GRADIVA

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

How Rookies Trade: Analysis of Trading Intentions in North Sulawesi

Jones X Pontoh[1], David P E Saerang [2] & Joubert B Maramis [3]

1. Manado State University, Indonesia. Email: jones.pontoh@unima.ac.id
2. Sam Ratulangi University, Indonesia. Email: dpesaerang@gmail.com
3. Sam Ratulangi University, Indonesia. Email: joubertmaramis@unsrat.ac.id

Abstract

Rookie traders have their own way to trade. Many reasons -sometimes irrational- behind their portfolio selection. This study analyzes the behavior of Rookie traders in North Sulawesi in terms of trading Intentions. Subjective Norms, Financial Literacy, Information and Communication Technology, Risk Tolerance and Overconfidence are the independent variables while Risk tolerance and overconfidence are suspected to mediate their impact to trading intentions of rookie traders. This research was conducted with a quantitative approach and used the Partial Least Square Technique to analyze the structural influence of variable variables that are suspected to influence trading Intentions of novice traders in North Sulawesi. A total of 150 respondents filled out the questionnaire that was run. The results of this study are Subjective Norms, Financial Literacy, Overconfidence has a positive and significant influence on the trading Intentions of North Sulawesi's rookie traders. Meanwhile, Information and communication technology and risk tolerance do not have a significant influence on trading intentions of North Sulawesi's Rookie traders. Furthermore, this study also found a significant influence of subjective norms and financial literacy on the risk tolerance of North Sulawesi's Rookie traders while information and communication technology did not show any significant influence. Overconfidence is influenced by subjective norms and financial literacy but no influence is found in mastering information and communication technology.

Keywords: *Trader behavior, trading intentions, subjective norms, financial literacy, information and communication technology, overconfidence, risk tolerance*

INTRODUCTION

The Indonesian stock exchange has developed along the time. Indonesia Stock Exchange develop exchange participant information data products, enhancement to the Alternative Market Operator System to support the development of non-equity securities trading, enhancement of taxonomy and Extensible Business Reporting Language (XBRL) systems, development of structured derivative products and warrants, enhancement of the electronic Initial Public Offering (e-IPO) system, development of special monitoring boards and new boards for the new economy.

All development programs are carried out to increase investor interest and interest. As result, every year there is an increase in the number of companies that *go public* and trade on the Indonesian stock market as well as traders. Regulatory support by making several listing boards make it easier for companies to jump into the stock exchange. Various rules and developments have increased the interest of companies seeking funding. The authorities have made many efforts to stimulate the growing number of emitens and traders. For Initial public offerings (IPOs), the pricing of securities is issued through an information system or through an e-book building mechanism.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The large number of potential young traders encourages the authority to create a "*Junior Program*" to attract potential millennial investors. The Indonesia Stock Exchange collaborates with universities throughout Indonesia. This collaboration is carried out in the form of the Indonesia Stock Exchange Investment Gallery program. This investment gallery helps facilitate students in making analysis and conducting transactions in the capital market.

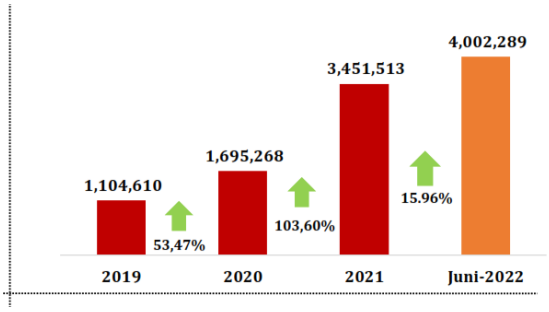

Figure 1: Growth of Indonesian stock market SIDs

Referring to Figure 1. Which shows the growth of Indonesian stock market's Single Investor Identification (SID), in June 2022, there has been a very significant increase in Single Investor numbers. It has reached 4 million entities with 99.79% being local individual investors. The number of investors increase by 15.96% from the end of 2021 and since 2019 it has increased by 362.33% (figure 1.).

Figure 2: Asset Growth recorded

Figure 2. Shows the growth of Asset from 2018-2022. Total assets in June 2022 were recorded at 5,910.58 trillion, gaining increase of 4.81% since 2021. While its ownership is dominated by local investors by 59.03% and 40.97% are foreign investors. The Indonesia Stock Exchange began to implement strategic partnerships with intermediaries, where, regulators will intensively educate exchange members, mutual fund managers, pension fund associations, and focus on targeting the young traders. Indonesia Stock Exchange also partner with financial technology companies, to roll out program for education and inclusion which will be more serious about attracting young investors. Since 2000, the Indonesia Stock Exchange has collaborated with many institutions both educational institutions and private institutions and securities companies to stimulate the interest of new investors on the stock exchange. Data from the Indonesian Central Securities Depository shows that the number of investors under

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

30 years are 5.92 percent and the age of 31-40 years are 21.92 percent. This means that more than 80 percent of Indonesia's capital market investors are a combination of gen Z and millennials with total assets reaching 144.07 trillion Rupiah as of June 2022. Looking at the numbers, the potential for young traders is enormous.

Choosing between assets often become a hard thing to do for traders, especially in situations of high uncertainty. The choice of certain assets will have financial consequences in the form of profit or loss. Reducing potential losses or risks is a must for decision making (Yohnson, 2008). The published information is one of the reasons investors make investment decisions (Godker and Mertins, 2018; He, Wright, and Evans, 2018; Zaidi and Tahir, 2019). In addition, psychological aspect of investors is also a determinant of their investment decision behavior (Christanti and Mahastanti, 2011). Several previous studies have examined investor behavior in making decisions. Islamoğlu, Apan; Ayvali (2015); Salem (2019); Sarkar and Sahu (2018) examine investor behavior in making investment decisions. An investor will determine the preferences of the portfolio based on considerations involving technical/knowledge aspects and psychological aspects. Ajzen (1991) found that before individuals exhibit specific behaviors (such as decision-making), desires are first formed within themselves.

Conventional financial approaches -in investment decision making- based on assumption that individuals will make rational decisions and do not experience bias in predictions about the future (Nofsinger, 2005). In practice, the assumption that individuals will behave rationally does not entirely occur because of the limited ability to think (bounded rationality), that is the reason for the emergence of Behavioral finance. Shefrin (2005) describe behavioral finance as the science of how psychological phenomena affect financial behavior. Ajzen (1991) developed the Theory of Planned Behavior (TPB) later developed become foundation of the Theory of Reasoned Action (Ajzen and Fishbein, 1980). Ajzen through the Theory of Planned Behavior raises three decisive things in an effort to predict desire, 1) Attitude toward the behavior, 2) Subjective norm, 3) Perceived Behavioral Control.

Phan and Zhou (2014) found that attitudes, subjective norms, and perceptions of behavioral control have a positive effect on individual investor intentions. This result is similar to Sondari and Sudarsono (2015) which found a significant influence between subjective norms and individual intentions to invest in stocks. In contrast, Pascual-Ezama, Scandroglio, and; Liaño (2014); Shanmugham and Ramya (2012) found no evidence of subjective norms effect on investment intentions. According to Pascual-Ezama et al. (2014) when attitudes show a strong role will be able to weaken the role of subjective norms, this makes attitudes not only have an impact on intentions but are also directly related to behavior. Similar findings from by Lillemo, Alfnes, Halvorsen, and wik (2013) found evidence that environmental attitudes influence investment desirability. On the other hand, in research outside the field of investment, Huang, Chou, and Lin (2010) examined consumer behavior of travel products found that attitudes have no effect on purchase intentions, because lack of information thus makes doubtful attitudes in consumers

Xu, Zuo, Gao, and Yao (2019) conducted a study to determine the factors that influence the intention/desire in stock selection. They found the past experience of an investor influences satisfaction and will influence the desire of the investor. In addition to experience, investor psychology in determining investment decisions is also influenced by public knowledge of investment instruments (Putra et al., 2016). This research proves that knowledge, past experience and expert or peer advice influence the decisions of individual investors in Bangladesh Stock market. Research by Afroze et al., (2015) produced somewhat different

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

findings. They find that stock recommendations from brokers, opinions of family and friends are not things that concern individual investors. One factor that is an important consideration for investors is risk. Different risk preferences of each investor lead to varying behavior towards risk. There are many definitions of risk in different domains. A decision maker's attitude towards risk can be characterized as risk-aversion, risk-seeking and risk-neutral. Risk tolerance is defined as the ability and capacity of investors to accept and deal with risks when making an investment (Budiarto, 2017). Risk tolerance relates to individual actions when facing a risk, whether investors like risk, dislike risk, or ignore risk (Wulandari and Iramani, 2014).

Building a portfolio and trading, investors must have specific knowledge of capital markets and investments. Financial literacy is a measure of the level of understanding of key concepts in finance and the ability and confidence to manage finances through short-term decision making, appropriate long-term planning, taking into account events and changes in economic conditions (Remund, 2010). Asaad (2015) found that financial literacy can not only increase investor knowledge and insight, but also can increase investor confidence in making transactions. Al-Tamimi and Kalli (2009) found that in the United Arab Emirates market, good financial literacy is only owned by those who work in finance, have high incomes, and higher education. Tokar (2015) explores how financial literacy and confidence influence financial decisions. They conclude is that financial confidence is one of the important components of financial literacy, but individuals who have too much self-confidence with low financial knowledge have a tendency to behave riskily. Beverly and Emily (2005) found that the level of financial literacy among young people in America is very low and can threaten their financial future in the long-term.

Information technology has provided many alternative sources of information and references for investors. However, some studies have found varying results related to the role of information and communication technology in investor activity and behavior. Preis et al. (2013) examined whether common search terms related to finance could be used to predict market movements. They found that a buy or sell strategy, based on Google search volume for a particular keyword could outperform a market index by 3%-10% over the 7-year period they investigated. Similar results were found by Moat et al. (2013) who used Wikipedia visit statistics to predict stock returns. They point out that a trading strategy based on page view changes for the constituents of the Dow Jones Industrial Average can be used to create a trading strategy that outperforms market indices. They also applied this strategy to Wikipedia articles for more general financial keywords with similar results.

This research is built on behavioral research to investigate the investor’s intentions or reasons to trade and factors that can influence it. We built models that link factors that determine trading intentions: 1) subjective norms as predictors of risk tolerance, overconfidence and trading Intentions, 2) financial literature as predictors of risk tolerance, overconfidence and trading Intentions 3) Use of information and communication technology as a predictor of risk tolerance, overconfidence and trading Intentions 4) Risk tolerance as a predictor of trading Intentions 5) Overconfidence as a predictor of trading Intentions.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

LITERATURE REVIEW

The Theory of Financial Behavior

Theory and financial models in general assume that investors always behave rationally in the investment decision-making process. The investor is assumed to be willing and able to receive and analyze all available information based on his rational thinking. However, in reality investors often exhibit irrational behavior, so this situation deviates from the assumption of rationality and has a tendency to be biased. Financial behavior aims to investigate the emotional characteristics of investors to explain subjective factors and irrational anomalies in capital markets (Taffler, 2002; Godoi et al., 2005; Hayes, 2010; Jureviciene and Invanova, 2013).

Shefrin (2000) defines behavioralal finance as a study of how psychological phenomena influence financial behavior practicioners. The behavior of the traders that states how they act in practice. Nofsinger (2001) defines financial behavior as a study of how humans actually behave in a financial setting. In particular, how psychology influences financial, corporate and financial market decisions. The two concepts described clearly state that financial behavior is an approach that explains how humans invest or relate to finance, influenced by psychological factors.

Shefrin (2000) stated that there are three themes discussed in Financial Behavior, where the theme is in the form of questions:

- Do financial practitioners admit mistakes because they adhere to rules of thumb? Adherents of Financial Behavior admit it while traditional finance does not. Traditional finance uses statistical tools appropriately and correctly to process data, while Financial Behavior practice rules of thumb such as "back-of-the-envelope calculations" which are generally not perfect. As a result, practitioners hold "biased beliefs" that influence the fulfillment of promises against such errors (Heuristic-driven bias).
- Does the substance influence the practitioner? In Financial Behavior, practitioners' perceptions of risk and return are strongly influenced by how the "decision problem" is framed, while Traditional Finance view all decisions based on transparency and objective (frame dependence).
- Do mistakes and decision-making frameworks influence the price building in the market? Financial Behavior claim "heuristic-driven bias" and the influence of framing causes prices to fall far short of their fundamental value so that markets are inefficient, while Traditional Finance assume market is efficient as described by Famma (1970). This theme is known as an inefficient market.

Prospect Theory

Prospect theory was developed by Tversky and Kahneman (1979). This theory provides alternatives and several refutations to the Efficient Market Hypothesis and utility theory which has been one of the foundations of finance so far. The outlook predicts that individuals tend to be *risk-averse* when everything goes well. Tversky and Kahneman (1979) apply psychophysical principles to investigate judgment and decision-making. People make decisions according to how their brains process and understand information and not solely on the basis of the inherent utility that certain choices have for decision makers. They argue that normative theories should be abandoned altogether in analyzing judgment and decision-making because they fail to offer an adequate understanding of actual decision behavior.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Statman (2008) says behavioral finance is a framework that adds several parts to financial standards. Financial standards are known as modern portfolio theory. This understanding started in 1961 by Merton Miller and Franco Modigliani revealed that investors are rational. In1965 Eugene Fama revealed that markets are efficient. In1952-1959 by Harry Markowitz gave a formulation of portfolio risk and return with mean-variance, so investors must design their portfolios according to the rules of portfolio theory. According to Statman investors behave normally not rationally and the market is inefficient. As result, portfolio built by portfolio theory, expected return in asset pricing theory are determined by risk itself.

The difference between behavioral finance and previous theories are, first, conventional finance generally assumes that all investors will maximize expected utility whereas behavioral finance assumes that individuals will minimize expected regret. Second, conventional finance is normative, that is, trying to predict what has not happened (ex-ante), where on the contrary behavioral finance is based on positivism which seeks to describe what has happened (ex post) (Wilkinson, 2008). Third, conventional finance argues that humans are risk averse. However, in behavioral finance, humans are actually not risk averse but loss averse. Fourth, conventional finance assumes that humans can make unbiased predictions, but according to behavioralists human predictions are often biased because they do not understand the concept of probability. Fifth, conventional finance views investors as decision makers who are always based on rational expectations, while behavioralists see investor decisions often based on naïve expectations or normal. Finally, conventional finance assumes humans are rational economic men (REM) with profit as the primary motive. Behavioral looks at other aspects that also underlie a person's decisions such as pride, guilt, shame, fear, empathy and other traits in humans.

Theory of Planned Behavior

Theory of Planned Behavior is the basis theory of the Theory of Reasoned Action. Ajzen (1988) added the construct of perceived behavioral control. These constructs are added to explore individual limitations when performing certain behaviors. Whether a behavior is performed or not is determined not only by subjective attitudes and norms, but also by individual perceptions of control that can be exercised, based on beliefs in that control (control beliefs). The schematic of perceived behavioral control is depicted as shown in the following figure.

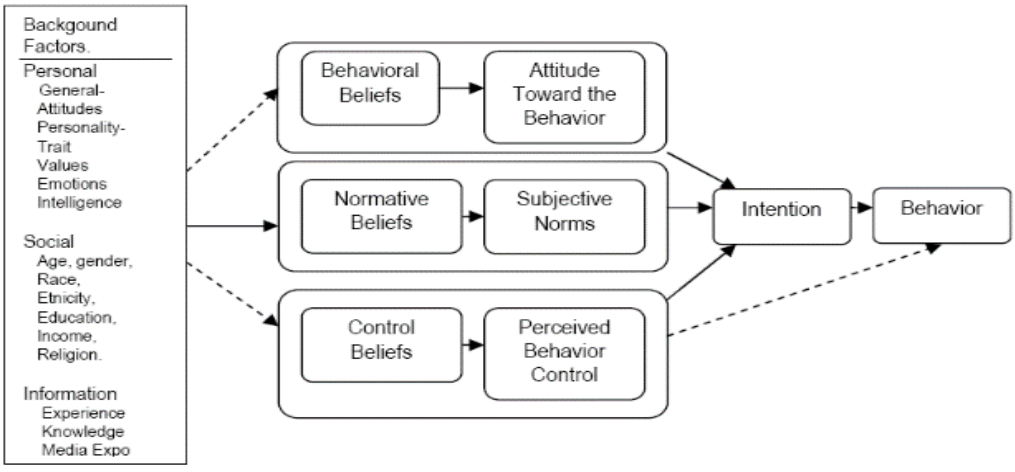

Figure 3: Planned Behavior Theory, Azjen (1988)

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The Planned Behavior Theory has several variables (figure 3.): 1) Background factors-age, gender, ethnicity, socioeconomic status, mood, personality traits, and knowledge-influence an individual's attitude and behavior toward something. The background factors are natural traits that exists in a person. Ajzen (2005), includes three background factors which are personal, social, and informational. Personal factors are a person's general attitude towards something, personality traits, life values, emotions, and intelligence. Social factors include age, gender, ethnicity, education, income, and religion. Information factors are experience, knowledge, and exposure to the media. 2) Attitude toward behavior. Attitude is a predisposition that is learned to respond to an object in the form of like and dislike. Attitude is the tendency to evaluate the degree of favor or unfavored, which expressed in cognitive, affective, and behavioral responses to an object, situation, institution, concept or person/group of people. 3) Subjective norms. This is a person's perception of social pressure to display or not display behavior. Ajzen also defines subjective norm as a person's "belief". A particular individual or group approves of him or her to display certain behaviors. To do something important, usually a person considers what the expectations of others (closest people, society) are. However, the expectations of these people are not equally influential. Some are very strong influences and some tend to be ignored. Expectations from others that strongly influential, will support the possibility of someone behaving in accordance with expectations. 4) Control of perceived behavior. This is a person's perception of the ease or difficulty of displaying behavior. This perception is a reflection of the individual's past experience as well as an obstacle or obstacle to displaying behavior. Like subjective attitudes and norms, perceived behavioral control is also a function of belief, which refers to a person's perception of whether or not he has the capacity to exhibit behavior. 5) Intention. Ajzen and many researchers suggest that intention is a powerful predictor of how a person behaves in a given situation. Intention is a strong predictor of behavior that indicates how hard a person has the desire to try, how much effort they put into planning, so as to display a behavior. Some experts also argue that the simplest way to predict whether someone will do something is to ask if they intend or not intend to do it. Therefore, intention is measured by asking a person to place himself in a subjective dimension that includes the relationship between the individual and behavior. 6) Behavior. Etymologically, the word behavior means a person's response or reaction to the stimulation or to the environment. In addition, behavior is also an activity carried out by individuals in to meet needs.

Subjective Norms

Subjective norms are functions based on beliefs called normative beliefs, namely beliefs about agreement and/or disagreement that come from referent or people and groups that influence individuals. Subjective norms are individual's perception of social pressure to do or not to do a behavior (Ajzen; 2005:124). Subjective norm is a person's perception or view of the beliefs of others that will influence the intention to do or not do the behavior under consideration. While Hogg and Vaughan (2005: 17) explains, subjective norms are the product of individual perceptions of the beliefs that others have. Based on these understandings, Subjective Norms can be explained as personal or group perceptions/views that influence the intentions of traders. A beginner trader can be influenced or not depending on his strength to face others. Someone will choose an investment instrument if the instrument is considered will provide profits. In addition, a person also believes that others want him to do it (Ajzen: 2005:125) so, there are two indicators of subjective norms as normative belief and motivation to comply. The first normative beliefs consist of the influence of parents, the influence of friends, the influence of educators, the influence of successful entrepreneurs and the influence

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

of people who are considered important. The second motivation to comply as motivation to fulfill suggestions or opinions from parents, friends, educators, successful entrepreneurs and people who are considered important.

Financial Literacy

The American Financial Industry Regulatory Authority (FINRA) revealed that 66% of Americans are financially illiterate. Being financially illiterate leads to poor investment decisions, bankruptcy and poverty. There are several definitions of financial literacy that are often used. All generally imply an individual's ability to obtain, understand and evaluate the information needed in decision-making in order to secure their future as much as possible. Financial literacy is the ability to judge based on information and to take effective decisions relating to the use and regulation of money (Noctor, Stoney and Stradling; 1992). Anthes (2004) states that a person's financial literacy is the ability to read, analyze, organize and communicate a person's financial condition that affects well-being. Financial literacy is the basic knowledge of financial investment concepts such as inflation and risk diversification and the ability to calculate interest rates (Lusardi and Mitchell, 2011a). (Remund, 2010, p.279) explains financial literacy as the ability of consumers to make their own financial decisions based on short-term as well as long-term interests. Taylor (2010) identifies factors that determine financial literacy. Using panel data, he found the key factors of financial literacy are age, health, size and structure of the household, structure, credit repayment period, and occupation of a person and other household members. Tullio Jappelli (2009), conducted literacy level testing with executive respondents from 55 countries in 1995-2008. Respondents were selected from experts and managers in the country of the country. Descriptive statistical results show that literacy varies greatly with fairly large numbers in certain countries. The regression results show that the level of literacy depends on the level of education, social interaction.

Information Technology

Technology can be interpreted as a scientific method to achieve practical goals or applied science. Technology is a mean to solve the fundamental problems of human civilization. Information is a result of processing some raw data obtained and then packaged in such a way as to become a form of information that is important for the recipient and has a function as a basis for decision making by users that can be felt directly at any time. Information technology is an intangible product, which cannot be touched, smelled and felt, but can be seen in the real world (Purwanto, 2011, 408). Such as books, magazines, or newspapers which transform information from and to the world using the internet and e-mail that process and analyze information data with microcomputers (Indrajit; 2001:11). Investors in general and online investors in particular are now making decisions in a very different environment than investors in the past. They have access to more data. They often act without personal intermediaries. They can perform extensive searches and comparisons on various criteria. (Barber and Odean, 2021)

Risk Tolerance

A decision maker's attitude towards risk can be characterized as risk-aversion, risk-seeking (risk-tolerance, risk-taking, risk-loving), and risk-neutrality. Risk attitudes can be defined in the classical sense as the preference between risk and its expectation value (Kahneman and Tversky, 1979; Markowitz, 1952). Risk tolerance is influenced by competition and collaboration between cognitive and affective systems (Loewenstein et al, 2001). The

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

cognitive system is assumed to deal with the probability of risk. Risk behavior is driven by fear and anxiety, responses to pain that occur when experiencing loss (Camerer et al., 2005).

When the capital market receives a fundamental analysis of companies, individual investors tend to start buying, but sometimes they do not understand what they are buying, there is only a feeling of optimism about the information they receive and to the stage of euphoria there are still those who still buy. However, when the market is experiencing a decline, there is a nature of selling at the same price as the purchase price (capitulation stage). Some even sell at times when prices are falling, or the despondency stage (Bhakay, 2011). The model of Lampenius and Zickar (2005) shows the contradiction of financial theory, because of the existence of interactive in speculative risk and risk control influenced by previous investment experience and knowledge possessed by individual investors. When individual investors previously exercised increased risk control, then speculative risk will be moderate. When individual investors previously increased speculative risk, then risk control will decrease. These individual investors will be strengthened as long as they earn high returns and engage more deeply in high-risk strategies, while negative returns (losses) will lead to a re-evaluation of the two dimensions that cause investors to adopt a more conservative approach. In contrast to current financial theory, it is generally assumed that investors are strictly risk-averse (Brigham, 2002; Emery, 1998), the risk-taking model assumes that for some investors individuals are passionate about speculation more than individuals who are risk-averse. These individuals are 'risk averters' with a focus on risk control, whereas speculative risk investors are labeled 'risk seekers'. Development of research on further risks by Sjoberg and Engelberg (2009). They used cognitive approaches by Tversky and Kahneman about heuristics that predominate, but supplemented with emotional and personality factors, since cognitive limitations do not provide a complete explanation of the psychology of decision making.

Overconfidence

Overconfident investors underestimate the risks that may occur and overestimates their control over what phenomena occur. On the other hand, overconfidence makes investors overtrade and results in low portfolio returns. This causes investors to bear greater risk. Self-confidence is one of the psychological biases that concerns how well a person understands his abilities and knowledge and understands his limitations. Overconfidence is an excessive feeling of self-confidence. Overconfidence causes people to overestimate their knowledge, underestimate risk and overestimate their ability to control what happens (Nofsinger, 2005: 10-15). Investors who are overconfident in making too many trades always tend to increase the number of trades causing individuals to become overconfident in their opinions. The opinions of investors stem from their beliefs regarding the accuracy of the information received and their ability to interpret it. In general, investors overestimate the accuracy of information and are biased in their interpretation of the information. Investors who are confident in themselves are stronger in self-perception assessment of stocks and less self-concern about trust from others (Nofsinger, 2005: 11). According to Kufepaksi (2007) using experimental studies concluded that confident behavior is self-deceptive behavior that causes errors in predicting stock prices. Another effect of confident behavior is over-trading or an investor's tendency to trade in the stock market too much (Benos, 1998; Barber and Odean, 2000; Barber and Odean, 2001; Pompian, 2006; Graham et al., 2005). This is due to the investor’s overconfidence in their abilities and knowledge in stock market trading. This belief leads to a tendency to make transactions more frequently. Based on empirical research, it was found that investors'

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

confidence levels affect the frequency of trading. Overconfident investors who are higher tend to trade more often (Graham et al, 2006; Grinblatt and Keloharju, 2009).

Trading Intentions

The intention to trade requires high abilities for market participants related to individual abilities in cognitive, affective, and connotations such as processing financial and non-financial information, application of investment knowledge from fundamental and technical aspects, changes in investment preferences, perception of risk and return, investment and learning process (Nofsinger 2005). The intention to trade requires knowledge of specific analysis to ascertain about the performance of the stocks to be selected in the overall stock investment (Altman 2006). Knowledge analysis for investment intent specifically in the analysis phase includes the following: First, fundamental and industry analysis. Fundamental analysis is an analysis of the financial performance of issuers assuming company value; the value of the company is indicated or reflected in the price of the security. Second, it concerns economic analysis and technical analysis. The analysis is based on the movement of the selected stock. The purpose of the analysis is to obtain an estimated return and risk calculation of the selected stock. The results of the analysis are used to decide on the choice of stocks with the highest returns. Third, it relates to portfolio analysis.

Previous Research

Hikmah, Triana and Rustam (2020) try to explore investment motivation. The result is investment motivation has a strong influence on interest and how individual investors transact in the stock market. Cici and Gibson (2006) conditioned trade size and net investor flow. They found that fund managers could not beat the market when forced to invest excess cash from investor inflows. Sales motivated by valuation perform below their benchmarks and are insignificant. In contrast, liquidity-motivated selling is superior

Al-Tamimi (2009) revealed that financial literacy has a significant effect on the decisions of individual investors of the United Arab Emirates. Investors who have high literacy will tend to use financial publications in making decisions, while investors who have low literacy tend to rely more on advice from colleagues, family. The study also found that there were significant differences in financial levels by gender. Women have a low level of financial literacy compared to men. Another study related to financial literacy and overconfidence was conducted by Xia, Wang and Li (2014, 1233-1245) with the result that financial literacy and excessive self-confidence are positively correlated with stock market participation. On the other hand, under-confidence is negatively correlated with stock market participation. Baker, Kumar, Goyal, Gaur (2019) in their study "*How Financial Literacy and Demographic Variables Relate to Behavioral Biases*" found that financial literacy had a negative relationship with disposition effects and *herding* bias, a positive relationship with accounting mental bias, but no significant relationship with overconfidence and emotional bias.

Technology can facilitate as well as be an obstacle for *users* of a country's online trading system, Febrianto (2020) found that in the Indonesian Stock market, information and communication technology has a very significant influence on the investment interest of young investors. They use multiple regression techniques to determine the influence between information and communication technology on student investment interest. Previously in several studies researchers have shown the influence of information technology on investment decisions. Zulkifli et al (2008) found that there is an improvement in investors' investment

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

decision making in the Malaysian stock market when using a hybrid model that utilizes advances in information and communication technology.

Humans have different personal characteristics, both in the way of thinking, feeling and acting. To explore individual behavior, it is necessary to identify the motivation that drives a person to act and react. (Corret al., 2013; Liang and Kelsen, 2018). In several prior research, researchers in the realm of psychology have succeeded in proving evidence that individual character influences the investment decisions of investors and the way they behave in trading activities. (De Bondt, 1988; Slovic, 2005; Chitra and Sreedevi, 2011). Croce, Ughetto and Cowling (2019) found that investment motivation/reason has a significant influence in explaining investors' attitudes and risk tolerance. Lindner, Kirchler, Rosenkranzc, Weitzel (2021) conducted a study of 864 students and 330 professional practitioners related to motivation and risk selection. They found that reputation motivation had no effect on professional investors while for students, reputation motivation had an effect on risk-taking.

In some studies, differences in risk tolerance of each individual can be caused by the level of understanding of financial risk (Sung and Hanna, 1996). In general, individuals who have a good level of understanding of financial risk tend to be more risk averse. Individuals tend to choose something they perceive as highly mastered and understood (Heath and Tversky, 1991). However, some researchers dispute this conclusion by arguing that naturally understanding risk reduces negative reactions to risk itself (cf. Croson and Gneezy, 2009; Loewenstein et al., 2001; Slovic, 1987). In line with these objections, some evidence from subsequent studies concluded that understanding financial literacy results in more risk-tolerant behavior (e.g., Bannier and Neubert, 2016; Dimmock et al., 2016; Van Rooij et al., 2011). Gustafsson, Omark (2015) concluded in their research that each investor has a different risk tolerance based on the level of financial literacy. The higher the level of financial literacy of an investor, the higher their risk tolerance. Furthermore, they found that high financial literacy is obtained from investor experience in the capital market rather than courses.

Asaad, Colleen (2015) found, based on data from United States investors, that investor confidence is related to financial literacy. Investors with low financial literacy and excessive confidence tend to buy risky assets. They further concluded that financial literacy should not focus solely on knowledge but should also be able to help investors establish the right level of confidence. Cwynar, Patena and Sibanda (2020) conducted research on financial literacy and their overconfidence and behavioral bias in the capital market. The results showed that young investors who have low financial literacy tend to have high self-confidence and subsequently they will often borrow. This behavior often leads to an unhealthy portfolio.

Zulkifli, Shah, Norzaidi, Chong (2008) in a study on the Malaysian capital market found that information and communication technology provides an important role to prove the Markowitz prototype model in order to increase returns and minimize risk. Girlando et al. (2021) found that the use of information technology, databases and automation has reduced critical thinking from investors. Investors tend to have great confidence in the results of information presented through complex algorithmic and computational processes. Thus, investors will have a high-risk tolerance after getting information from technology-based processing. The study focuses more on investor behavior and risk perceptions, but findings on the impact of using information and computing technology support the argument that risk tolerance behavior is determined by information and communication technology.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The results of Lipe (1998) research revealed variance, covariance, expected returns influence investment decisions and risk assessment. However, if there is a discrepancy between market information and accounting information carried out, investors are more likely to choose accounting information to make an investment decision. In addition, there is a segmentation approach to trading behavior in the capital market by Wood and Zaichkowsky (2004), who say there are investors who like risk, some do not like risk, some do not care about market conditions because investment is for the long term. *Sitinjak, Ghozali (2012) "*The Investor Indonesia Behavior on Stock Investment Decision Making: Disposition Effect, Cognition and Accounting Information" found that, there is a disposition effect before and after treatment of accounting information, there is a tendency to release winner shares faster than looser stocks. Aspects of cognition tend towards risk takers and overconfidence after being given accounting information treatment. There is an interaction between dispositional influence, aspects of cognition (level of risk and level of confidence), and accounting information. These interactions give rise to neuroselling behavior in individual investors

Graham, Harvey and Huang (2009, 1094-1106) conducted a study entitled Investor Competence, Trading Frequency, and Home Bias**.** This research contributes to understanding the theoretical relationship between overconfidence and trading frequency. Existing theories about trading frequency have focused on one aspect of overconfidence: calibration errors. The study also offers a potential mechanism for the "more-than-average" aspect of overconfidence to influence trading frequency. In this, overconfident investors tend to perceive themselves as more competent, and thus more willing to act on their beliefs, leading to a higher frequency of trades.

Grinblatt and Keloharju (2009, 549-578) explored psychological factors in investors' transactions and found that thrill-seeking factors and excessive confidence influence investors' way of trading. Overconfident investors have irrational optimism about the value of their human resources or transaction prospects. Statman, Thorley and Vorkink (2006) in the study Investor Overconfidence and Trading Volume, proved the proposition that investors become overconfident if in previous transactions they managed to make a profit. Furthermore, the study found that trading volume is also determined by the profits made on previous transactions.

Research Model

This study used cognitive behavioral factors consisting of risk tolerance, overconfidence, subjective norms and knowledge factors such as Financial Literacy and Information Technology to predict the trading intentions. The model constructed in Structural Equation model which later examined in outer and inner model test (Figure 4.)

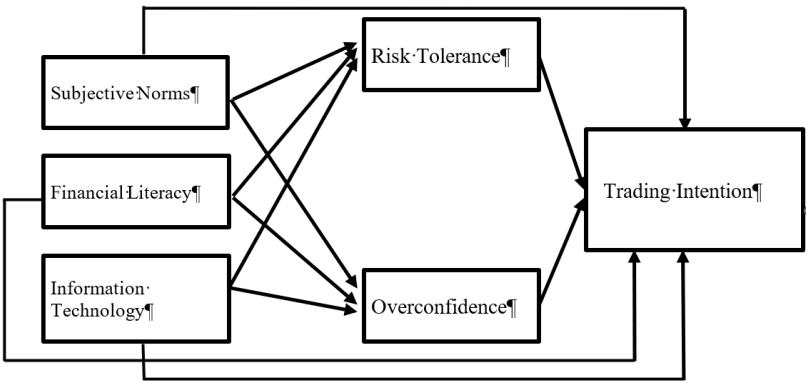

Figure 4: Research design

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Later in data processing and report we use the following abbreviation to simplify the writing:

TI = Trading Intention

SN = Subjective Norms

FL = Financial Literacy

ICT = Information and Communication Technology

RT = Risk Tolerance

OC = Overconfidence

Hypothesis

Theoretical background and previous research are the main foundation of the research design above (figure 4.). Based on those foundations we constructed the following hypothesis

Hypothesis 1: Subjective norms influence trading intentions of rookie traders

Hypothesis 2: Financial literacy influences trading intentions of rookie traders

Hypothesis 3: Information and communication technology influences the trading intentions of rookie traders

Hypothesis 4: Subjective norms influence the risk tolerance of rookie traders

Hypothesis 5: Subjective norms influence *overconfidence of r*ookie trader

Hypothesis 6: Financial literacy influences risk tolerance rookie trader

Hypothesis 7: Financial literacy influences *overconfidence* of rookie traders

Hypothesis 8: Information and communication technology influences the risk tolerance of rookie traders

Hypothesis 9: Information and communication technology influences the overconfidence of rookie traders

Hypothesis 10: Risk tolerance influences the trading intentions of rookie traders

Hypothesis 11: O*verconfidence* influences the trading intentions of rookie traders

Hypothesis 12: Risk tolerance mediates the Influence of subjective norms on trading intentions of rookie traders

Hypothesis 13: Risk tolerance mediates the Influence of financial literacy on trading intentions of rookie traders

Hypothesis 14: Risk tolerance mediates the Influence of information and communication technology on trading intentions of rookie trader

Hypothesis 15: Overconfidence mediates the influence of subjective norms on trading intentions of rookie trader

Hypothesis 16: Overconfidence mediates the Influence of financial literacy on trading intentions of rookie trader

Hypothesis 17: Overconfidence mediates the influence of information and communication technology on trading intentions of rookie trader

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

RESEARCH METHOD

This study uses a quantitative approach. We designed it with quantitative confirmative associative research method with survey approach. This research is an explanatory study that aims to explain the causal relationship of independent variables Subjective Norms, Financial Literature, information and communication technology, risk tolerance, Overconfidence, to the Trading intentions of rookie Traders. The data is quantitative data. The primary data in this study is obtained from the collected questionnaire. Secondary data is obtained through tracing published financial data, statistics, and published informations.

The population in this study is all rookie traders in North Sulawesi province. The samples are determined by judgment/purposive sampling. This research used rookie traders as respondents. The term rookie trader referred to traders who are at the time this research was made had just started transactions on the stock exchange for a maximum of 3 years, with an average money invested ranged 1-50 million rupiah. Hair et al (2013) set the minimum sample size guidelines in PLS SEM analysis to be equal to or greater than the condition of (1) Five to ten times the number of indicators used to measure a construct or (2) ten times the number of structural paths leading to a particular construct. The guide, sometimes called the *10-time rule of thumbs*, is practically 5-10 times the maximum number of paths to a latent variable in the SEM-PLS model. The total number of Indicators are 23, thus the minimum sample size is 115-230. The samples than set to 200. To reach the sample, researchers used questionnaires distributed via *google form* and disseminated through whatsapp groups, messengers and stock exchange gallery networks.

Table 1: Variables and Indicators

Variables	Indicators	Sources
Trading intentions (TI)	1. The desire to own stocks with high returns 2. The desire to own blue-chip stocks 3. The desire to find information about the desired stock 4. Desire to revise stock performance 5. The desire to know a new way of investing 6. The desire to own a certain share 7. Desire to be responsive to changes in stock prices 8. Desire to be responsive to changes in Interest Rates	Arozi et al (2009)
Subjective Norms (SN)	1. Friend Influence 2. Family Influence 3. Influence Experienced investors	Chow and Chan (2008)
Financial Literacy (FL)	1. Able to analyze technical analysis 2. Able to analyze fundamental aspects of the company 3. Able to analyze asset valuation models	
Information and Communication Technology (ICT)	1. Mastery of investment applications 2. Utilization of the internet and information media 3. Utilization of technology in the formation of investor networks	Girlando, Grima, Boztepe, Seychell, Apoga, Romanova (2021)
Risk Tolerance (RT)	1. Tendency to hold an asset When the price falls (Aggressive) 2. Tendency to wait a moment to make a decision when the price falls (Moderate) 3. Direct tendency to sell assets when prices fall (Conservative)	Dorn, Huberman (2002)
Overconfidence (OC)	1. Confidence in the accuracy of the information held 2. Confidence in transactions made 3. Confidence in own investment strategy	(Nosfinger, 2005)

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The decision to use analytical techniques using Partial Least Square - Structural Equation Model (PLS-SEM) is considered appropriate because this study uses 6 variables whose relationship patterns are tiered. This pattern of cascading relationships creates complex model relationships that are less able to be solved with multiple regression analysis techniques. PLS-SEM is a data analysis technique that does not require classical assumptions such as data normality and multicollinearity. This is because PLS is a robust data analysis technique against classic assumption problems (Hair et al., 2010).

To assess the Goodness of Fit of the model, PLS uses the R-square (R^2) value. The higher the R^2 value, the better the research model. However, the R^2 value is not an absolute parameter in measuring the model, the most important parameter is the explanation of the causality relationship. Therefore, in order to test the causality relationship, testing the hypothesis must be done. In testing the PLS hypothesis using the *Bootstrapping* technique, the hypothesis can be said to be supported if the critical ratio (CR) or T-Stat value ≥ 1.96 two-tailed value is equivalent to a confidence level of 95% or a p-value of 0.05.

RESULTS

Description of Questionnaires Results

Table 2: Description of Trading Intentions Questionnaires Result

No.	Item	5	4	3	2	1
1	Intent to own stocks with high returns	40.00%	42.00%	18.00%	0.00%	0.00%
2	Intent to own *Blue-chip* shares	19.33%	50.00%	23.33%	7.33%	0.00%
3	Intent to find information about stocks that is sold/bought	15.33%	45.33%	31.33%	8.00%	0.00%
4	Intent to revise the performance of stocks owned	18.67%	50.67%	19.33%	11.33%	0.00%
5	Intent to know a new way of investing	10.67%	48.00%	28.00%	13.33%	0.00%
6	Intent to own a certain stock no matter what	13.33%	49.33%	22.67%	14.67%	0.00%
7	Intent to respond to changes in stock prices	36.00%	42.00%	17.33%	4.67%	0.00%
8	Intent to Respond to changes in interest rates	0.00%	51.33%	34.67%	14.00%	0.00%

Table 2. Presented the description of Trading Intention's Questionnares Result. 82% of respondents voted in agree and strongly agreed to the item "Want to have a high return stock." Only 18% voted neutral and no one had no intention of owning high-return stocks. The majority of rookie traders in North Sulawesi want to own stocks with high returns. As for blue-chip stocks, 79.33% respondents have the intention or desire to own it through transactions, 23.33% are neutral and 7.33% disagree. Likely because the characteristics of blue-chip stocks that have a large market capitalization and usually have a high price cause some respondents to assume they cannot afford to buy blue-chip stocks. Respondents who make transactions to find information about the shares are 60.66%. 30.31% are neutral and there are 8% who do not intend to seek information about the shares owned. They just want to make a transaction without wanting to dig further into the company's stock information being bought and sold.

69.34% of respondents make transactions with the intention of revising the performance of their portfolio. 58.67% of the respondents, make transactions with the intention of wanting to know the new way of investment. Respondents who made transactions with the intention of pursuing a certain stock were 62.66% and the rest have other intentions. Respondents who transact with the intention of responding to changes in stock prices are 78%, the rest are not too interested in changes in stock prices. The last is respondents who make transactions with

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

the intention of responding to changes in interest rates, there are 51.33% and the rest are not (table 2.). From observations and interviews with respondents, it seems that the interest rate has not become an urgent factor for traders to follow up. They react more to other indicators.

Subjective Norms

Table 3: Description of Subjective Norms Questionnaire Results

No.	Item	5	4	3	2	1
1	Invited by a friend	19.33%	47.33%	24.00%	9.33%	0.00%
2	In making transaction decisions I follow the pattern of friend's transactions	10.67%	49.33%	30.00%	10.00%	0.00%
3	Suggested by family member	8.67%	56.00%	25.33%	10.00%	0.00%
4	Family influences my transaction decisions	18.67%	48.67%	24.00%	8.67%	0.00%
5	Inspired by experienced investors	14.00%	45.33%	32.00%	8.67%	0.00%
6	Follow the transaction pattern of experienced investors	14.67%	50.00%	26.67%	8.00%	0.67%

The majority of respondents admitted that they were influenced by friends, parents and experienced investors. In total for all questions, the number of respondents who agreed and strongly agreed was more than 50% (table 3.). This indicates that the subjective norm in rookie traders in North Sulawesi is quite high. In general, they start as traders under the influence of friends. Parents or investors who have already trade prior to them.

Table 4: Description of Financial Literacy Questionnares Result

No.	Item	5	4	3	2	1
1	able to analyze stock price trends	34.67%	38.67%	16.67%	7.33%	0.00%
2	Able to analyze graphs and transaction volume data	36.67%	28.67%	30.67%	11.33%	0.00%
3	able to analyze the company's financial health	35.33%	28.00%	29.33%	16.00%	0.00%
4	Able to make macro and microeconomic analysis	16.00%	40.00%	32.00%	16.00%	0.67%
5	Able to make analysis of CAPM asset valuation models	9.33%	54.67%	20.00%	16.00%	0.00%
6	Able to analyze APT models	2.00%	56.00%	25.33%	8.00%	0.67%

In the cognition stage of being able to analyze, it turns out that there are still many respondents do not have good financial literacy. Although above 50% of respondents already have good financial literacy, it can be seen that the largest percentage of respondents' analytical skills is in technical skills, such as the ability to analyze trends and analyze charts with the percentage of 73.33% traders are able to analyze stock trends and 65.33% traders are able to analyze charts and stock volume data (table 4). A smaller percentage is found in other financial literacy skills.

Table 5: Description of Information and Communication Technology

No.	Item	5	4	3	2	1
1	Able to determine the advantages and disadvantages of a trading application	34.00%	27.33%	30.67%	8.00%	0.00%
2	Able to use trading software	48.00%	44.00%	7.33%	0.67%	0.00%
3	Read magazines/ newspapers/ publications about the stock market	12.67%	53.33%	20.67%	13.33%	0.00%
4	Using the internet to find the latest information about the development of the investment world	36.67%	36.00%	24.67%	2.00%	0.00%

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

5	Get a lot of investor network through digital technology	7.33%	50.67%	30.00%	12.00%	0.00%
6	Use social media, WhatsApp/ email/ telegram to get investor network	8.00%	54.00%	26.67%	8.67%	2.67%

In general, the information and communication technology skills of North Sulawesi traders are quite good. The ability to use trading applications, the percentage of respondents who expressed strongly agree and agree reached 92%. This illustrates that almost all respondents can operate trading applications well. However, the percentage that utilizes digital technology in building investor networks is only 58% and 62% (table 5.).

Table 6: Description of Risk Tolerance Questionnares Result

No.	Item	5	4	3	2	1
1	Love risks in trading	41.33%	34.00%	22.00%	2.67%	0.00%
2	Willing to re-buy the stock that previously cause me loss	22.00%	42.67%	26.67%	8.67%	0.00%
3	Pursuit of profit by considering the risks in trading	16.00%	50.00%	28.67%	5.33%	0.00%
4	Willing to take risks to a certain degree to increase the likelihood of getting bigger results, but I want to limit the loss potential	23.33%	44.00%	20.67%	12.00%	0.00%
5	Understand that in every investment there is a possibility to lose	18.00%	48.67%	27.33%	6.00%	0.00%
6	Willing to accept investment losses to a reasonable extent	12.00%	48.00%	26.00%	14.00%	0.00%

Table 6 describes the risk tolerance of rookie traders in North Sulawesi. In general, respondents have a fairly high-risk tolerance. 75.33% of respondents are happy to take risks in transactions, 64.67% are not afraid to buy stocks that have made a loss (table 6).

Table 7: Description of Overconfidence Questionnares Result

No.	Item	5	4	3	2	1
1	The information I have was the most accurate information	26.00%	32.67%	30.67%	10.67%	0.00%
2	I believe my trading references are very strong	22.00%	40.67%	26.67%	10.67%	0.00%
3	I believe my trading decision is the best	9.33%	48.67%	36.00%	4.00%	2.00%
4	Confidence in the ability to make a profit compared to other investors	12.67%	46.67%	24.67%	16.00%	0.00%
5	I choose a strategy that is consistent in decision making even when the market changes	10.67%	48.67%	29.33%	11.33%	0.00%
6	The success of making profits in the past make me more confidence	5.33%	52.00%	26.67%	14.00%	2.00%

Beliefs in information and references each 58.67%, 62.67% who voted strongly agree and agree. This shows that quite a lot of respondents have excessive self-confidence, as well as the next indicator all of them are above 50% who have excessive confidence levels (table 7).

Validity and Reliability

Considerations in convergent validity are the *loading factor* value and *the Average Variance Extracted* (AVE) value. *A loading factor* higher than 0.5 is acceptable. However, the software determines the minimum limit for factor loading in determining validity is 0.7. Meanwhile, AVE values higher than 0.5 are better (Hair *et al*., 2010: 695). The results of factor loading testing can be summarized as follows:

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Table 8: Summary of Factor Loading test

	TI	FL	SN	OC	ICT	RT
1	0.889	0.862	0.796	0.905	0.850	0.863
2	0.846	0.864	0.847	0.847	0.795	0.828
3	0.845	0.840	0.790	0.812	0.897	0.830
4	0.817	0.823	0.804	0.842	0.767	0.887
5	0.870	0.849	0.835	0.834	0.875	0.824
6	0.877	0.814	0.828	0.852	0.790	0.898
7	0.891					
8	0.931					

From table 8. We can see that all loading factors of existing indicators are greater than 0.7 as a minimum requirement. It implies that the data are valid.

Average Varian Expected

The next test is the Average Variance Extracted (AVE) value. Variable instrument items meet their convergent validity if the loading *factor* ≥ 0.5 and does not experience *cross loading* problems and *the Average Variance Extracted* (AVE) value ≥ 0.5 (Hair et al. 2010: 695, 709).

Table 9: Average Variance Extracted (AVE)

	Average Variance Extracted (AVE)
Trading intentions	0.759
Subjective Norms	0.667
Financial Literacy	0.709
Information and Communication Technology	0.689
Risk Tolerance	0.732
Overconfidence	0.721

All latent variables have *an Average Variance Extracted* (AVE) greater than 0.5 (table 9.). Therefore, we conclude that the data is valid and can be used to predict the model.

Discriminant Validity Test

A discriminant validity test finds out the items between research constructs are different or not correlated with other constructs. Validity of discriminants is measured by looking at whether the indicators used in the research construct do not experience *cross loading* problems and the indicators collect on the construct (Hair *et al*., 2010: 689, 710). We use fornell-larcker discriminant validity, Cross Loading Discriminant and Hetero-trait Mono-Trait Ratio tests.

Table 10: Fornell-larcker Discriminant Validity Test

	TI	FL	SN	OC	ICT	RT
TI	0.871					
FL	0.686	0.842				
SN	0.682	0.708	0.817			
OC	0.674	0.69	0.657	0.849		
ICT	0.395	0.396	0.341	0.276	0.83	
RT	0.618	0.686	0.597	0.695	0.267	0.855

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Table 11: Cross Loading Discriminant Validity Test

	TI	FL		SN		OC		ICT		RT	
TI1	0.889	FL1	0.862	SN1	0.796	OC1	0.905	ICT1	0.85	RT1	0.863
TI2	0.846	FL2	0.864	SN2	0.847	OC2	0.847	ICT2	0.795	RT2	0.828
TI3	0.845	FL3	0.84	SN3	0.79	OC3	0.812	ICT3	0.897	RT3	0.83
TI4	0.817	FL4	0.823	SN4	0.804	OC4	0.842	ICT4	0.767	RT4	0.887
TI5	0.87	FL5	0.849	SN5	0.835	OC5	0.834	ICT5	0.875	RT5	0.824
TI6	0.877	FL6	0.814	SN6	0.828	OC6	0.852	ICT6	0.79	RT6	0.898
TI7	0.891										
TI8	0.931										

Table 12: Cross Loading Discriminant Validity Test Hetero-trait Mono-Trait Ratio

	TI	FL	SN	OC	ICT	RT
TI						
FL	0.72					
SN	0.733	0.768				
OC	0.714	0.738	0.717			
ICT	0.409	0.423	0.359	0.284		
RT	0.651	0.732	0.648	0.751	0.279	

The largest value of Fornell-larcker Discriminant Validity is on the top row for each column (table 10). Thus, we conclude that the data are valid. The Cross-Loading value for each variable has the highest value in its row (table 11), so it can be concluded that the value of each item of the cross-loading indicator has been in its construct or has not experienced cross loading problems. From the Cross Loading Hetero-trait Mono-Trait Ratio table (table 12) we can see that the value of the top row of each column variable is smaller than 0.9, so it can be said that the instruments are valid.

Based on the results of discriminant validity testing (table 10, 11, 12), we conclude that each instrument item can represent its construct and be different from items from other constructs. In other words, the instruments have fulfilled the validity of discrimination.

The reliability test used internal consistency methods which include two assessments of *Cronbach's alpha* and *composite reliability*. Instruments that meet their reliability are instruments that have accuracy of measurements over time. The value for *cronbach's alpha* is greater than 0.6 and for *composite reliability* is higher than 0.7.

Table 13: Reliability test

	Cronbach's Alpha	Composite Reliability
TI	0.955	0.962
SN	0.9	0.923
FL	0.918	0.936
ICT	0.91	0.93
RT	0.926	0.942
OC	0.922	0.939

The result of reliability test shows that all variable constructs have met the reliability test, both assessments based on Cronbach alpha and composite reliability values. In the Cronbach alpha assessment, all constructs have an ideal value because the value is above 0.7(table 13.). According to Hair *et al*., (2010: 710) the value of reliability above 0.7 can be considered very good and ideal. Similarly, the assessment of the composite reliability criterion results also as

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

good as the *Cronbach alpha* value, where all the assessment results produce *a composite reliability* value above 0.7.

Hypothesis Test Results

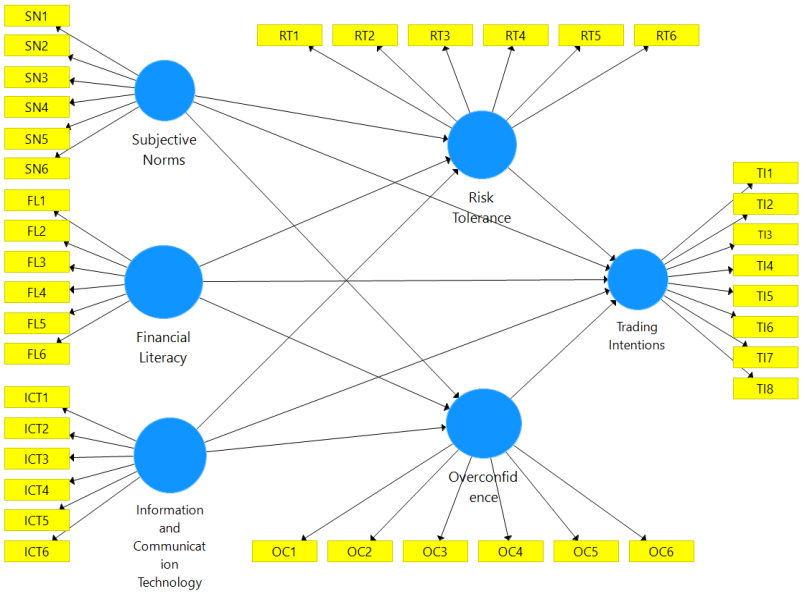

Figure 5: Model Construct

The hypothesis tested using constructed model above (figure 5.). The basis for decision making is to look at the value of *the critical ratio* t-stat. A t-stat value higher than 1.960 (*two tailed*) equivalent to a p-value of 0.05 means the result is significant or hypothetically acceptable.

Table 14: Hypothesis Test Results

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Status
Financial Literacy (X2) -> Trading Intentions (Y1)	0.195	2.159	0.031	Significant
Financial Literacy (X2) -> Overconfidence (X5)	0.457	4.725	0	Significant
Financial Literacy (X2) -> Risk Tolerance (X4)	0.535	5.537	0	Significant
Subjective Norms (X1) -> Trading Intentions (Y1)	0.268	3.016	0.003	Significant
Subjective Norms (X1) -> Overconfidence (X5)	0.341	3.403	0.001	Significant
Subjective Norms (X1) -> Risk Tolerance (X4)	0.225	2.396	0.017	Significant
Overconfidence (X5) -> Risk Tolerance (Y1)	0.245	3.013	0.003	Significant
ICT (X3) -> Trading Intentions (Y1)	0.127	2.053	0.04	Significant
ICT (X3) -> Overconfidence (X5)	-0.021	0.361	0.718	unsignificant
ICT (X3) -> Risk Tolerance (X4)	-0.021	0.366	0.714	unsignificant
Risk Tolerance (X4) -> Trading Intentions (Y1)	0.12	1.671	0.095	unsignificant

Based on the data processing results above, the following are the results of the Hypothesis test.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Hypothesis 1: There is a significant influence of Subjective Norms on trading intentions. The analysis shows that the efficiency of this path is 3.016 (table 14.) with a value of pvalue = 0.003 less than 0.05. Thus, H_0 is rejected, there is a significant influence of subjective norms on trading intentions.

Hypothesis 2: There is a significant influence between financial literacy and trading intentions. The analysis shows that the efficiency of this path is 2.159 (table 14.) with a value of pvalue = 0.0 31 smaller than 0.05. Thus, H_0 is rejected, there is a significant influence of financial literacy on intentions in risk selection. Financial literacy significantly influences Trading intentions.

Hypothesis 3: there is a significant influence between Information and Communication Technology on trading intentions. The analysis shows that the efficiency of this path is 2.053 (table 14.) with a value of pvalue = 0.0 4 smaller than 0.05. Thus, H_0 is rejected, there is a significant influence of Information and Communication Technology on trading intentions. Information and Communication Technology directly influences the trading intentions.

Hypothesis 4: There is a significant influence of Subjective Norms on Risk Tolerance. The analysis shows that the efficiency of this path is 2.396 (table 14.) with a value of pvalue = 0.0 17 smaller than 0.05. Thus, H_0 is rejected, there is a significant influence of subjective norms on risk tolerance. Subjective norms influence Risk Tolerance significantly.

Hypothesis 5: There is a significant influence of Subjective Norms on Overconfidence. The analysis shows that the efficiency of this path is 3.403 (table 14.) with a value of pvalue = 0. 001 is smaller than 0.05. Thus, H_0 is rejected, there is a significant influence of the subjective norm on overconfidence.

Hypothesis 6: There is a significant influence of Financial Literacy on Risk Tolerance. The analysis shows that the efficiency of this path is 5.537 (table 14.) with a value of pvalue = 0.000 or less than 0.005. Thus, H0 is rejected, there is a significant influence of Financial Literacy on Risk Tolerance. Financial Literacy significantly influences Risk Tolerance.

Hypothesis 7: There is a significant influence of Financial Literacy on Overconfidence. The analysis shows that the efficiency of this pathway is 4. 725 (table 14.) with pvalue = 0.000 or less than 0.05. Thus, H0 is rejected, there is a significant influence of Financial Literacy on overconfidence. Financial literacy influences overconfidence significantly.

Hypothesis 8: There is a significant influence of Information and Communication Technology on Risk Tolerance. The analysis shows that the efficiency of this path is 0.366 with a value of pvalue = 0. 714 (table 14.) is greater than 0.05. Thus, H0 is accepted, there is no significant influence of Information and Communication Technology on risk tolerance. Information and Communication Technology does not significantly influence Risk Tolerance.

Hypothesis 9: There is a significant influence of Information and Communication Technology on Overconfidence. The analysis shows that the efficiency of this path is 0.361 with a value of pvalue = 0.718 (table 14.), greater than 0.05. Thus, H0 is accepted, there is no significant influence of Information and Communication Technology on Overconfidence. Information and Communication Technology does not influence Overconfidence significantly.

Hypothesis 10: There is a significant influence of risk tolerance on trading intentions. The analysis shows that the efficiency of this path is 1.671 with a value of pvalue = 0.095 (table 14.) greater than 0.05. Thus, H0 is accepted, there is no significant influence of risk tolerance on trading intentions.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Hypothesis 11: There is a significant influence of Overconfidence on trading intentions. The analysis shows that the efficiency of this path is 3.013 (table 14.) With a value of pvalue = 0. 003 is smaller than 0.05. Thus, H0 is rejected, there is a positive and significant influence of Overconfidence on trading intentions. Overconfidence influences trading intentions significantly.

Indirect influence Hypothesis

Next, because the model built has a mediation setting, the results of *specific indirect* influence testing are presented to see the mediating influence of the risk tolerance and overconfidence variables.

Table 15: Direct influence and indirect influence comparison

	Original Sample	T Statistics	P Values	
Financial Literacy (X2) -> Trading Intentions(Y1)	0.195	2.159	0.031	Significant
Financial Literacy (X2) -> Overconfidence (X5) -> Trading Intentions(Y1)	0.112	2.381	0.017	Significant
Subjective Norms (X1) -> Trading intentions (Y1)	0.268	3.016	0.003	Significant
Subjective Norms (X1) -> Overconfidence (X5) -> Trading intentions (Y1)	0.084	2.143	0.032	Significant
ICT (X3) -> Trading Intentions (Y1)	0.127	2.053	0.04	Significant
ICT (X3) -> Overconfidence (X5) -> Trading Intentions(Y1)	-0.005	0.356	0.722	unsignificant
Financial Literacy (X2) -> Trading Intentions(Y1)	0.195	2.159	0.031	Significant
Financial Literacy (X2) -> Risk Tolerance (X4) -> Trading Intentions(Y1)	0.064	1.55	0.121	unsignificant
Subjective Norms (X1) -> Trading intentions (Y1)	0.268	3.016	0.003	Significant
Subjective Norms (X1) -> Risk Tolerance (X4) -> Trading intentions (Y1)	0.027	1.244	0.213	unsignificant
ICT (X3) -> Trading Intentions (Y1)	0.127	2.053	0.04	Significant
ICT (X3) -Risk Tolerance > (X4) -> Trading Intentions(Y1)	-0.003	0.31	0.756	unsignificant

Hypothesis 12: Risk Tolerance (X4) as a mediator of Subjective Norms (X 1) to trading intentions (Y1). The value of the indirect influence coefficient is 1.244 with pvalues=0. 213 (table 15.) greater than 0.05. Thus, H0 is accepted, Risk tolerance is proven not to mediate variables subjective norms to Trading intentions.

Hypothesis 13: Risk Tolerance (X4) as a mediator of Financial Literacy (X2) to trading intentions (Y1). The value of the indirect influence coefficient is 1.55 (table 15.) with pvalues = 0. 121 greater than 0.05. Thus, H0 is accepted, Risk tolerance is proven not to mediate Financial Literacy to Trading intentions

Hypothesis 14: Risk Tolerance (X4) as a mediator of Information and Communication Technology of Trading intentions (Y1). The value of the indirect influence coefficient is 0.31

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

with pvalues = 0. 756 (table 15.) greater than 0.05. Thus, risk tolerance is proven not to be a mediating variable for Information and Communication Technology of Trading intentions.

Hypothesis 15: Overconfidence as a mediator of Subjective Norms (X1) to trading intentions. The value of the indirect influence coefficient is 2.143 with pvalues = 0. 032 (table 15.) smaller than 0.05. Thus, H0 is rejected, overconfidence mediates Subjective Norms against trading intentions. Based on comparison with its significant direct influence (table 4.17), it can be concluded that the form of mediation is partial mediation

Hypothesis 16: Overconfidence as mediating the influence of Financial Literacy on trading intentions. The value of the indirect influence coefficient is 2.381 with pvalues = 0.017 (table 15.) less than 0.05. Thus, H0 is rejected, overconfidence mediates financial literacy to trading intentions. Based on comparison with its significant direct influence (table 4.17), it can be concluded that the form of mediation is partial mediation

Hypothesis 17: Overconfidence as a mediator of Information and Communication Technology (X3) to trading intentions (Y1). The value of the indirect influence coefficient is 0.356 with pvalues = 0.722 (table 15.) greater than 0.05. Thus, H0 is accepted, overconfidence is proven not to mediate Information and Communication Technology of Trading intentions.

DISCUSSION

The Influence of Subjective Norms on Intentions in Purchasing Shares

Processing of questionnaire data distributed to novice traders in North Sulawesi shows that Subjective Norms have a significant influence with a positive direction (path coefficient = 0.268) on stock purchase intentions (table 14). The results of this study are not in line with the research of Masrurun, Yanto (2015) which also found that subjective norms did not have a significant influence on stock purchase intentions. However, this study is in line with Gilbert's (2020) research which found that subjective norms have a significant influence on trading intentions. Indeed, subjective norms vary greatly among the populations we will examine. Fayhen (2016) said subjective norms cannot be uniform and vary in different places and times, according to beliefs, cultures and traditions. This is a possibility that causes the possibility of variations in research results. In an independent population environment, it is likely that a person has a firm stance and does not rely on others, so they are not easily influenced. In different contexts, the influence of family or professors or friends can be very strong and "wrong to ignore". This situation makes it possible that research results can vary

The Influence of Financial Literacy on Intentions in Purchasing Shares.

Data processing shows a positive influence (Line coefficient = 0.195) and significant of financial literacy on trading intentions (table 14). It can be said that the higher the financial literacy of a trader, the more qualified the trading intention. These results are in line with Al-Tamimi (2009). Al Tamimi found that in Saudi Arabia financial literacy has a significant influence on the decision of individual investors of the United Arab Emirates in making decisions to choose their portfolio. Investors who have high literacy will tend to use financial publications in making decisions, while investors who have low literacy tend to rely more on advice from colleagues, family. Research conducted by Xia, Wang, Li (2014) that measured the relationship of literacy in the Chinese capital market and its influence on investor transaction participation found that financial literacy has a positive relationship. Good knowledge of financial instruments and financial literacy makes investors sharper and more

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

accurate in the formation of their portfolios compared to those who do not have good financial literacy. (Asaad, 2015)

The Influence of Information and Communication Technology on the Intention to Purchase Shares.

This study found that there is a positive and significant influence of Information and Communication Technology on the intention to purchase shares. This research is in line with the research of Zulkifli et al (2008) found that there is an improvement in investors' investment decision making in the Malaysian stock market when using a hybrid model that utilizes advances in information and communication technology.

The results of this study are indeed quite unsurprising because in this digital era, information and communication technology influences almost all aspects of human life, including stock trading. From descriptive statistics it can be seen that most investors already have access to the world of digital information. Even digital trading platforms are no longer foreign and exclusive items for rookie traders in North Sulawesi. Some of the reasons expressed by respondents are among them, they focus more on fundamental and technical trading, and the application they use is very easy to master. In addition, they have access to application admins to ask questions and resolve technical issues of the application. However, in some studies it was found that technological advances do not guarantee the success of determining transaction strategies. Bijl et al (2016) examined the use of google search engine assistance in determining shares to be transacted, found that the use of google search to help determine the volume of shares to be traded actually gave negative results. The use of google search will only give positive results when transaction costs are not taken into account,

The influence of subjective norms on Risk Tolerance.

This study found that subjective norms had a positive influence (0.0225) and significantly on risk tolerance (table 14). It is proven that the influence of friends, family and experienced investors makes investors able to accept transaction risks well. When a trader receives input from friends, family or more experienced investors, he is psychologically more tolerant of risk. The knowledge that he is not alone in determining the strategy gives confidence in the level of risk that will be taken. However, Fayhen (2016) said subjective norms cannot be uniform and vary in different places and times, according to beliefs, cultures and traditions. Research conducted by Pahlevi and Oktaviani (2018) on factors that determine investor behavior in decision making proves that, subjective norms, perceptions of behavioral control, herd behavior have a positive influence on investor intentions in investing, and there is no influence on risk psychology.

The influence of subjective norms on Overconfidence.

The result obtained in this study is that subjective norms influence the level of overconfidence significantly. This study obtained the same results as Bree (2017). Bree found evidence that subjective norms positively influence *student trader* confidence. This means that environmental influences can cause overconfident bias. The influence of friends, parents, lecturers, and even experienced investors can be an important reference before selecting a prototype. But in certain situation confidence in the surrounding environment (whether friends, parents or more experienced investors) can result in excessive self-confidence. But in the end a trader has to execute and take responsibility for his transactions so they tend to use their personal judgment.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The influence of Financial Literacy on risk tolerance

This study found that there is a positive and significant influence of financial literacy on risk tolerance. Thus, it can be said that the better the level of literacy of a trader, the higher the risk tolerance of the trader. The results of this study are in line with the results of Permanasari, Kuncara (2020) research on the influence of financial literacy and its antecedents on risk tolerance, concluding that there is a positive and significant influence of financial literacy on risk tolerance. Mastery of good financial literacy allows a trader to accurately measure the level of risk he can and can accept. High financial literacy is proven to increase traders' risk tolerance.

The Influence of Financial Literacy on Overconfidence

Financial literacy was shown to have a positive influence (path coefficient = 0.457) and significantly on overconfidence in this study (table 14). In concept, high financial literacy will provide confidence for a trader in choosing which stocks to trade. The higher the financial literacy of the investor, the higher his confidence will be and can even reach the level of excessive confidence (Overconfident). Even at some point it can become a *boomerang* for traders who have high financial literacy when their confidence is too excessive (de Zwaan et al, 2017, 31-46). Traders with good financial literacy usually have higher self-confidence than those with low self-esteem. But at some point, excessive confidence due to feeling better and more understanding than other traders can lead to behavioral bias from traders. This was also found in a study conducted by Baker et al (2018) which examined the relationship of financial literacy, demographic factors and behavioral biases of investors. Baker found that in investors who have high financial literacy, behavioral bias is detected.

The influence of information and communication technology on risk tolerance

Hypothesis, the influence of Information and Communication Technology on risk tolerance proved insignificant. This result is not in line with several previous studies such as Sarah (2010), Chan (2016), Brigdet (2018) where in their research, it was found that information and communication technology makes traders more courageous in taking higher risks. Risk tolerance can increase with better mastery of technology and communication.

Researchers try to see from the other side that information technology today is not exclusive to some traders. The average trader has a good mastery of information technology. They are no longer confused in finding the source of information needed for their trading Intentions. Today there are many sources of information available digitally. This allows Information and Communication Technology to no longer be a variable that influences a trader's risk tolerance.

The influence of information and communication technology on overconfidence.

This research found that Information and Communication Technology did not have a significant influence on the overconfidence of rookie traders in North Sulawesi. This research is not in line with Hambro's (2019) research which found an increase in excessive confidence from investors in India who have high mastery of information technology. Rookie traders tend to feel overconfident in their ability in technology so that they have the potential to make transactions that are too risky. The results of this study imply that information and communication technology is no longer an extraordinary thing among rookie traders in North Sulawesi. Digital technology does not make traders become overconfident.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

The Influence of Risk Tolerance on trading intentions.

This study found that there was no significant influence of risk tolerance on the trading intentions of North Sulawesi rookie traders. This research is not in line with Hartarto's (2017) which found that the level of preference and risk tolerance greatly determines the choice of a trader's prototype. Traders will choose the instrument to be traded based on their preferred level of risk tolerance to the trade-off risk and return of the instrument to be chosen. The higher the risk tolerance of a trader, the more courageous they will be to have more risky investment instruments. Conversely, the lower a trader's risk tolerance, the more likely they will be to choose instruments and structure their portfolio with low-risk assets.

Research conducted by Nuryassin, Nurhadi (2021) on the influence of financial literacy and risk tolerance found that financial literacy and risk tolerance have a simultaneous or partial positive and significant influence on investors' investment decisions in the capital market. This result implies that rookie traders in North Sulawesi pay less attention to risk when choosing stocks to trade.

The Influence of Overconfidence on trading intentions.

The results of this study found that overconfidence has a significant influence on trading intention of novice traders in North Sulawesi. These results are in line with results; Bayes (2016) research on the influence of too high confidence in the preparation of a trader's portfolio. This can be because novice traders tend not to be careful in choosing stocks to be traded. When they have excessive self-confidence, they do not hesitate to make transactions even in situations of limited funds, experience and limited financial knowledge. In the results of the questionnaires, it is also seen that even traders who have high confidence try to own stocks with high returns with a reasonable level of risk. (Benigno, 2019)

CONCLUSION

Traders in Indonesia have rapid increasing number in the last 20 years. The existence of a stock exchange representative in all province of Indonesia brings the capital market closer to society in general and young people in particular. This research shows the existence of rookie traders in North Sulawesi. This research provides insight to rookie traders in North Sulawesi about the behavior of young traders in general related to trading intentions, subjective norms, financial literacy, Information and Communication Technology, risk tolerance and overconfidence. Empirically in this study has proven the significant influence of financial literacy and risk tolerance on trading intentions as well as the significant influence of financial literacy and Information and Communication Technology on overconfidence, the significant influence of subjective norms and financial literacy on risk tolerance. Detail result of the hypothesis tested are as follows: 1) Subjective norms have a positive and significant influence on trading intentions of rookie traders. 2) Financial Literacy has a positive and significant influence on the trading intention of rookie traders. 3) Information and Communication Technology has a positive and significant influence on the trading intentions of rookie traders. 4) Subjective norms have a positive and significant influence on the Risk Tolerance of rookie traders. 5) Subjective norms have a positive and significant influence on the level of Overconfidence of rookie traders. 6) Financial Literacy has a positive and significant influence on the Risk Tolerance of rookie traders. 7) Financial literacy has a positive and significant influence on the Overconfidence of rookie traders. 8) Information and Communication Technology does not have a significant influence on the Risk Tolerance of rookie traders. 9)

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

Mastery of Information and Communication Technology does not have a significant influence on the overconfidence of rookie traders. 10) Risk tolerance does not have a significant influence on trading intentions of rookie traders. 11) Overconfidence has a positive and significant influence on trading intention of rookie traders. 12) Risk Tolerance does not mediate the influence of subjective norms to Trading intentions. 13) Risk Tolerance does not mediate the influence of Financial Literacy to Trading intentions. 14) Risk Tolerance does not mediate the influence of Information and Communication Technology on trading intentions. 15) Overconfidence mediates the influence of subjective norms on trading intentions. The form of mediation is partial mediation. 16) Overconfidence mediates the influence of financial literacy on trading intentions. The form of mediation is partial mediation. 17) Overconfidence does not mediate the influence of Information and Communication Technology on trading intentions.

The Implications

1. This study provided theoretical implications for the development of behavioral finance in particular the study of investment behavior. The results of this study provide new empirical evidence based on the situation and behavior of existing traders in North Sulawesi.
2. The results provide practical implications for novice traders in North Sulawesi regarding their trading behavior. Factors that influence their trading intentions have been proven in this study. For this reason, rookie traders in North Sulawesi need to improve Information and Communication Technology mastery, Financial Literacy, control of confidence in trading Intentions. Rookie traders can draw reference from this to clarify their risk tolerance in creating a portfolio that balances risk and return.
3. The unsignificant influence of Risk tolerance on Trading Intentions can be interpreted as lack of risk consideration when rookie traded. This means rookie investors are vulnerable. Risk is important factor in investment. Rookie traders must be educated to consider the risk when choosing stocks to trade.

References

1. Afroze, T., Rahman, S. M. Z., Bristy, J. F., & Parvin, F. (2015). Factors Influencing Investment Decisions in Capital Market: A Study of Individual Investor in Bangladesh. European Journal of Economics, Finance and Administrative Sciences, (71), 80–96.
2. Al-Tamimi, H.A. and Anood Bin Kalli, A. (2009). “Financial Literacy and Investment Decisions of UAE Investors. The Journal of Risk Finance. 10 (5). 500-516.
3. Asaad, Colleen Tokar, 2015 financial literacy and financial behavior: Assessing knowledge and confidence, Financial Services Review; Atlanta Vol. 24, Iss. 2, (101-117)
4. Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes, 50(1), 179–211.
5. Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, N.J.: Prentice-Hall.
6. Baker, H.K., Kumar, S., Goyal, N. and Gaur, V. (2019), "How financial literacy and demographic variables relate to behavioral biases", Managerial Finance, Vol. 45 No. 1, pp. 124-146. *https://doi.org/10.1108/MF-01-2018-0003*

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

7. Barber, B.M., and Odean, T. 2000. Trading is Hazardous to your Wealth: The Common Stock Investment Performance of Individual Investor. Journal of Finance, 55 (2): 773 –806
8. Calvo, Guillermo and Enrique Mendoza, 2000, "Rational Herd Behavior and Globalization of Securities Markets," Journal of International Economics, Vol. 51, No 1 (June), pp. 79–113
9. Dayong Huang, Market States and International Momentum Strategies, 46 Q. Rev. Econ. & Fin. 437–446 (2006)
10. Godoi, Christiane K., Marcon Rosilene, dan Anielson Barbosa da Silva (2005) Loss Aversion: A Qualitative Study in Behavioural Finance. Managerial Finance, Vol. 31, No. 4, p. 46-56.
11. Grinblatt, M., & Keloharju, M. (2009). Sensation seeking, overconfidence, and trading activity. Journal of Finance, 64(2), 549–578.
12. Hayes, Suzanne K. (2010) Exploring Investor Decisions in a Behavioral Finance Framework. Journal of Family and Consumer Sciences, Vol. 102, No. 2, p. 56-60.
13. Huang, C., Chou, C., & Lin, P. (2010). Involvement theory in constructing bloggers' intention to purchase travel products. Tourism Management, 31(4), 513–526. https://doi.org/10.1016/j.tourman.2009.06.003
14. Jureviciene, Daiva dan Olga Ivanova (2013) Behavioral Finance: Theory and Survey. Mokslas: Lietuvos Ateitis, Vol. 5, No. 1.
15. Islamoğlu, M., Apan, M., & Ayvali, A. (2015). Determination of Factors Affecting Individual Investor Behaviours: A Study on Bankers. International Journal of Economics and Financial Issues, 5(2), 531–543.
16. Lillemo, S. C., Alfnes, F., Halvorsen, B., & wik, matte. (2013). Households' heating investments: The effect of motives and attitudes on choice of equipment. Biomass and Bioenergy 57(1), 4–12. https://doi.org/10.1016/j.biombioe.2013.01.027
17. Kahneman, D. and A. Twersky. 1979. "Prospect theory: An analysis of decision under risk." Econometrica, Vol. 47, No.2, pp.263-291
18. Markus Glaser and Martin Weber 2007, Overconfidence and trading volume, The Geneva Risk and Insurance Review, Vol. 32, No. 1 (June 2007), pp. 1-36 Palgrave Macmillan Journals
19. Masrurun Ilham, Yanto Heri 2015, Determinan Perilaku Investor Individu Dalam Pengambilan Keputusan Investasi Saham, Accounting Analysis Journal Vol 4 No. 4
20. Nofsinger, John R. 2005. Psychology of Investing. Second Edition. New Jersey. Prentice-Hall Inc Herding Behavior Model in Investment Decision on Emerging Markets: Experimental in Indonesia, The Journal of Asian Finance, Economics and Business Volume 8 Issue 153-59/2021 2288-4637 https://doi.org/10.13106/jafeb.2021.vol8.no1.053
21. Pascual-Ezama, D., Scandroglio, B., & Liaño, B. G.-G. de. (2014). Can we predict individual investors' behavior in stock markets? A psychological approach. International Academic Research Journal, 13(1), 25–35. https://doi.org/10.11144/Javeriana.UPSY13-1.cwpi

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

22. Phan, K. C., & Zhou, J., 2014. Factors Influencing Individual Investor Behavior: An Empirical Study of the Vietnamese Stock Market. American Journal of Business and Management, 3(2), 77–94. https://doi.org/10.11634/216796061403527

23. Putra, I. P. S., Ananingtiyas, H., Sari, D. R., Dewi, A. S., & Silvy, M. (2016). Pengaruh tingkat literasi keuangan, experienced regret, dan risk tolerance pada pemilihan jenis investasi. Journal of Business and Banking, 5(2), 271–282. https://doi.org/10.14414/jbb.v5i2.548

24. Preis, Tobias and Moat, Helen Susannah and Stanley, H. Eugene, Quantifying Trading Behavior in Financial Markets Using Google Trends (April 25, 2013). Scientific Reports, Vol. 3, pp. 1684; DOI:10.1038/srep01684 (2013), Available at SSRN: https://ssrn.com/abstract=2260189

25. Ramayah, T., & Harun, Z. (2005). Entrepreneurial Intention among the Student of Universiti Sains Malaysia (USM). International Journal of Management and Entrepreneurship, 1, 8-20

26. Ramayah T., Kamel Rouibah, M. Gopi, Gary John Rangel, A decomposed theory of reasoned action to explain intention to use Internet stock trading among Malaysian investors, Computers in Human Behavior, Volume 25, Issue 6, 2009, Pages 1222-1230, ISSN 0747-5632,

27. Remund, David L, 2010. Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. Journal of Consumer Affairs, 44: 276-295

28. Salem, R. (2019). Examining the investment behavior of Arab women in the stock market. Journal of Behavioral and Experimental Finance, 22, 151–160. https://doi.org/10.1016/j.jbef.2019.03.001

29. Sarkar, A. K., & Sahu, T. N. (2018). Analysis of Investment Behaviour of Individual Investors of Stock Market: A Study in Selected Districts of West Bengal. Pacific Business Review International, 10(7), 7–17.

30. Shanmugham, R., & Ramya, K. (2012). Impact of Social Factors on Individual Investors' Trading Behaviour. Procedia Economics and Finance. 2nd Annual International Conference on Accounting and Finance, 2, 237–246. https://doi.org/10.1016/S2212-5671 (12)00084-6

31. Shefrin, H and M. Statman. 1985. "The Disposition to Sell Winners too early and Ride Losers too long: Theory and Evidence." The Journal of Finance, Vol. 40, No.3, pp. 777-790, July

32. Sitinjak Elizabeth Lucky Maretha, Imam Ghozali 2012 The Investor Indonesia Behavior on Stock Investment Decision Making: Disposition Effect, Cognition and Accounting Information, *Research Journal of Finance and Accounting Vol 3, No 8,*

33. Sondari, M. C., & Sudarsono, R. (2015). Using Theory of Planned Behavior in Predicting Intention to Invest: Case of Indonesia. International Academic Research Journal of Business and Technology, 1(2), 137–141.

34. *Taffler, R. J. (2002) "What can we learn from behavioral finance?", Credit Control, Vol.23.*

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/4CZNW

35. Xia, T., Wang, Z. & Li, K. Financial Literacy Overconfidence and Stock Market Participation. Soc Indic Res 119, 1233–1245 (2014). https://doi.org/10.1007/s11205-013-0555-9

36. Xu, W., Zuo, Y., Gao, X., & Yao, M. (2019). The influencing factors of satisfaction and lending intention in online lending investment: an empirical study based on the Chinese market. Accounting & Finance, 59(52), 2045–2071. https://doi.org/10.1111/acfi.12551

37. Yohnson. 2008. "Regret Aversion Bias dan Risk Tolerance Investor Muda Jakarta dan Surabaya". Jurnal Manajemen dan Kewirausahaan Vol 01

38. Zheying Yao, Abed G. Rabbani, 2021, Association between investment risk tolerance and portfolio risk: The role of confidence level, Journal of Behavioral and Experimental Finance, Volume 30, 2021, 100482, ISSN 2214-6350

39. Zulkifli et al, 2008, Portfolio diversification: the role of information: Technology in future investment decision-making, International Journal of Electronic Finance, Vol. 2, No. 4, 2008