulawesi Region, the determination of the number of investors taken as a sample of this study was determined using the formula from Taro Yamane or Slovin (Kuncoro & Riduwan, 2014), and the determination of the margin of error in the research sample was set at 5%, with this formula, the minimum sample size in this study was 391. Furthermore, from the value of the minimum sample size, the number of samples allocated to each item or Regency / City was calculated using the proportional allocation method with the formula (Sudrajat, 2002).

4. RESULTS

Validity Test For Reflective Variables

Convergent validity test is a test to determine the validity of the relationship between indicators and latent variables or constructs through the average variance extracted (AVE) value. AVE value of more than 0.50 can be accepted as convergent validity. The metric used to evaluate the construct of convergent validity is the average variance extracted (AVE) for all items in each construct. AVE is calculated by squaring the loading of each indicator on the construct and calculating its average value. The AVE value is 0.5. This value describes adequate convergent validity, meaning that one latent variable is able to explain more than half of the variance of its indicators on average.

Table 1. Results of Convergent Validity Test Through AVE Values for Reflective Variables

	Cronbach's alpha	Average variance extracted (AVE)
Afinity Bias (AB)	0,919638853	0,713372736
Emotional Bias (BE)	0,915731094	0,587283439
Cognitive Bias (BK)	0,934611302	0,575914975
Ilusion of Control Bias (IC)	0,891761387	0,821472662
Lose Aversion Bias (LA)	0,856313649	0,699041560
Mental Accounting Bias (MA)	0,868343090	0,655579282
Regret Aversion Bias (RA)	0,920802084	0,716577955
Representativeness Bias (RB)	0,866600910	0,653818126
Self Atribution Bias (SA)	0,863979964	0,649260528

Source: Data processing results via Smart PLS 4.0, 2024

The results of data processing obtained the Average Variance Extracted (AVE) value above 0.5 so that the requirements for convergent validity testing have been met. Therefore, all questionnaire items can be used for subsequent data analysis.

Reliability Test For Reflective Variables

Reliability testing is carried out to prove the accuracy, consistency, and precision of the instrument in measuring the construct (Ghozali, 2012). According to Ghozali (2012) reliability measurement can be done by looking at the composite reliability value on the Smart PLS output where the composite reliability value must be greater than 0.7. If the composite reliability value of the construct gives results above 0.7, it can be said that the indicators of each construct are reliable and can represent the actual measurement.

Table 2. Results of Composite Reliability and Cronbach's Alpha Tests

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
Afinity Bias (AB)	0,919638853	0,926355985	0,937151121
Emotional Bias (BE)	0,915731094	0,918361675	0,926151285
Cognitive Bias (BK)	0,934611302	0,936349494	0,942060216
Ilusion of Control Bias (IC)	0,891761387	0,898703245	0,932448545
Lose Aversion Bias (LA)	0,856313649	0,859931367	0,902752928
Mental Accounting Bias (MA)	0,868343090	0,873827562	0,904717592
Regret Aversion Bias (RA)	0,920802084	0,923497055	0,938108345
Representativeness Bias (RB)	0,866600910	0,867079205	0,904002676
Self Atribution Bias (SA)	0,863979964	0,864585561	0,902267790

Source: Data processing results via Smart PLS 4.0, 2024

The composite reliability value in Table 2. above shows that each construct has good reliability, which is above 0.7. Where according to Chin (1998) in Ghozali (2012) a construct is said to have good reliability if its value is above 0.7. In table 2 above, the composite reliability value of the Emotional Bias (BE) construct is 0.9184, and the Cognitive Bias (BK) construct is 0.9363. Referring to Chin's opinion (1998), the composite reliability results of each construct are considered good and can be used in the analysis process because they have met the reliability requirements.

Validity Test For Formative Variables

For constructs measured formatively, convergent validity is assessed by the correlation of the construct with alternative measures of the same concept. According to Chin (1998), this procedure is called redundancy analysis. Hair et al. (2017a,b) suggested that the correlation of a construct measured formatively with a single item of the construct, which measures the same concept. Convergent validity means that a set of indicators represents one latent variable and that the latent variable is represented. To conduct a convergent validity test, the loading factor or outer loading value of each indicator can be seen on its latent variable. The standard value of the convergent validity test is 0.3 and higher.

Table 3. Results of the Formative Test of Convergent Validity of Risk Propensity Variables

Variable indicators	Outer loadings	Information
PR1 -> PR	0,649192049	Valid
PR2 -> PR	0,518154678	Valid
PR3 -> PR	0,82479159	Valid
PR4 -> PR	0,557087076	Valid
PR5 -> PR	0,554626609	Valid
PR6 -> PR	0,377900169	Valid
PR7 -> PR	0,476105645	Valid
PR8 -> PR	0,809052562	Valid
PR9 -> PR	0,402494335	Valid

Source: Data processing results via Smart PLS 4.0, 2024

Loading examination in Table 3. above, the Outer Loading value has an average value above 0.3, meaning that the reliability indicator has been met.

Table 4. Results of Formative Test of Convergent Validity of Investment Performance Variables

Variable indicators	Outer loadings	Information
KI1 -> KI	0,671902129	Valid
KI2 -> KI	0,589129833	Valid
KI3 -> KI	0,750346858	Valid
KI4 -> KI	0,670874242	Valid
KI5 -> KI	0,826447758	Valid
KI6 -> KI	0,80386872	Valid
KI7 -> KI	0,884150277	Valid

Source: Data processing results via Smart PLS 4.0, 2024

Based on the examination of Outer Loading in Table above, it can be seen that the Outer Loading value has an average value above 0.5, which means that the reliability indicator has been met.

Table 5. Results of Formative Test of Convergent Validity of Financial Literacy Variables

Variable indicators	Outer loadings	Information
LK1 -> LK	0,80715197	Valid
LK2 -> LK	0,845571756	Valid
LK3 -> LK	0,810239712	Valid
LK4 -> LK	0,778018509	Valid
LK5 -> LK	0,756718905	Valid
LK6 -> LK	0,888802728	Valid
LK7 -> LK	0,69569252	Valid
LK8 -> LK	0,746165508	Valid
LK9 -> LK	0,715191304	Valid

Source: Data processing results via Smart PLS 4.0, 2024

Based on the examination of the outer loading values of the financial literacy variables in Table 5. above, all outer loadings have values above 0.6, which means that the validity indicator has been met.

Collinerity Indicator Test For Formative Variables

The variance inflation factor (VIF) is often used to evaluate formative collinearity indicators. A VIF value of 5 or more indicates a critical collinearity problem among the formatively measured construct indicators. However, collinearity problems can also occur at VIF values lower than 3 (Mason & Perreault, 1991; Becker et al., 2015). Ideally, the VIF value should be close to 3 and below.

Table 6. Results of Collinearity Statistics (VIF) Test for Formative Variable Indicators

Variable indicators	Collinearity statistics (VIF)	Information
PR1	1,65601422	Valid
PR2	2,574747086	Valid
PR3	2,020036001	Valid
PR4	1,623538903	Valid

PR5	3,096458503	Valid
PR6	1,767360967	Valid
PR7	1,854927899	Valid
PR8	2,126662806	Valid
PR9	2,030171567	Valid
KI1	2,523625265	Valid
KI2	2,50074147	Valid
KI3	2,286002242	Valid
KI4	2,419933135	Valid
KI5	1,991538727	Valid
KI6	2,267603165	Valid
KI7	2,672116978	Valid
LK1	3,399367475	Valid
LK2	3,795513115	Valid
LK3	4,258361108	Valid
LK4	3,778386845	Valid
LK5	2,637612042	Valid
LK6	3,978489375	Valid
LK7	2,711705423	Valid
LK8	2,383956696	Valid
LK9	1,46133543	Valid

Source: Data processing results via Smart PLS 4.0, 2024

Based on the examination of Collinearity statistics (VIF) of Formative Variable Indicators in Table above, it can be seen that all variable indicators have values close to 0.3 and are in the range below 0.5 and the t-value is greater than 1.658, which means that all formative variable indicators can be stated as not indicating collinearity or their validity has been met.

Structural Model Testing Through R2 Determination Value

The data analysis method in this study uses the Partial Least Square (PLS) analysis technique with the Smart PLS 4.1.3 program. Hair et al (2021) stated the use of PLS-SEM to analyze and test the theoretical framework from a prediction perspective, especially out-of-sample predictions. A complex structural model that includes many constructs, indicators, and model relationships. The structural model is evaluated with *R*2 or R-Square for the dependent construct. The R-Square value measures the level of variation in changes in the independent variable to the dependent variable, the higher the R-Square value, the better the prediction model of the research model. Structural Model Evaluation is also called Goodness of Fit assessment measured using R-square of dependent latent variables and using Q-square predictive relevance for structural models that measure how good the observation values produced by the model and its parameter estimates are. Q-square values with a range of $0 < Q2 < 1$, the closer the value is to 1, the better the model. The coefficient of determination (R2) value of the dependent or endogenous variable in this research model is shown in Table 6.

Table 7. Structural Model Testing Through R-square Determination Value

Endogenous Variables	R-square	R-square adjusted
Bias Affinity (AB)	0,549558636	0,548400689
Bias Ilusion of Control (IC)	0,552746792	0,55159704

Kinerja Investasi (KI)	0,70718223	0,703379402
Bias Lose Aversion (LA)	0,612581563	0,611585629
Bias Mental Accounting (MA)	0,811404682	0,810919861
Propensiti Risiko (PR)	0,621414172	0,619462698
Bias Regret Aversion (RA)	0,553361682	0,552213511
Bias Representativennes (RB)	0,688140458	0,687338762
Bias Self Atribution (SA)	0,717992849	0,717267895

Source: Data processing results via Smart PLS 4.0, 2024

Based on Table 7. above, the R2 value of all variables ranges from 0.5 and above, indicating that the structural prediction model of the study is considered good. The R square value of Investment Performance is 0.7072 or 70.72%. This value indicates that the Investment Performance variable can be explained by the Risk Propensity variable by 70.72%, and the remaining 29.28% is explained by other variables not included in this study. Furthermore, the r-square value of the Risk Propensity variable is 0.6214 or 62.14%. This value indicates that the Risk Propensity variable can be explained by the Cognitive Bias and Emotional Bias variables by 62.14% and the remaining 38.86% can be explained by other variables not included in this study.

Q-Square Value

Goodness of fit Model is used to determine the extent of the ability of endogenous variables to explain the diversity of exogenous variables, or in other words to determine the extent of the contribution of exogenous variables to endogenous variables. Goodness of fit model in PLS analysis is carried out using Q-Square predictive relevance (Q2). The results of the Goodness of fit Model have been summarized in Table 8 below:

Table 8 Value R Square

Variable	R-Square
Investment Performance (KI) (R1)	0,70718223
Risk Propensity (PR) (R2)	0,621414172

Source: Data processing results via Smart PLS 4.0, 2024

To test the goodness of fit calculated using Q-Square, this can be done using the following formula:

$Q\text{-}Square = 1 - [(1 - R^2_1) * (1 - R^2_2)] = 1 - [(1 - 0.7072) * (1 - 0.6214)] = 1 - (0.2928 * 0.4274)$

$= 1 - 0.1251 = 0.8749$

Based on the data presented in table 1, it can be seen that the Q square value on the dependent variable (endogenous) is 0.8749. By looking at this value, it can be concluded that this study has a good observation value because the Q square value> 0 (zero) is 0.8749 (Chin, 1998). In addition, the Q-square predictive relevance value is 0.8749 or 87.49%. This shows that the accuracy of this research model of 87.49% can explain the diversity of variables in this study by 87.49%. The remaining 12.51% is explained by other variables outside this research model. The model in this study has a relevant predictive value, where the model used can explain the information in the research data by 87.49%. So it is concluded that the proposed research model is good or the structural model has a good estimation value. Based on these findings, this model can be used. The model can be interpreted that the influence of financial cognitive bias and financial emotional bias on investment performance mediated by risk propensity provides a Q-square value of 0.8749, which can be interpreted that the investment performance variable can be explained by the influence of financial behavioral bias mediated by risk propensity by 87.49%, while 12.51% is explained by other variables outside the model.

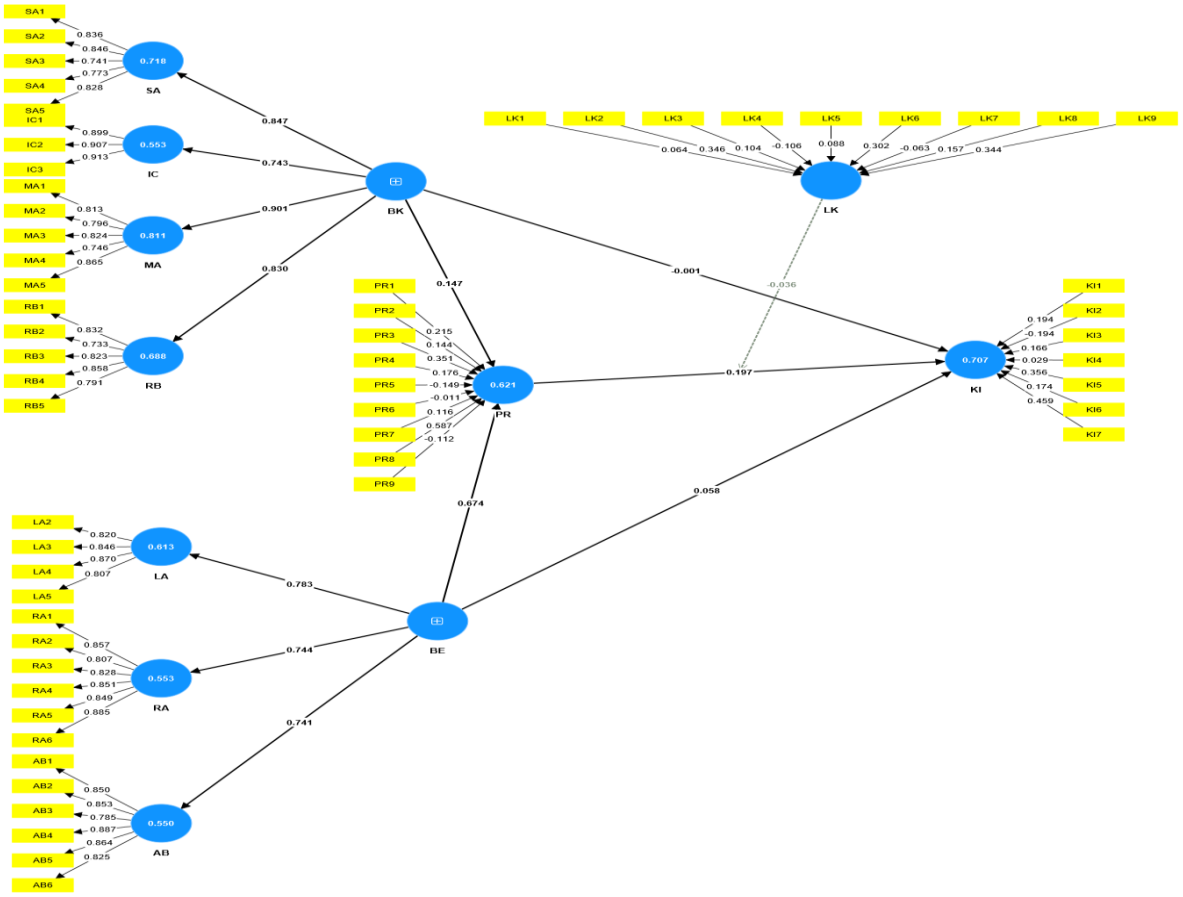

Figure 2. Partial Least Square (PLS) Processed Results Path Coefficient Diagram

Direct Effect Hypothesis Testing

The test results in Figure above show the direct effect of cognitive bias on investment performance, cognitive bias on risk propensity, emotional bias on investment performance, emotional bias on risk propensity, and risk propensity on investment performance. Indirect effect through mediation, namely financial literacy mediates risk propensity on investment performance. Based on the results of the bootstrapping process, the value of the direct path coefficient (direct effect) in this research model is obtained. A summary of the results of the path analysis calculations in this study can be presented through the Table 9. below:

Table 9. Direct Effect Hypothesis Testing

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Direction of Influence	Decision Finals
BE -> AB	0,741	0,740	0,057	12,960	0,000	+	H4d Accepted
BE -> KI	0,058	0,063	0,066	0,882	0,378	+	H4 Rejected
BE -> LA	0,783	0,784	0,026	30,442	0,000	+	H4b Accepted
BE -> PR	0,674	0,677	0,051	13,095	0,000	+	H5 Accepted
BE -> RA	0,744	0,746	0,042	17,772	0,000	+	H4c Accepted

BK -> IC	0,743	0,741	0,034	21,926	0,000	+	H1b Accepted
BK -> KI	-0,001	0,006	0,048	0,011	0,992	-	H1 Rejected
BK -> MA	0,901	0,901	0,010	91,681	0,000	+	H1c Accepted
BK -> PR	0,147	0,150	0,055	2,663	0,008	+	H2 Accepted
BK -> RB	0,830	0,830	0,019	42,680	0,000	+	H1d Accepted
BK -> SA	0,847	0,847	0,018	46,075	0,000	+	H1a Accepted
LK -> KI	0,614	0,612	0,060	10,180	0,001	+	H9 Accepted
PR -> KI	0,197	0,203	0,061	3,226	0,003	+	H7 Accepted

Source: Data processing results via Smart PLS 4.0, 2024

The results of processing in Table 9, the direct influence path coefficient test aims to answer the hypothesis whether the proposed hypothesis is accepted or rejected.

Indirect Effect Hypothesis Testing

For testing indirect influence (mediation) aims to detect the position of the intervening variable in the model. Indirect influence is the influence of the independent variable on the dependent variable, through another variable as an intermediary or mediating variable. Indirect influence is considered to strengthen or weaken the influence between two connected variables. The coefficient of indirect influence on each path that has an intermediary variable (mediation) is the result of multiplying the standard regression coefficients of each influence that crosses the path. The results of the analysis of the mediation role path and indirect influence which are intervening variables or mediate between research variables are presented in Table as follows:

Table 10. Testing the Hypothesis of Indirect Influence (Mediation)

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Direction of Influence	Decision Finals
BE -> PR -> KI	0,133	0,137	0,042	3,161	0,002	+	H6 Accepted
BK -> PR -> KI	0,029	0,031	0,015	1,896	0,058	+	H3 Accepted

Source: Data processing results via Smart PLS 4.0, 2024

Moderated Variables Hypothesis Testing

Moderation variables are independent variables that will strengthen or weaken the relationship between other independent variables and the dependent variable (Ghozali, 2017:221). Moderation relationship testing, namely interaction test (MRA), absolute difference value test, and residual test. The role of moderation of influence between the variables of this study is presented in Table 5.39 as follows:

Table 11. Hypothesis testing of the moderating role of influence between variables

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Direction of Influence	Decision Finals
LK x PR -> KI	-0,036	-0,030	0,020	1,797	-0,073	-	H8 Rejected

Source: Data processing results via Smart PLS 4.0, 2024

DISCUSSION

The Effect Of Cognitive Bias On Investment Performance

Cognitive bias has a negative and insignificant effect on investment performance, meaning that the higher the cognitive bias felt by investors, the lower the investment performance. This indicates that the cognitive bias felt by investors does not encourage increased investment performance. This finding supports the cognitive psychology theory by Ulrich Neisser (1967) which states that cognition is seen as a mental process that is believed to be able to encourage humans to behave. However, the presence of cognitive bias will inhibit their beliefs and encourage investors not to behave or take a stance in making investment decisions so that cognitive bias significantly encourages a decrease in investment performance. According to Neisser (1967) in several studies related to cognitive psychology, he has investigated various topics, stating that several factors of investor uncertainty in investing will encourage bias. The factors that cause investor uncertainty are: memory, attention, perception, knowledge representation, reasoning, creativity, problem solving. The cognitive approach was developed by Donald Broadbent (1958) in the literature Perception and Communication, which states that the basic pattern of cognition in information processing functions as the dominant model in cognitive psychology. Broadbent's approach considers mental processes as software operates in a computer (brain). Cognitive psychology is: human thinking in terms of input, representation, computation or processing, and output.

The findings of this study support the heuristic theory by Kahneman et al. (1974), which discusses findings on the flow of investor thinking. This study was triggered by the realization that intuitive predictions and judgments under uncertainty do not follow the laws of probability or statistical principles. This means that uncertainty will always encourage bias that will affect attitudes and behavior in deciding on investments, which will have an impact on investment performance. The results of this study support previous research conducted by Combrink & Lew (2020) which stated that Cognitive Bias has an insignificant effect on Investment Performance. In addition, the results of this study also support other studies conducted by Baker & Nofsinger (2002), Trehan & Sinha (2017), Javed et al (2017), Anum & Ameer (2017), Shah et al. (2018), Czaja & Roder (2020), Akhtar & Das (2020). The impact of each financial behavioral bias will differ on investors and its impact on risk propensity varies from market to market. The consequence of this finding is that investors registered in the Southeast Sulawesi Representative Office of the Indonesia Stock Exchange need to respond to perceived cognitive bias through increasing self-attribution, illusion of control, mental accounting and bias representativeness. With this increase in perceived cognitive bias, it is expected to improve their investment performance.

The Effect Of Cognitive Bias On Risk Propensity

Financial cognitive bias has a positive and significant effect on risk propensity, meaning that the higher the tendency of financial cognitive bias, the greater the risk propensity. In addition, financial cognitive bias has a significant effect on risk propensity, indicating that financial cognitive bias perceived by investors will be able to drive the risk propensity perceived by investors to increase. The findings of this study support Chavas's (2004) opinion on behavioral risk theory which states that behavioral risk is a representation of every situation, where some events are not known with certainty in advance. Uncertain situations indicate that time is a fundamental characteristic of risk, but through learning some information that is currently unknown, we can find out the risks that will occur in the future. Therefore, risk has a temporal dimension. Chavas (2004) stated that financial behavioral risk has different characteristics at each point in time. So in financial behavior, it is important to consider several risk factors related to time. This finding also supports the opinion of the Investment Risk Theory by Markowitz (1952) which views investment risk as the level of variability of expected returns. Du Troit & Muller (2004) present investment risk that regulates the term horizon or without describing the investment results. The results of this investment are in the form of profit or loss. The loss of developing several appropriate risk metrics is considered the utility of the entire risk process which is very complex. According to Combrink and Lew, (2020, p.337) In seeking security information, investors try to investigate the tendency to take risks along with major behavioral biases. Financial behavioral biases basically affect investors' risk tendencies when making investment decisions. To become a successful investor in the long term, investors consider it important to understand and overcome human cognitive or psychological biases that often lead to risky decisions and investment errors. Cognitive biases are 'connected' and all investors tend to take shortcuts, oversimplify complex decisions, and be overconfident in their decision-making process. By understanding cognitive biases, investors can lead to better decision making, which is fundamental, according to their view, to lowering risk levels and

increasing investment returns over time. Researchers have generally outlined several major cognitive biases that are common and cause investors to make poor investment decisions.

The results of this study support previous studies conducted by Fellner (2009), Sahi et al. (2013), Keller & Gollwitzer, 2017), Trehan and Sinha (2017), Khan et al. (2019), Dawson (2019), Chung et al. (2020), Czupryna et al. (2020), Hameed & Khan (2021), Sharma & Lyall, 2021, VanderPal (2021), Abdin et al (2022), Saivasan & Lokhande (2022) who in their studies found that financial cognitive bias has a significant effect on risk propensity. This study is in line with previous research by Abdin et al (2022) investigating several cognitive biases that cause investors to be overconfident, which ultimately affects the achievement of investment performance, and builds an indirect relationship through risk propensity. The findings of all cognitive biases affect risk propensity and investment performance through risk propensity. The illusion of control is the strongest predictor of risk propensity. All financial cognitive biases are positively related to investment performance. The consequence of this research finding is the importance of responding to and examining several cognitive biases perceived by investors, especially young investors. By understanding cognitive biases, it is expected that investors can adapt to the level of perceived risk propensity, which will ultimately impact their financial behavior. This encourages investment decision, more effective financial management and expected investment performance.

The Cognitive Bias On Investment Performance Through Risk Propensity.

Cognitive bias on investment performance through risk propensity has a positive and significant effect. This means that when cognitive bias increases, investment performance will tend to increase through an increase in the role of risk propensity which will further strengthen the relationship between the two variables. The findings of this study are in line with the theory of financial behavior, where in investing, cognitive behavior and attitudes can cause investors to act too confidently, and investors tend to take excessive risks in making investment decisions, thus affecting investment performance. Risk taker investors believe in getting higher returns on stocks. There are inconclusive results on self-attribution. The findings of this study support the prospect theory first theoretically stated by Kahneman & Tversky (1979). This theory discusses the rate of return from decisions made by humans whose results are uncertain in a situation. Prospect theory asserts that individuals do not always act in accordance with financial theory under risk under conditions of certainty, but individuals add psychological factors and uncertain behavior to rationality. Kahneman & Tversky (1979) explained prospect theory related to the idea that humans do not always behave rationally. This theory assumes that there are inherent biases and biases motivated by psychological factors influence people's choices under conditions of uncertainty.

This finding also supports the psychological risk theory of investors which is a development of prospect theory which states that investors in making investment decisions are always faced with conditions of uncertainty and risk tendencies can increase their investment performance. This finding supports the results of previous studies by Parmitasari et al. (2018), Czaja & Roder (2020), Akhtar & Das (2020), Ahmad (2020), Kanagasabaia & Aggarwala (2020), Abdin et al (2022), Ahmed et al. (2022) who also found the effect of cognitive bias on investment performance mediated by risk tendencies is significant. Abdin et al (2022) have investigated several cognitive biases that cause investors to become overconfident, which affects investment performance, and builds an indirect relationship through risk tendencies. The findings of all cognitive bias indicators studied affect risk tendencies and investment performance, as well as the strong mediating role of risk tendencies on investment performance. The illusion of control is the strongest predictor of risk tendencies and investment performance.

The Effect Of Emotional Bias On Investment Performance

Emotional bias has a positive and insignificant effect on investment performance, meaning that the higher the emotional bias felt by investors, the higher their investment performance will be. The effect of emotional bias is not significant on investment performance, indicating that the emotional bias felt by investors does not have a direct real effect on increasing their investment performance. This finding is in line with the cognitive emotional theory by Shefrin (2000), Nofsinger (2001) states that cognitive behavioral theory (cognitive emotional) is a psychological phenomenon that can influence the behavior of financial actors (stock players and practitioners). Psychological and cognitive emotional factors influence investors' decisions in investing and achieving their investment performance. However, the existence of the cognitive bias phenomenon causes psychological behavioral factors to have no impact on investment performance. Therefore, in investing, investors must understand psychology and financial behavioral science, especially emotional behavioral theory. Furthermore, Nofsinger (2001) emotional behavioral theory views humans as behaving in actual financial settings that can affect financial decisions, companies and financial markets. This theory states that psychological factors can cause bias or deviations in market prices and fundamental values. Cognitive emotional behavioral theory states that investor financial behavior is a psychological, social and economic approach that explains how humans invest or interact in the financial sector, which is influenced by psychological and emotional factors. However, humans are believed in their behavior, cannot escape from the aspect of bias during the decision-making process. In this view, the use of rationality assumptions will basically lead investors to a wrong understanding of the actual mechanism of financial anomalies in the capital market. Misunderstandings and different perceptions of investors cause the influence of emotional bias to be insignificant in driving an increase in investment performance. This finding also supports the financial attitude theory stating that high investor emotional bias affects investor financial attitudes in investing.

This finding supports research by Anderson & Galinsky (2006), Baker & Ricciardi (2014), Bonaparte et al. (2017), Mushinada & Veluri (2018), Akhtar & Das (2020) which found that Emotional Bias had no significant effect on Investment Performance. Emotional Bias has a positive impact on investment performance in line with the theory by Pompian (2006), and previous research by Malouff & Schutte (2017), Concetto & Ravazzolo (2019), Liu et al. (2020), Natasya et al. (2022), Abhinandan (2022). This is based on prospect theory explaining that emotional bias such as loss aversion is related to the attitude of holding loser stocks and selling winner stocks. Shefrin and Statman (1985) stated that stock pricing is a dispositional reason to avoid risk and improve investment performance. Disposition effect bias is positively related to prospect theory and regret aversion. Investors make decisions to cut losses, take large investment gains, hold losing stocks too long and sell winning stocks too early. Herd behavior is a phenomenon where investors ignore market information, follow market players who have invested, observe other people's information and ignore the information they have obtained.

In financial markets, investors follow the actions of others or the stock market that moves them and ignore their personal information (Baddeley et al., 2010). Human behavior that imitates the actions of big player investors rather than the personal information they have (Lee et al., 2011), is called herding behavior caused by sentimental investors related to behavioral finance. Investor sentiment behavior is very sensitive because of upgrade and downgrade announcements, implying analysts to produce trading indications that are beneficial for uninformed traders in the market (Kim & Nofsinger, 2007). This sentiment is considered pessimistic for investors because it releases bad news, which will affect the response to stock returns, due to the announcement of the downgrade. Investor sentiment causes a stock market reaction that changes the recommendations of stock market analysts. Emotional biases can cause investors to act based on feelings rather than reasonable calculations. Emotional biases that affect investment performance, namely: loss aversion bias prioritizes capital preservation over growth, holds investments that are declining, and sells stocks that have appreciated; Optimism bias always takes excessive risks because they feel too confident in their ability to predict market movements; Regret aversion bias is the fear of taking action because of regret over past mistakes or failures. Emotional bias can lead to a variety of outcomes, such as missed opportunities, wrong strategic choices, and inefficient resource allocation. To reduce losses, investors need to pay attention to emotional bias and compare the actual risk of investing with their risk tolerance level.

Effect Of Emotional Bias On Risk Propensity

Emotional bias has a positive and significant effect on risk propensity. This means that the higher the emotional bias felt by investors, the more it will affect the investor's risk propensity in investing and the risk propensity is perceived as good. The findings of this study support the behavioral risk theory which shows that psychological and emotional influences on decision making, involving risk and uncertainty, are informative and helpful in the decision-making process. Investment risk from a behavioral economics perspective is very important, and not only as an objective component. The relationship between investment risk and risk perception in the decision-making process is very important, because risk perception affects investors' investment decisions. Chavas (2004) states behavioral risk as a representation of every situation, where some events are not known for sure in advance. Uncertain situations show that time is a fundamental characteristic of risk, but through learning and information obtained, risk can be known for sure. In addition, the findings of this study support the risk propensity theory by Sitkin and Pablo (1992), which states that two determinants of the risk model are risk propensity and risk perception. Risk propensity according to Sitkin and Pablo (1992) is seen as a person's tendency in making decisions whether to take or avoid risks. Based on this point of view, risk propensity can be influenced by a person's risk preferences, and making risky decisions will increase the chances of getting better investment results. Sitkin & Weingart (1995) and Alleyne & Broome (2011) view risk propensity as a personality trait of investors so that it is considered stable over time in various investment conditions, and is seen as the main predictor that drives investor decisions in investing. The findings in this study have also supported the risk perception theory which states that subjective assessments of investors will depend on each other's individual psychology. The perceived risk perception is different for each investor. The role of risk perception in investor behavior in investing is considered important, especially in urgent and uncertain circumstances.

This finding supports previous research by Samuelson & Zeckhauser (1988), Lakonishok et al. (1992), Odean (1998), Zcharakis & Shepherd (2001), Bikhchandani & Sharma (2021), Dang & Lin (2016), Javed et al. (2017), Marwan & Sedeek (2018), Bachmann (2018), VanderPal (2021), Hameed & Khan (2021), Abdin et al. (2022), Saivasan & Lokhande (2022) which states that emotional bias is one of the factors driving investor risk propensity, thereby increasing investment performance. Investors who have emotional bias will estimate optimal income and manage expenses in a controlled manner to avoid risk tendencies. So that investors who have emotional abilities and controlled financial stability in carrying out investment activities will encourage low risk tendencies. In addition, investors who are financially satisfied tend to be disciplined in planning and managing risk. Investors tend to have a diversified portfolio to minimize risk while maximizing potential returns, thereby driving higher investment performance. In the case of classic emotional bias, sometimes investors are afraid to sell securities that have not performed well, choose to hold on while waiting for the right time to release them, and their instincts tend to hold on to lost investments until at least they rebound enough. In this rebound condition, the investment that was declared a loss will again reveal its performance prospects, and the company cannot predict a rebound. This condition will lead investors to carry out a disposition effect, namely the tendency of investors to place or sell stocks that perform well and tend to hold stocks that perform poorly, which are believed to increase in value in the future. Investors

tend to sell stocks that perform well (winners) and retain stocks that perform poorly. This condition is often experienced by investors in the capital market, and if it continues it will harm investors because the stocks that are sold will provide benefits that continue to perform well, while stocks that are held at a loss actually-worsen their performance.

Emotional Bias On Investment Performance Through Risk Propensity.

Emotional bias on investment performance has a positive and significant effect through risk propensity, indicating that high perceived emotional bias can increase investment performance achievement if the risk propensity experienced by investors is good. Risk propensity can indirectly be a bridge that explains the relationship between emotional bias and investment performance in investors registered on the Indonesia Stock Exchange, representative of Southeast Sulawesi Province.

These findings support the Prospect Theory by Kahneman & Tversky (1973, 1979) mental processes directly related to decision making under conditions of uncertainty. Prospect theory presents a critique of expected utility theory as a descriptive model of decision making under risk, and develops an alternative model of the choice function value. Choices among risky prospects exhibit several pervasive effects inconsistent with the basic principles of utility theory. In investing, commonly called the certainty effect, contributes to risk aversion in choices involving the pursuit of certain gains and risky choices involving certain losses. Investors generally discard components that they have in their consideration of prospects, called the isolation effect tendency, leading to inconsistent preferences when the same choice is presented in different forms. Prospect theory, also called choice alternative theory because value is based on the gains and losses of the final asset and probabilities are proxied by decision weights.

The findings of this study support the theory of planned behavior (TPB) by Ajzen (1991. p. 199) and the development of the reasoned action theory. The theory of planned behavior (TPB) is an action taken by investors in a planned and open manner that shows investors capture a significant proportion of the variance of intentions or behaviors after several investment choices are taken and taken into account at this time. This theory states that individual behavioral attitudes, subjective norms, and perceived control affect intentions or decisions. Emotional overflow attitudes towards behavior are considered as a person's assessment of a given behavior based on his or her beliefs; subjective norms related to a person's perception; perceived control concerns the perceived difficulty of performing the behavior (Ajzen, 1991). This model predicts investor behavior through intentions, interests, attitudes, and perceptions that encourage investors to choose and decide on appropriate investments. The reasoned action theory states that investors who have good risk propensity will support emotional bias behavior.

In addition, investors who have controlled emotional bias will make investment performance higher. With the addition of the mediation role of risk propensity, it will encourage the emotional bias that is felt to increase so that theoretically it will encourage the achievement of optimal investment performance. Behavioral bias is assumed to cause decisions to deviate from traditional financial rational decisions covering various aspects related to how investors feel their overall financial condition, both in terms of financial security, risk management and investment, and the ability to achieve their financial goals. Emotional bias will have an impact on the risk propensity owned by investors. If associated with the theory of planned behavior, the tendency of the risk propensity perceived by investors can strengthen the influence of emotional bias on their investment performance. The emotional bias felt by investors and through the role of positive risk propensity will encourage investors to be more motivated to invest, which will then have a significant effect on the achievement of their investment performance, so that there is a reciprocal relationship or mutual influence. This finding also supports the money psychology theory which emphasizes that individual perceptions and attitudes towards the money they have can affect a person's financial behavior. This theory explains that positive emotional bias will contribute to increasing investment performance through the role of positive risk propensity, strong self-control, clear motivation to try, and confidence in the investment climate.

This finding supports previous studies by Lakonishok et al. (1992), Ricciardi & Simon (2000), Barber & Odean (2001), Ackert et al. (2005), Alleyne (2011), Daniel & Shleifer (2015), Cheng et al. (2018), Yousaf et al. (2018), Bachmann (2018), Akhtar & Das (2020), Ahmad (2020), Kanagasabaia & Aggarwala (2020), Adil et al. (2021), Abdin et al. (2022), Ahmed, Rasool & Saleem (2022) who found that emotional bias affects investment performance, and the role of risk propensity is positive and significant in mediating the effect of emotional bias on investment performance. This shows that there is a positive and significant mediating role of risk propensity that explains the relationship between cognitive bias and investment performance. This study shows that risk propensity is a perfect mediator with a positive and significant direction in explaining the effect of emotional bias on investment performance. Investors sometimes do not know, do not understand, or do not pay attention to historical statistics of investment performance, so that overconfident investors can underestimate their downside risk. As a result, investors suddenly experience poor portfolio performance. Overconfident investors have less diversified portfolios, so they take more risk without a commensurate tolerance for risk changes. Overconfident investors do not realize that they have accepted more risk than they normally tolerate.

The Effect Of Risk Propensity On Investment Performance

Risk propensity has a positive and significant effect on investment performance, meaning that the greater the perceived risk propensity, the greater the increase in investment performance and the investment activities that have been carried out are

very satisfying. This finding supports the investment theory which states that investment is an activity of investing capital in a particular field. Investment is made in various ways, one of which is financial investment in the form of stock securities. The findings of this study also support the investment opportunity set (IOS) theory by Myers (1977) which explains that companies can place their funds through a combination of real assets (assets in place) and future investment opportunity set options (IOS). In addition, the results of this study support the Signaling theory which states that investment expenditures will provide a positive signal about the company's growth in the future, thereby increasing the volume and price of shares as an indicator of the company's value. The findings of this study support the theory of financial investment performance, such as portfolio theory by Markowitz (1952) assuming investors form expectations about their risks and returns, and make portfolio choices according to their expectations and risk preferences. Investors should always invest in well-diversified investment conditions and reduce risky investment activities. To calculate the level of portfolio profit, investors need an analysis tool, namely a general equilibrium model to measure risk and return, through the Capital Asset Pricing Model (CAPM) model. In CAPM there are two types of risk, namely unsystematic risk and systematic risk. If both types of risk are combined, it is called total risk. The CAPM model has good accuracy in determining stock returns. The most important thing about CAPM is the statement of the relationship between the expected risk premium of individual assets and systematic risk. However, different individual investors generally hold undiversified portfolios (Goetzmann & Kumar, 2008), trade or engage in risky investment activities (Barber & Odean, 2000) and speculate in the stock market (Kumar, 2009). Empirically, investors adopt separate investment strategies from mean variance optimization strategies (Grinblatt & Keloharju, 2000) through error analysis from the perspective of investment psychological biases (Odean, 1999; Glaser & Weber, 2007).The findings of this study support the personal investment theory through the investment performance model by Maehr & Braskamp (1986) on building achievement motivation and integrating various dimensions of early conceptualization of the nature of motivation that is considered important and motivation analysis especially in cross-cultural environments. Personal investment theory is related to the decision to choose to invest energy, talent, and time. Personal investment theory investigates individuals from different cultural backgrounds in relation to different achievement situations. Personal investment theory is a derivative of social cognitive theory that assumes the main antecedents of choice, persistence, and variation in task activity levels are based on culturally and socially embedded thoughts, perceptions, and beliefs about oneself and situational conditions. These findings support previous studies by Kim & Nofsinger (2007), Alleyne (2011), Hamid et al. (2013), Baghani & Sedaghat (2016), Ahmad & Maochun (2019), Niazi & Malik (2019), Kanagasabaia & Aggarwala (2020), Combrink & Lew (2020), Abdin et al (2022), Saivasan & Lokhande (2022), Parmitasari et al. (2018), Natasya et al. (2022) found that risk propensity has a positive and significant effect on investment performance. The willingness to invest in stocks shows that investors are risk takers who affect investment performance. Investors perceive a high level of risk to get high returns from the stock market. This study uses a measure of investment performance attitudes that have been felt by investors. In financial management, understanding risk tendencies and investment decisions can improve investment performance.

Risk Propensity On Investment Performance Moderated Financial Literacy

The role of financial literacy is negative and insignificant in moderating the influence of risk propensity on investment performance, indicating that low financial literacy understanding drives the role of investor risk propensity towards decreasing investment performance, so that risk propensity will significantly weaken investment performance, when perceived financial literacy is negative or decreasing. The findings of this study support the Learning Theory which states that to increase insight, knowledge, and literacy skills, a person needs to learn by taking various stages of education and learning, both formal and non-formal. The findings of this study support the theory of investor behavioral risk by Sitkin & Pablo (1992), stating that two determinants of behavioral risk are risk propensity and risk perception. Risk propensity is the tendency of investors in making decisions through choices, namely taking risks or avoiding risks. The behavioral risk theory of investors views risk taking as being strengthened through the involvement of financial literacy which reduces risk propensity and encourages risk perception, thereby increasing the chances of better investment performance. The risk perception theory states that subjective assessments of investors are interdependent on each other's psychology. Risk perception is different for each investor. The role of risk perception in investor behavior is very important, in urgent and uncertain circumstances. The findings in this study support the theory of investment performance by Zakamouline & Koekebakker (2009) who view the perspective of "expected utility theory" as the basis for conducting a more optimal capital allocation forecast analysis. The literature review shows that integration of three different perspectives on performance measurement is essential. Integration is needed to understand individual characteristics and situational factors that produce high individual performance. The findings of this study support previous studies by Rasool & Ullah (2019), Adil et al (2021) which state that risk propensity on investment performance through financial literacy has an insignificant effect. The findings of this study are in line with previous research by Quddoos et al (2020) which found a negative moderating role of financial literacy, indicating that financial literacy weakens the influence between risk propensity and investment performance, when financial literacy perceived by investors is negative or decreasing.

The Influence Of Financial Literacy On Investment Performance

Financial literacy has a significant positive effect on investment performance, indicating that the better the understanding of

investor financial literacy will have a significant effect on increasing the achievement of investor investment performance. This finding supports the theory of financial literacy by Chen & Volpe (1998) that financial literacy is interpreted as a person's ability to manage their finances so that life can be more prosperous in the future. The findings of this study also support the investment theory by Keynes (1936) which states that investment projects are feasible to be carried out to improve the welfare and financial performance of a business. Keynes' investment theory states that the amount or amount of investment does not depend on returns as the only factor, but investment performance is influenced by many factors, including the cost of capital or interest rates. Specifically, financial literacy and factors that influence investment decisions by referring to Keynes' theory, namely: a sense of optimism, economic growth, increasing stock capital, and technological developments. All of these determinants encourage individuals or companies to feel optimistic about their economic and financial conditions, thus encouraging investors to have the courage to invest, which has a positive impact on growth, demand, efficiency, effectiveness and increased investment performance. The findings of this study support the theory of investment performance by Zakamouline & Koekebakker (2009) who view investment performance (IP) as a perspective of "expected utility theory", as a basis for analyzing more optimal capital allocation estimates. Each investor has a unique utility function and the investor's investment performance depends on their risk preferences and return expectations.

These findings support research by Chen, H. & R. P. Volpe. (1998). Lusardi and Mitchell, 2007; Huston, S. J. (2010). Atkinson & Messy (2012), Baihaqqy et al. (2020), Van Rooij et al. (2012), Lusardi (2012) Lusardi & Mitchell (2007, 2014), Fornero, E., & Monticone, C. (2011). Agarwal et al. (2015), Mouna, A. and Jarboui, A. (2015), Bajo, E., M. Barbi, S. Sandri, (2015), Chhapra et al. (2018), Shah et al. (2018), Grohmann, A. (2018). Oggero et al. (2018), Niazi & Malik (2019), Zhang & Xiong (2019), Kanagasabaia & Aggarwala (2020), Hastings and Mitchell (2020). Hsu et al. (2020). Panos & Wilson (2020). Raut, R. K. (2020) stated that financial literacy has a significant effect on investment performance. Lusardi & Mitchell (2014) view the importance of financial literacy, in line with the increase in financial products and the importance of choosing profitable financial products. When investors invest, it indicates that investors have good financial literacy. Baihaqqy et al. (2012) revealed that financial literacy has a significant effect on investment decisions. Financial literacy plays an important role and has a positive effect on investor decisions to improve their investment performance. In improving investment performance, investors tend to be driven by financial literacy factors, which can be seen from the way investors manage their finances. Investors can be said to have high financial literacy knowledge if they are able to manage their finances for future investments.

5. CONCLUSION

Based on the results of the research and discussion, the following conclusions can be drawn: financial cognitive bias has a negative effect on investment performance, meaning that the high tendency of investor cognitive bias results in a decrease in investment performance, and indicates that perceived financial cognitive bias is unable to drive the increase in investment performance expected by investors. The positive and significant effect of cognitive bias on risk propensity means that the higher a person's cognitive bias will drive the risk propensity to increase, and indicates that perceived cognitive bias by investors will be able to drive the risk propensity perceived by investors. The role of risk propensity is positive and significant in mediating between the influence of cognitive bias on investment performance, meaning that the mediating role of risk propensity further strengthens the influence of perceived cognitive bias by investors in driving investment performance achievement and when cognitive bias increases, investment performance tends to increase through the role of risk propensity which is increasingly strengthening in both variables. Emotional bias has a positive and insignificant effect on investment performance, meaning that the high emotional bias of investors will increase their investment performance. However, on the other hand, the influence of emotional bias has an insignificant effect on investment performance, indicating that investors' emotional bias is unable to directly drive an increase in their investment performance. Emotional bias has a positive and significant effect on risk propensity, meaning that the higher the emotional bias felt by investors, the more positive and significant the effect on increasing risk propensity in investment decisions and the level of risk propensity is felt to be good. The role of risk propensity is positive and significant in mediating the effect of emotional bias on investment performance, meaning that investors with high emotional bias and supported by good risk propensity will drive their investment performance achievement to be greater. When the emotional bias felt by investors increases, the achievement of investment performance will continue to increase through the positive and significant role of risk propensity, meaning that high emotional bias is able to increase the achievement of investment performance if the risk propensity is felt to be good by investors. Risk propensity can directly be a bridge that explains the relationship between emotional bias and the achievement of investor investment performance. Risk propensity has a positive and significant effect on investment performance, meaning that the greater the risk propensity perceived by investors can encourage the achievement of investment performance and the investment performance perceived is very satisfying for investors. The role of financial literacy negatively and insignificantly moderates the effect of risk propensity on investment performance, meaning that a high understanding of financial literacy will weaken the effect of risk propensity perceived by investors on increasing their investment performance, and conversely the role of low financial literacy will strengthen the effect of risk propensity on investment performance achieved by investors. The positive and significant effect of financial literacy on investment performance indicates that the better the understanding of financial literacy perceived by investors has a significant effect on increasing the investment

performance expected by investors. Some recommendations in this study are: the need for application and deepening of several financial behavioral biases in the form of cognitive and emotional biases, risk propensities, and financial literacy and their contribution to investment performance. In addition, investors need to understand the important role of financial literacy in mediating the influence of cognitive bias and emotional bias on investment performance, and being able to moderate the relationship between risk propensities and investment performance. The need to consider various types of financial behavioral biases that have implications for decision making and investment performance. Before investing, investors are expected to always pay attention to and deepen the risk propensity indicators in mediating the influence of financial behavioral bias on investment performance, ensuring the role of risk propensities in driving investment performance achievements, and trying to minimize financial behavioral biases that have a varied impact on different investors in similar cases. The need for financial education and strengthening of investors' personal characteristics to improve their financial literacy and investment capacity. Investors strive to continue to improve financial literacy through various financial education and deepening to minimize risk propensities, thereby encouraging strengthening of their investment performance. Further researchers need to conduct a comprehensive in-depth study of indicators, variables, dimensions, samples, models and data analysis in financial behavioral bias research.

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