

Khairani Saladin¹
Marwan Asri²
Rahmat Eka Putra³
Alfi Husni Fansurya⁴

GENDER AND INVESTMENT LITERACY ON INVESTORS BEHAVIOUR: EVIDENCE FROM INDONESIAN BEGINNERS INVESTORS⁵

This study examines the literacy levels and investment behaviour of novice stock investors in Indonesia. Specifically, this study reveals the influence of investment literacy on risk tolerance, overconfidence, and herding behaviour, comparing men and women. The data was collected from 210 members of an Indonesian community for novice investors. Using the Mann-Whitney U test, the differences in investment behaviour between male and female investors were examined. This study also examines the effect of investment literacy on investor behaviour through structural equation modelling analysis. The findings show that female investors exhibit a greater aversion to risk and lower levels of investment confidence in comparison to their male counterparts. Furthermore, investment literacy significantly influences the behaviour of novice investors. However, the study found no significant differences between the two groups in terms of financial literacy and herding tendencies. The discussion includes implications for practice and potential avenues for future research.

Keywords: Investment literacy; Risk tolerance; Overconfidence; Herding behaviour
JEL: G4

1. Introduction

Male investors still outnumber female investors in Indonesia; however, the number of female investors is growing. According to the Indonesia Stock Exchange (IDX), there are 470 thousand female investors and 629 thousand male investors, with female investors growing by 965 per cent and male investors by 710 per cent from 2014 to April 2018. Kustodian

¹ Khairani Saladin, mrs, Tourism Department, Universitas Negeri Padang, +62 83 182 073 652, khairanisaladin@fpp.unp.ac.id.

² Marwan Asri, prof, Universitas Gadjah Mada, marwan.asri@ugm.ac.id.

³ Rahmat Eka Putra, mr, Politeknik Negeri Padang, +62 82 385 133 210, rahmatekaputra@pnp.ac.id.

⁴ Alfi Husni Fansurya, mr Tourism Department, Universitas Negeri Padang, +62 81 378 605 376, alfifansurya@fpp.unp.ac.id.

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Sentral Efek Indonesia (KSEI) found that 34.08 per cent of capital market investors are 21-30 years old (Kompas, 2018).

Men and women differ in social, economic, and investment perspectives. Men prefer riskier investments than women (Bernasek & Shwiff, 2001), leading to men's greater participation in stock transactions (Zoghلامي & Matoussi, 2009). Male investors invest a greater proportion of their capital in equities than female investors (Salem, 2019). Gender is a crucial factor in investment behaviour research due to the differences between men and women. However, gender-related research on investment behaviour appears futile because it is more prevalent in developed countries than in developing countries. One of the studies conducted in developing countries is Salem (2019), which found that female investors are more risk-averse than male investors, are more insecure in investing and tend to behave in herding behaviour or heed advice from others when investing. Salem (2019) concludes that this is because female investors have a lower investment literacy level than male investors.

Inexperienced investors who are new to the realm of investment often possess limited information and experience, leading them to rely heavily on their emotions rather than employing rational decision-making. Investment literacy places significant importance on comprehending investment concepts as a form of knowledge or the capacity to effectively handle investment activities (Van Rooij et al., 2011). According to Salem (2019), the level of investment literacy has a significant impact on various aspects of investors' behaviour, including their risk tolerance, level of self-confidence, and tendency to engage in herding behaviour. The presence of limited investment literacy has been found to be associated with suboptimal investment management (Jappelli, 2015).

The evidence also shows that women are less financially literate than men (Chen & Volpe, 2002; Delavande et al., 2008; Lusardi, 2010; Bucher-Koenen, 2014; Almenberg & Dreber, 2015). Thus, women's lesser financial literacy makes them risk-averse and less confident in their stock trading skills than males. Lusardi and Mitchell (2007) found that women investors have higher risk aversion due to their low financial understanding. Bucher-Koenen et al. (2012) found that women, especially young women, are less financially literate than males, resulting in unplanned retirements. While the researchers acknowledged that women have poorer financial expertise compared to males, they did not specifically investigate the impact of women's limited financial literacy on their trading behaviours.

Conversely, some research indicates that investors do not act logically (Shiller, 1999; Kiyilar & Acar, 2013) because of psychological biases and personality traits like overconfidence, which affects their emotions and makes them act illogically when investing (Barberis & Thaler, 2003). Aside from that, cultural and demographic considerations also play a role in investment decisions. According to Grable (2000), a person's investment decisions can be influenced by psychological variables, environmental factors, and individual variations such as age, gender, ethnicity, marital status, income, and education. This is also evident in the ways that male and female investors behave differently when it comes to taking on financial risks and trading stocks. It is believed that male investors are more aggressive than female investors when it comes to taking chances during stock purchases (Bernasek & Shwiff, 2001). In addition, compared to female investors, male investors engage in more active stock purchasing and selling operations (Zoghلامي & Matoussi, 2009). Male investors allocate a

larger portion of their capital to shares than female investors do, not only in industrialised nations but also in emerging nations (Salem, 2019).

Previous scholarly research has independently recognised three key variables that play a crucial role in elucidating disparities in stock market behaviour between males and females. These variables include risk tolerance, as identified by Dorn and Huberman in 2005, investment confidence, as highlighted by Barber and Odean in 2001, and investment literacy levels, as explored by Grinblatt and Keloharju in 2009. In general, the extant body of literature examines the investment behaviour of women, primarily in industrialised nations, with the aim of conducting gender-based analyses (Salem, 2019). This research expands upon existing scholarly works by incorporating Indonesian women and their investment behaviours. This research investigates the collective influence of three previously researched variables, namely risk tolerance, investment confidence, and literacy level, as well as herding behaviour, on women's investment behaviour in Indonesia. Additionally, this study underscores the significance of women's investment behaviour in constraining their involvement in stock investments.

Studying the phenomenon of the increasing presence of female investors and the dominance of young investors in Indonesia is an interesting exploration opportunity. This can be accomplished by examining and contrasting their investment behaviours with those of their male counterparts. The significance of this matter lies in the findings of numerous prior researches, which indicate that female investors exhibit greater rationality compared to their male counterparts (Salem, 2019). Consequently, the inclusion of female investors is regarded as a form of "arbitrage" inside the stock market. Numerous scholarly investigations have revealed that the rationality of investors is compromised (Shiller, 1999; Kiyilar & Acar, 2013) due to the impact of personality factors as well as psychological and demographic biases (Grable, 2000).

The primary focus of this study is directed towards the community of novice investors in Indonesia. Beginner Stock Investor Community is a prominent investor community in Indonesia that focuses on promoting investment literacy. It has gained recognition from the World Bank, as reported by Kontan (2019). The community of Beginner's Stock Investors comprises individuals who are new to investing as well as a subset of seasoned investors who assume the role of coordinators within the group. The Indonesian capital market greatly relies on its significant contribution to its sustainability. The objective of this study is to elucidate the disparities between male and female novice investors with respect to financial literacy, risk tolerance, overconfidence, and herding behaviour. In addition, it is important to clarify the impact of investment literacy on risk tolerance, as well as the impact of novice investors' overconfidence and herding behaviour.

2. Literature Review and Hypotheses Development

2.1. Gender and Investment Literacy

The importance of investment literacy lies in an individual's comprehension of investing principles (Van Rooij et al., 2011). This encompasses the acquisition of knowledge, development of skills, and cultivation of attitudes necessary for effectively addressing

investment-related challenges (Schwella & Nieuwenhuyzen, 2014). Limited knowledge and expertise in the field of investing may lead individuals to rely more on their emotions rather than employing rational thinking. Cole et al. (2009) claim that there exists a disparity in investment literacy between women and men, which subsequently leads to the constrained involvement of women in financial product investment.

According to Lusardi and Mitchell (2007), female investors exhibit a higher degree of risk aversion, which might be attributed to their comparatively poor financial and investment knowledge. According to the studies conducted by Lusardi and Mitchell (2008) as well as Bucher-Koenen et al. (2012), it has been observed that women exhibit lower levels of financial literacy compared to males. This disparity is particularly pronounced among young women, which therefore hinders their ability to effectively plan for their retirement. According to the findings of Almenberg and Dreber (2015), there exists a disparity in the participation of female investors in the stock market, which can be attributed to comparatively lower levels of both basic and advanced financial literacy. Moreover, there exists a notable disparity in risk tolerance between female investors and their male counterparts, resulting in a lower level of engagement in the stock market among women. According to the provided explanation, it suggests that women investors possess a comparatively lower level of investment literacy in comparison to their male counterparts, thereby constraining their participation in financial product investments. The hypothesis can be formulated in the following manner:

H1: Female investors have a lower level of investment literacy than male investors in the stock market.

2.2. *Gender and Investment Risk Tolerance*

Risk tolerance refers to the highest level of uncertain circumstances that an individual is ready to accept while making financial choices (Grable, 2000). Risk tolerance affects nearly every aspect of economic and social life. Risk tolerance indicates the extent to which an investor is prepared to accept the risks associated with their investment decisions. In general, Investors can be categorized into three groups based on their risk tolerance: risk seekers (those who are more tolerant of high-risk investments), risk-neutral investors, and risk-averse investors.

Men and women respond differently to investment risk in different ways. Female investors are more likely to be risk-averse than male investors (Hira & Loibl, 2008). Female investors prefer to invest in low-risk fixed assets such as gold and deposits. Power, position, and optimism can explain a person's perception and attitude towards risk, and women are believed to lack these three characteristics, particularly optimism, so they will only tolerate smaller risks when trading stocks (Flynn et al., 1994).

According to additional research, women are less risk-seeking than men (Powell & Ansic, 1997; Bernasek & Shwiff, 2001; Badunenko et al., 2010). This shows that the approach to financial decision-making between men and women is different. Sunden and Surrette (1998) conducted a study on investment behaviour among single men, single women, and married couples. They analyzed data from the Survey of Consumer Finances (SCF) to investigate gender disparities. Single women have a higher degree of risk aversion compared to single

males when making financial decisions, resulting in a lower allocation of funds towards risky investments. Numerous empirical researches support the idea that, despite making more conservative investment choices than males, women still generate higher returns on their capital (McDonald, 1997).

Based on this explanation, it can be concluded that female investors are more hesitant than male investors to assume higher investment risks due to the gender gap, particularly in optimism, so they will only accept smaller risks when trading stocks (Flynn et al., 1994). Bernasek and Shwiff (2001) and Badunenko et al. (2010) discovered that women are less risk-taking than males. Consequently, one can formulate a hypothesis as follows:

H2: Female investors are more risk-averse than male investors in the stock market.

2.3. Gender and Overconfidence

Overconfidence is defined as a person's propensity to overestimate their knowledge, skills, and the accuracy of the information they currently possess (Bhandari & Deaves, 2006). According to Graham et al. (2009), overconfidence is a biased behaviour that leads people to act primarily in accordance with their own beliefs. People frequently feel they know more about something than they actually do, and they can exhibit overconfidence in their skills or expertise. Even after only two or three transactions, it is not unusual for an investor to feel knowledgeable enough to make a variety of investment decisions (Shiller, 2007).

Because people frequently believe they know more than they actually do about a subject, they frequently exhibit excessive confidence in their skills or expertise. Higher confidence levels among investors are typically accompanied by activity in stock transactions, irrationality, and a willingness to take risks (Hassan et al., 2014). It is believed that men are more engaged in stock transactions and have greater confidence when it comes to investing than women (Zoghلامي & Matoussi, 2009; Barber & Odean, 2001; Graham et al., 2009; Christiansen et al., 2009). Consequently, the hypothesis is organised as follows:

H3: Female investors have a lower level of overconfidence than male investors in the stock market.

2.4. Gender and Herding Behaviour

Herding behaviour is a phenomenon that occurs when investors monitor or even replicate the behaviour of other investors (Bikhchandani & Sharma, 2000). Herding behaviour is universal, which means it can be experienced by anyone, regardless of their level of education, gender, age, or experience (Asri, 2015).

Given to gender disparity in society, males are more prone to occupying prestigious positions and exerting authority over women (Eagly, 1983; Carli, 1999) and are therefore viewed as more influential people. In many areas (such as investing), women are more susceptible to the influence of others than men, and as a result, they exhibit a greater propensity to adopt the viewpoints of others (Feingold, 1994). Women have a preference for seeking guidance from others, including their spouses or financial advisors, when it pertains to investing. This

is due to cultural factors as well as limited financial experience and knowledge (Naffee, 2014; Salem, 2019). In developing nations, women exhibit greater herding behaviour than males (Choi, 2016). Based on this explanation, it can be inferred that female investors are more likely than male investors to exhibit herding behaviour. Consequently, the hypothesis is organized as follows:

H4: In the stock market, female investors are more likely to exhibit herding behaviour than male investors.

2.5. Investment Literacy and Risk Tolerance

According to Ricciardi (2000), there is a positive correlation between the level of investing literacy and the propensity of investors to engage in risk-taking behaviour. This phenomenon occurs due to the recognition that investments characterized by higher levels of risk tend to yield correspondingly higher levels of returns, adhering to the principle of "high risk, high returns" and conversely, investments with lower risks often yield lower returns. Dwyer et al. (2002) and Aren and Zengin (2016) observed a positive correlation between investment literacy and risk tolerance. In their study, Dwyer et al. (2002) conducted an assessment of the risk-taking tendencies exhibited by both male and female investors in the context of mutual fund investments. The findings indicate that the disparities in risk-taking behaviour among mutual fund investors based on gender can be attributed to inherent variations in financial and investment knowledge between males and females.

In their study, Aren and Zengin (2016) examined the relationship between financial literacy, personality traits, risk tolerance, and individual investing preferences. The study revealed that there is a significant relationship between risk perception, amount of financial literacy, and individual investing preferences, as well as perceptions of risk. When investors possess a low degree of financial literacy, they tend to exhibit a preference for investments that entail lower levels of risk. Conversely, if their financial literacy level is high, they are more inclined to favour assets with higher levels of risk. Based on the argument, it can be inferred that investment literacy has the potential to impact the risk tolerance of investors. Investors exhibiting a heightened level of financial literacy are also shown to possess an elevated risk tolerance. A hypothesis can be formulated in the following manner:

H5: Investment literacy has a significant and positive effect on risk tolerance.

2.6. Investment Literacy and Overconfidence

The phenomenon of overconfidence can manifest in individuals because of their accumulated experiences, leading to a heightened sense of self-assurance in their abilities due to repeated testing and validation. Moreover, investors possessing a heightened sense of assurance hold the belief that they possess exclusive knowledge not accessible to others. Consequently, this further intensifies their need to generate financial gains through a range of transactions. According to Kramer (2016), an individual's level of investment literacy has the potential to enhance their confidence in making financial decisions. According to the findings of

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The study conducted by Josef and Vera (2017) examined the level of financial literacy among students pursuing economics education, as well as the potential impact of financial literacy on behavioural biases. According to the findings of his study, there exists a positive correlation between a heightened level of financial literacy and an increase in overconfidence. It can be inferred that individuals possessing a heightened degree of literacy will likely exhibit a commensurate level of self-assurance when engaging in investment activities. A hypothesis can be formulated in the following manner:

H6: Investment literacy has a significant and positive effect on overconfidence.

2.7. Investment Literacy and Herding Behaviour

Herding behaviour refers to an investor's propensity to heed the recommendations of others. As a result of a "fear of regret" and the belief that he is not exclusively responsible if an investment turns out to be unprofitable, an individual tends to choose to follow others. Moreover, a person's lack of investment knowledge also contributes to herding behaviour. Bucher-Koenen and Koenen (2015); Stolper (2018); and Baker et al. (2018) discovered that financial literacy negatively impacts herding behaviour.

The more inexperienced an investor is, the more likely they are to blindly follow the recommendations of those around them. Individuals with lower levels of financial literacy exhibit a reduced propensity to engage in active participation in the stock market, because they rely so heavily on others for guidance (Van Rooij et al., 2011; Li, 2014). According to research by Bucher-Koenen and Koenen (2015), financial illiteracy is correlated with a greater propensity to ignore the advice of one's broker. Stolper (2018) revealed that investors who had the least amount of financial literacy were also the most likely to follow advice. Financial literacy was demonstrated to have a strong aversive influence on herding behaviour (Baker et al., 2018). Since most people don't know what they're doing when it comes to investing, it seems to reason that they'll take the advice of those around them. This allows us to formulate a hypothesis as:

H7: Investment literacy has a significant and negative effect on herding behaviour tendencies.

3. Methods

3.1. Sample

This study used purposive sampling in determining the sample. The sample criteria consist of novice investors who have been actively engaged in stock trading activities within the past year. The research questionnaire is disseminated using an internet platform in order to enhance accessibility. Respondents who met the research criteria were 210 respondents. The description of the demographic profile of the research respondents can be seen in Table 1.

The prevailing demographic consisted of individuals aged 17 to 24 (55.7%). Then, respondents aged 25 to 34 (39.5%) followed. The majority of respondents (66.2%) have less than one year of experience. Then comes 1 to 3 years of experience (26.2%). This demonstrates that the sample category in this study met the criteria for a comparatively young beginner investor.

Table 1. Profiles of Respondents

Profiles	Frequency	Per centage
Gender		
Male	124	59%
Female	86	41%
Age		
17-24	117	55,7%
25-34	83	39,5%
35-44	8	3,8%
≥45	2	1%
Investment experience		
<1 years	139	66,2%
1-3 years	55	26,2%
3-5 years	12	5,7%
>5 years	4	1,9%

3.2. Measurement

This study encompasses four variables, particularly herding behaviour, overconfidence, risk tolerance, and investment literacy. All variables are observed using Salem (2019) indicators that have been modified for the Indonesian environment. There are eight questions in the investment literacy test. For example, “What is the main function of the stock market?” “In general, which of the assets below shows the highest fluctuations over time?” Multiple-choice and true/false questions are used to measure the investment literacy variable. There are a maximum of eight possible scores, and the minimum score is zero. When doing a comparative analysis, the number of possible scores is used.

The risk tolerance measurement consists of five items. Example items include: “Do you prefer investments with low risk and return over investments with higher risk and return?” The scale used is an ordinal scale, with the lowest number of potential weights indicating the investor is a risk averter being 5 and the highest weight being 17, which indicates the investor is a risk taker. The overconfidence measurement consists of five question items. Example items include: “How confident are you about investing in stocks based on your experience?”

The scale used is an ordinal scale, with the lowest potential weight being 5 and the highest being 20.

The measurement of the herding behaviour variable consists of four question items. Example items include: "When you want to invest in stocks, what do you rely on more?" "Do you follow the recommendations of friends, colleagues, or close relatives compared to your investment experience when investing in stocks?" The scale used is an ordinal scale, with the lowest number of potential weights being 4 and the highest being 15.

Analysis

The data were examined using the statistical software SPSS and WarpPLS 5.0 for the structural equation modelling (SEM). Hypotheses 1-4 utilize the Mann-Whitney U Test to ascertain the contrast in investment behaviour between female and male investors. The Mann-Whitney U test is employed to assess disparities between two distinct groups when the dependent variable consists of ordinal data. Hypotheses 5-7 are analyzed using SEM with WarpPLS 5.0.

Fulfilment of SEM assumptions needs to be done before testing the hypothesis. The SEM assumptions include identifying outliers and missing values, as well as identifying multicollinearity and common method bias. Next, carry out SEM-PLS analysis, which is grouped into two-step approaches. Specifically, there are two models involved in this context: the measuring model, also known as the outer model, and the structural model, often referred to as the inner model.

4. Result and Discussion

4.1. Mann Whitney U Test

This study compared Indonesian female investors to men using the Mann-Whitney U test. Tables 2 and 3 show that women's investment literacy is 107.78 points higher than men's, 103.92, but not statistically significant. Thus, investment literacy is similar for men and women. The mean rank results for males, 116.53, are statistically significantly higher than for females, 89.59, indicating that male and female investors experience differing risk tolerance.

Table 2. Mann Whitney U Test

Variable	Gender	N	Mean Rank	Sum of Ranks
IL	Female	86	107,78	9.269,5
	Male	124	103,92	12.885,5
RT	Female	86	89,59	7.705
	Male	124	116,53	14.450
O	Female	86	88,12	7.578
	Male	124	117,56	14.577
HB	Female	86	113,10	9.726,5
	Male	124	100,23	12.428,5

Note: RT: Risk Tolerance, O: Overconfidence, HB: Herding Behaviour

Table 3. Mann Whitney U Test

	IL	RT	O	HB
Mann-Whitney U	5.135.5	3.964	3.837	4.678.5
Wilcoxon W	12.885.5	7.705	7.578	12.428.5
Z	-0.461	-3.190	-3.503	-1.530
Asymp. Sig. (2-tailed)	0.645	0.001***	0.000***	0.126

***Significant at level 1%, **Significant at level 5%

Note: RT: Risk Tolerance, O: Overconfidence, HB: Herding Behaviour.

4.2. Model Fit Analysis

Table 4 below presents various indicators to assess model fit. The table indicates that the fit model is valid as the p-values for APC, ARS, and AARS are ≤ 0.05 . AVIF and AFBIF are 1.166 and 1.349, respectively, both below 3.3, indicating no multicollinearity in this research model. The GoF value of 0.308 indicates a medium appropriateness model for the research model (≥ 0.25). Given the model's satisfactory fit data, it served as the foundation for assessing the research (Putra et al., 2023).

Table 4. Model Fit

Indicator	Value	Decision
Average path coefficient (APC)	P=0,023	Accepted
Average R-squared (ARS)	P= 0,019	Accepted
Average adjusted R-squared (AARS)	P=0,041	Accepted
Average block VIF (AVIF)	1,166	Ideal
Average full collinearity VIF	1,349	Ideal
Tenenhaus GoF (GoF)	0,308	Medium

Note: P Sig < 0,05; AVIF Accepted ≤ 5 , Ideal $\leq 3,3$; AFBIF Accepted ≤ 5 , Ideal $\leq 3,3$; GoG Weak $\geq 0,1$, Medium $\geq 0,25$, Strong $\geq 0,36$ (Kock, 2018).

4.3. Validity and Reliability Analysis

The assessment of convergent and discriminant validity was conducted by a Confirmatory Factor Analysis (CFA). The findings demonstrated that all the items exhibited substantial loadings on their related constructs, surpassing a threshold of 0.5 (range from 0.6 to 0.92). In addition, the average variance extracted (AVE) for all three constructs surpassed the threshold value of 0.50 (Table 5), indicating that convergent validity was achieved (Hair et al., 2014).

Table 5. AVE value after indicator removal

	TR	ICL	PH
AVE	0,596	0,543	0,678

Note: RT: Risk Tolerance, O: Overconfidence, HB: Herding Behaviour.

Table 6 presents the AVE square root values of all constructs and proves that the data used in this study have met discriminant validity. The loading values for the TR, ICL and PH constructs were 0.772; 0.737 and 0.823. The construct demonstrates discriminant validity

when the indicator for the construct exhibits the largest loading value within its own group. Therefore, this study has successfully established discriminant validity.

Table 6. Discriminant Validity

	RT	O	HB
RT	0.772		
O	0.255	0.737	
HB	-0.309	-0.203	0.823

Note: RT: Risk Tolerance, O: Overconfidence, HB: Herding Behaviour

Table 7. Composite Reliability (CR)

Indicator	CR before removal of the indicator	CR after removal of the indicator
RT	0.775	0.815
O	0.739	0.779
HB	0.768	0.808

Note: RT: Risk Tolerance, O: Overconfidence, HB: Herding Behaviour

This study uses composite reliability (CR) in determining whether a variable is declared reliable or not. Composite reliability can be said to be a closer approximation assuming more accurate parameter estimates. Table 7 shows the composite reliability values for all constructs before and after removing indicators. The composite reliability value before and after removing indicators for each construct is more than 0.7, therefore all constructs are reliable.

4.4. Structural Model Analysis

Table 8 summarizes the entire hypothesis tested based on the data collected and obtained four supported hypotheses, namely hypotheses 2, 3, 5 and 7. As for the unsupported hypotheses, there are three hypotheses, namely hypotheses 1, 4 and 6. The following is a discussion of hypotheses that are supported or not supported.

The results of the hypothesis testing previously described revealed that hypothesis 1 was not supported. This is shown by the significance value of the investment literacy variable which is above 0.05 and the mean rank value between male and female investors which is not much different so that there is no difference between investment literacy (IL) of male and female investors. The unsupported hypothesis 1 in this study proves that the effectiveness of the program implemented by the IDX and the government in educating the public, both men and women regarding stock investment. This program is proven to increase the investment literacy of female investors so that it can balance the investment literacy of male investors. This finding supports the research of Lopus, Amidjono, and Grimes, (2019) which found that men and women were equally effective in participating in program for increasing financial literacy and perceptions of acquiring soft skills.

Table 7. Summary of hypothesis testing results

Hypothesis	Mean Rank		Sig. (2-tailed)	Description
	Female	Male		
H1: Female investors have a lower level of investment literacy than male investors in the stock market.	107.78	103.92	0.45	Not Supported
H2: Female investors are more risk-averse than male investors in the stock market.	89.59	116.53	0,001***	Supported
H3: Female investors have a lower level of overconfidence than male investors in the stock market.	88.12	117.56	0,000***	Supported
H4: In the stock market, female investors are more likely to exhibit herding behaviour than male investors.	113.10	100.23	0,126	Not Supported
Hypothesis	β		<i>p-value</i>	Description
Hipotesis 5: investment literacy – Risk Tolerance	0.152		0.012**	Supported
Hipotesis 6: investment literacy – Overconfidence	-0.160		0.009***	Not Supported
Hipotesis 7: investment literacy – Herding Behaviour	-0.124		0.034**	Supported

***Significant at level 1%, **Significant at level 5%

According to the results of the tests, hypothesis 2 was supported since the mean rank for males (116.53) was greater than the mean rank for women (89.59) and significance (0,001***). These results corroborate a study from Salem (2019) found that female investors are less risk-tolerant than male investors. Unlike women, who tend to be more cautious and less driven to take risks (Anbar, Eker, 2010), males are more inclined to take risks and hence tend to become overconfident in their abilities, especially when it comes to occupations like investing that are viewed as masculine (Beyer & Bowden, 1997). A person's perspective and attitude toward risk can be explained by their strength, position, and optimism; women are seen to lack these attributes, which leads them to only take smaller risks while trading stocks (Flynn et al., 1994). This finding also confirms Johan et al., (2022) that exposing safety orientation lowered risk perception.

The significance value of the Mann Whitney u test for the overconfidence variable is 0.000, and the mean rank value of male investors is 117.56, which is greater than the mean rank value of female investors, which is 88.12, thus supporting hypothesis 3. The results of this study support the conclusion made by Salem (2019) that male investors exhibit greater confidence than female investors when it comes to the stock market. This study aligns with the research conducted by Graham et al. (2002), Barber and Odean (2001), and Jacobsen et al. (2008), which found that male investors tend to exhibit more irrational and aggressive behaviour while engaging in stock transactions. This behaviour is attributed to their higher level of confidence in their own abilities and knowledge.

This study does not support hypothesis 4 regarding herding behaviour because the significance level is 0.126 (> 0.05), despite the fact that the mean rank of female investors is 113,10 points higher than that of male investors, which is 100,23. This unsupported variable is attributable to the growing investment literacy of women investors. According to Van Rooij et al. (2011) and Li (2014), investors with low levels of literacy will rely significantly on others. Thus, the investment knowledge of female investors is increasing, which leads them to emulate the investment knowledge of male investors, thereby decreasing their propensity to follow the advice of others.

The investment literacy path to risk tolerance has a positive ($\beta = 0.152$) and significant value at the 5% level (0.012), supporting hypothesis 5. These findings reflect Aren and Zengin's (2016) findings that financially literate people take more risks. Because financial literacy boosts confidence, investors are more likely to take risks because they expect larger returns. Furthermore, the study's findings show that hypothesis 6 is not supported since the beta (β) value is negative (-0.160) with a p-value of 0.009, which is less than 0.01. The unsubstantiated hypothesis concludes that overconfidence is negatively impacted by investment literacy. This conclusion validates the findings of Takeda, Takemura, and Koza's (2013) study, which found that overconfidence decreases as investment literacy increases. This finding aligns with the research conducted by Mudzingiri, Mwamba, and Keyser (2018), which indicates that students lacking sufficient financial literacy are more prone to exhibiting overconfidence. This is due to the fact that a more knowledgeable person will typically exercise greater caution when making decisions, especially when investing in stocks. When paired with prior unsuccessful investing experiences, investors with sufficient financial knowledge are more likely to take all relevant factors into account, making them even more cautious.

Hypothesis 7 is supported by the finding that the beta (β) value of investment literacy is negative on herding behaviour (-0.124; p-value 0.034), which is significant at the 5% level. This research is consistent with the findings of Bucher-Koenen and Koenen (2015), who discovered a negative correlation between financial literacy and the propensity to follow the recommendations of their brokers or financial advisors. Stolper (2016) discovered that investors with a low level of financial literacy tend to heed advice. In addition, Baker et al. (2018) discovered that financial literacy has a substantial negative impact on herding behaviour. This phenomenon occurs due to the presence of investors who possess a relatively limited degree of financial literacy, hence acknowledging their lack of expertise and relying on other sources to offer guidance and suggestions pertaining to their investment decisions. This attitude of following the advice of others is a result of the fear of regret, with the belief that if an investment is unsuccessful, it is not exclusively their fault (Asri, 2015).

5. Conclusions

The aim of this study is to analyse the investing behaviour of male and female novice stock investors in Indonesia and to investigate the impact of investment literacy on an individual's investment behaviour. The study of gender differences in Indonesia is of academic interest due to several factors. Firstly, there has been a notable increase in the number of female investors, surpassing their male counterparts. Secondly, it is predicted that the female population in Indonesia will soon exceed the male population. Lastly, women in Indonesia have a longer life expectancy compared to men. These factors contribute to the significance of examining gender disparities in the country. The overarching framework of this study is adopted from Salem's (2019) research, which concludes that investment behaviours such as risk tolerance, overconfidence, and herding behaviour are influenced by investment literacy. The conclusion drawn by Salem (2019) has not been empirically substantiated, thus prompting this study to simultaneously examine the aforementioned assertion.

The findings indicate that female investors have been shown to exhibit greater risk aversion compared to male investors. Meanwhile, it has been demonstrated that male investors exhibit greater confidence in their investment decisions compared to their female counterparts. Similarly, it has been demonstrated that investment literacy has a positive influence on risk tolerance and a negative influence on herding behaviour.

The research findings also indicate that there is no difference between males and females in investment literacy and herding behaviour. This can be attributed to the investment literacy enhancement programs implemented by both the government and financial institutions in recent years. On the other hand, there is evidence that the level of investment literacy has a negative relationship with the level of overconfidence. Increasing investment literacy does not automatically result in someone becoming overconfident. The results of this study align with the research conducted by Takeda et al. (2013), indicating that increased levels of investing literacy are linked to decreased levels of overconfidence.

5.1. Research Contributions

The theoretical contribution of this research is to provide evidence that investors are humans who are not completely rational, and gender can be a differentiator in their investment behaviour. The results of this research prove that men and women differ in their investment behaviour, such as risk tolerance and level of confidence in investing. This research also proves that investment literacy is an important factor in influencing investor behaviour, such as risk tolerance, overconfidence, and herding behaviour.

Investment literacy can influence investor investment behaviours such as risk tolerance, overconfidence, and herding behaviour. Therefore, the results of this research can help related parties continue to improve educational programs for the community. When investment literacy is adequate, the quality of the Indonesian capital market will also improve.

The findings of this study demonstrate that there is no distinct disparity in investment literacy levels between males and females. However, the number of male investors in the Indonesian capital market is still dominant compared to female investors. Male investors exhibit greater confidence and possess a greater propensity for taking risks compared to their female counterparts. Studies indicate that individuals who possess a higher level of self-assurance tend to engage in a greater number of stock transactions. Female investors are anticipated to possess greater confidence in their investment knowledge and talents, enabling them to actively participate in stock transactions. This is due to the perception that women excel at processing information. Furthermore, the government and other related parties can also adopt policies such as holding training to increase women's confidence in investing.

5.2. Limitations

There are various limitations inherent in this research. One primary constraint is to the utilization of ordinal scales including disparate ratings when assessing risk tolerance and herding behaviour. While the current measurement does not pose any issues, it is desirable

for future studies to incorporate alternative scales such as the 1-5 Likert scale or the 1-7 Likert scale.

One further constraint of this study pertains to its focus solely on the examination of disparities in investor conduct with respect to gender, as well as the direct impact of investment literacy on investment behaviour, specifically in relation to risk tolerance, overconfidence, and herding behaviour. Subsequent investigations are anticipated to explore the indirect impact of investment literacy on investor behaviour through the utilization of mediating variables, such as overconfidence. It is hypothesized that overconfidence mediates the relationship between investment literacy and risk tolerance, as well as herding behaviour. Additionally, the inclusion of the education variable as a control variable is proposed.

This study employs a survey methodology for the purpose of data collection. The survey approach is subject to limitations in terms of internal validity, as researchers are unable to exert control over all potential factors that may impact the variables under investigation. It is anticipated that forthcoming investigations may employ alternative methodologies, such as an experimental approach.

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