Journal of Infrastructure, Policy and Development 2024, 8(9), 5407.
https://doi.org/10.24294/jipd.v8i9.5407

Article

Exploration of the overconfidence behavior of millennial generation stock investors using the social network theory approach

Retnoning Ambarwati[1,*], Hadri Kusuma[2], Zaenal Arifin[3], Sutrisno[3]

[1] Economic Doctoral Program Student, Faculty of Business and Economics, Islamic University of Indonesia, 55584, Indonesia
[2] Accounting Department, Faculty of Business and Economics, Islamic University of Indonesia, 55584, Indonesia
[3] Management Department, Faculty of Business and Economic, Islamic University of Indonesia, 55584, Indonesia
*** Corresponding author:** Retnoning Ambarwati, retnoning.ambar72@gmail.com

CITATION

Ambarwati R, Kusuma H, Arifin Z, Sutrisno. (2024). Exploration of the overconfidence behavior of millennial generation stock investors using the social network theory approach. Journal of Infrastructure, Policy and Development. 8(9): 5407. https://doi.org/10.24294/jipd.v8i9.5407

ARTICLE INFO

Received: 23 March 2024
Accepted: 11 May 2024
Available online: 2 September 2024

Abstract: Indonesia's stock market has seen an increase in investment due to the ease of investing and the availability of information about stocks on different social media platforms. This research uses a social network approach to analyze overconfidence behavior in millennial stock investors. This research uses a descriptive quantitative method. The population used in this study are capital market investors in the Greater Solo area who are millennials (<30 years). The number of stock investors in the Greater Solo area is 60,542 investors. The sampling technique in this study was non-probability sampling using purposive sampling. This research uses the AMOS SEM (Structural Equation Model) analysis tool. The conclusion of this study is that millennial investors' overconfidence behavior increases influenced by financial literacy. investor skills. family ties and friendship ties. The contribution of this research can be applied to understand and educate millennial investors in order to overcome overconfidence behavior so that they can anticipate the losses received. This research may have implications for improving Behavioral Finance Integration Incorporating insights from behavioral finance into investment strategies can help mitigate the negative effects of overconfidence. The limitation in this study is that the scope used in the study is only in the greater solo area.

Keywords: overconfidence behaviour; millennial investor; stock investor

1. Introduction

Stock investment has increased along with the ease of investing and information about stocks that is easily accessible and spread across various social media. Indonesia's stock market has seen an increase in investment due to the ease of investing and the availability of information about stocks on different social media platforms. Indonesia's growing domestic capital market has insulated the country from the downturn seen in other countries in the region, with market capitalization increasing by an average of 12% (Endri et al., 2020). Despite the US Federal Reserve raising interest rates in 2022, Indonesia's stock market continues to grow, while neighbouring exchanges such as Singapore Exchanges (SGX) and Thailand stock exchange (SET) have seen their market capitalization shrink (Danila et al., 2020). The growth of Indonesia's stock market can be attributed to several factors, such as the government's focus on developing the domestic capital market, the listing of new companies on the exchange, and the absorption of sell-offs by a sizeable domestic investor class (Prihandini, 2020).

Overconfidence is a condition where a person makes an investment decision with a low-risk perception. However, this overconfidence condition also indicates that a person overestimates his ability to signal information. Overconfidence in investment

decision-making refers to a condition where a person shows excessive confidence in the ability and accuracy of their information, thus making them make investment decisions with low-risk perceptions (Inghelbrecht and Tedde, 2024). Millennial investors' lack of financial literacy can lead to overconfidence, potentially resulting in losses in investment decisions (Lei, 2019; Yang, 2020). The lack of financial literacy can indeed lead to overconfidence, which may result in losses in investment decisions.

Conversely, poor financial literacy can result in poor investment choices and financial practices (De Los Santos-Gutiérrez et al., 2022). Financial literacy has also been shown to be able to control the relationship between behavioural biases like overconfidence and investment decisions (Yeh and Ling, 2022). Furthermore, the relationship between financial literacy and overconfidence has been explored in various contexts, emphasizing the importance of financial knowledge in mitigating overconfidence. Investors with higher levels of financial literacy tend to exhibit better financial behaviors and decision-making, while those with lower financial literacy may make suboptimal investment choices (Balletto et al., 2022). Overall, enhancing financial literacy among millennial investors is essential to empower them with the knowledge and skills to make informed investment decisions, reduce overconfidence, and improve their overall financial well-being (Morgan and Long, 2020).

Inappropriate family and friendship ties increase overconfidence, which can harm stock investors. Inappropriate family and friendship ties issues can increase overconfidence in stock investors, harming their investment decisions (Septyanto et al., 2021). Friends and family investors often invest based on emotional ties rather than objective measures of a company's potential success, which can lead to misjudgement and overvaluation (Patil and Bagodi, 2021). This can result in a lack of professional feedback and evaluation, which is crucial for startups to identify viable market opportunities and scale up their business (Ungeheuer and Weber, 2021). In addition, if the company runs into difficulties and investors cannot return their investment, this can lead to damaged relationships and personal losses (Parveen et al., 2020). Investors need to communicate expectations and set payment terms to protect both parties.

The lifestyle of millennial investors who are very close to the views of YOLO (you only live once) and FOMO (fear of missing out) can give this generation characteristics that tend to be extravagant. A fictitious sensation of control and the conviction that stock selection techniques can duplicate returns can contribute to this overconfidence (Shrotryia and Kalra, 2023). To reduce overconfidence and make more informed investment decisions, millennial investors should focus on developing a long-term plan that aligns with their personal risk tolerance and sticks to it (In et al., 2020). This approach can help them avoid the pressure of FOMO and the YOLO mentality, which can often lead to waste and irrational investment decisions. The findings are that millennial investors can reduce their overconfidence to avoid making irrational investment decisions.

2. Literature review

The growth of Indonesia's stock market can be attributed to various factors that have contributed to its development (Devie et al., 2020). One key factor is the

government's focus on developing the domestic capital market, as evidenced by policies that improve regulations and transparency (Gali et al., 2020). Additionally, listing new companies on the exchange has played a role in providing investors with more opportunities and diversifying the market (Rahman et al., 2022). The active participation of a large class of domestic investors in absorbing sell-offs has also been crucial in providing liquidity and stability to the market (Hermuningsih et al., 2021).

An overestimation of one's abilities can lead to suboptimal choices, reducing the quality of investment decisions and performance (Aljughaiman and Chebbi, 2022). Research shows that overconfidence can lead individuals to take more risks, potentially resulting in higher investment returns in the stock market (Frihartina and Nurjannah, 2021). Overconfidence can affect various aspects of investment behaviour, such as trading volume and market volatility (Brunzel, 2021). Overconfident investors tend to engage in more trading activities, which can negatively impact their investment returns (Rossi-Goldthorpe et al., 2021). Moreover, overconfidence bias has been found to affect decision-making differently across various groups and can lead to irrational investment decisions (El-Ansary and Ahmed, 2023; Shrotryia and Kalra, 2023).

The concept of social network theory consists of kinship relationships with family (family ties) and friendship (friendship ties), which will influence changes in investor behavior. In this study, both are placed as new variables driving the emergence of investor overconfidence. The existence of these social influences and interactions has an impact on behavior change, as expressed in attitude change theory (Cheng and Shiu, 2019). Social network theory is critical in understanding investor behavior, especially in the context of overconfidence (Chen et al., 2021). Social networks influence information diffusion among investors, impacting their participation in capital markets and investment decisions (Yao et al., 2021). Behavioral theory emphasizes how attitudes, subjective norms and perceived control accurately predict behavioral intentions, thus explaining the complexity of human behavior (Banstola et al., 2020). The influence of social networking websites, such as Facebook, on the judgment of non-professional investors, demonstrates the unique impact of social media platforms on investors' decision-making processes (Llopis-Amorós et al., 2019).

Research has shown that financial literacy is crucial in moderating behavioural biases, such as overconfidence, among investors (Ameliawati and Setiyani, 2018). Investors with low levels of financial literacy may exhibit undiversified portfolios and make poor investment decisions, which can negatively impact their financial outcomes (Grohmann et al., 2018). Moreover, the deficiency of financial literacy has been linked to poor financial decision-making, less wealth accumulation, and suboptimal financial practices (Sharma, 2019). Studies have highlighted the significant impact of financial literacy on investment decisions, particularly among millennials (Bongomin et al., 2018). Better financial results have been attained as a result of financial literacy's positive influence on financial behaviour and investment decisions (Li et al., 2022; Xu et al., 2024).

Another study on the influence of overconfidence, herding behavior, and risk tolerance on stock investment decisions found that overconfidence and risk tolerance have a positive effect on investment decisions, while herding behavior does not have an effect (Aljifri, 2023). The notion that unwise investing choices might stem from overconfidence, which can be brought on by a lack of financial knowledge (So, 2022).

The study examined the impact of overconfidence bias, herding behaviour, and experienced regret on investing decisions (Rashid et al., 2022). The findings indicated that investors with a high degree of education and financial literacy are not influenced by overconfidence bias.

This research uses a social network approach to analyze overconfidence behavior in millennial stock investors. The importance of this research lies in the effort to identify what factors contribute to overconfidence behavior in millennial generation stock investors to provide deeper insights and practical solutions in overcoming this phenomenon. Previous research may have focused more on psychological or economic factors that influence investor behaviour, but this approach broadens the horizon by considering the role of social media in shaping perceptions and attitudes towards investing (Almansour et al., 2023; EL-Ansary and Ahmed, 2023). Incorporating elements of social network theory, this research explores how information, opinions and support from social networks can reinforce or undermine investors' confidence levels, and the impact this has on their investment decisions. This approach provides a more holistic understanding of the dynamics of millennial investment behaviour, recognising the increasingly dominant role played by social media in shaping perceptions and decision-making.

3. Method

This research adopts a descriptive quantitative method to investigate the overconfidence behavior of millennial stock investors in the Greater Solo area. The target population for this study comprises capital market investors who belong to the millennial generation (aged under 30) and reside in the Greater Solo area. According to available data, the total number of stock investors in this region amounts to 60,542 individuals. Sampling for this study was conducted using non-probability sampling techniques, specifically purposive sampling. This method was chosen to ensure that participants selected for the study possess the specific characteristics relevant to the research objectives.

Primary data for the study were collected through the administration of questionnaires in the field. The questionnaire technique was employed to gather responses directly from the participants. To reach a wider audience and increase the response rate, research questionnaires were distributed online using Google Forms. The distribution of the online questionnaires was facilitated through various social media platforms including WhatsApp, Facebook, Instagram, and email. Additionally, to assist with the distribution process and ensure access to a diverse pool of respondents, the Indonesia Stock Exchange Representative II, located at Graha Prioritas Building Lt. 1&2, Brigjen Slamet Riyadi No.302-304 Surakarta 57141, provided support. The collected data were analyzed using the AMOS SEM (Structural Equation Model) analysis tool. SEM allows for the examination of complex relationships among multiple variables and is particularly suitable for exploring the interplay between various factors influencing overconfidence behavior among millennial investors. By employing SEM, the study aims to provide a comprehensive understanding of the underlying mechanisms driving overconfidence in this demographic group within the context of stock market investment.

4. Result

4.1. Research model

The research model is then converted into an SEM model, as illustrated in **Figure 1**.

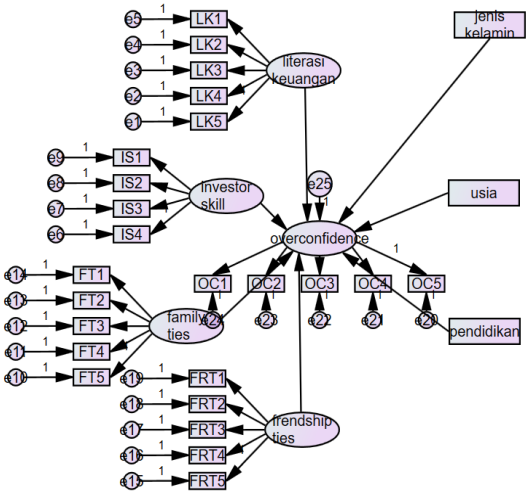

Figure 1. Research SEM model.

4.2. Normality test

The normality test used in this study was carried out by comparing the C.R. (critical ratio) value in the assessment of normality with a critical ± of 2.58 at the level of 0.01. The results of this study's normality testing will be presented in **Table 1** as follows:

Table 1. Normality test results.

Variable	Min	Max	Skew	*C.R.*	Kurtosis	*C.R.*
Age	1.000	4.000	−0.164	−1.259	−1.254	−4.821
Education	1.000	5.000	−0.256	−1.971	0.280	1.076
Gender	0.000	1.000	−0.256	−1.966	−1.935	−7.441
OC5	1.000	7.000	−0.812	−6.243	0.274	1.056
OC4	1.000	7.000	−0.778	−5.984	0.159	0.611
OC3	1.000	7.000	−1.017	−7.823	1.114	4.284
OC2	1.000	7.000	−0.776	−5.970	0.529	2.033
OC1	1.000	7.000	−1.131	−8.703	0.978	3.761
FRT1	1.000	7.000	−1.141	−8.778	1.003	3.856
FRT2	1.000	7.000	−1.307	−10.057	1.707	6.564
FRT3	1.000	7.000	−1.083	−8.328	1.143	4.396
FRT4	1.000	7.000	−1.048	−8.063	0.779	2.996
FRT5	1.000	7.000	−1.182	−9.091	1.302	5.008
FT1	1.000	7.000	−1.096	−8.431	1.028	3.955

Table 1. (*Continued*).

Variable	Min	Max	Skew	*C.R.*	Kurtosis	*C.R.*
FT2	1.000	7.000	−1.038	−7.980	0.613	2.359
FT3	1.000	7.000	−0.990	−7.614	0.636	2.448
FT4	1.000	7.000	−1.102	−8.479	1.023	3.936
FT5	1.000	7.000	−0.910	−7.001	0.594	2.286
IS1	1.000	7.000	−1.013	−7.794	0.802	3.085
IS2	1.000	7.000	−0.977	−7.519	0.620	2.386
IS3	1.000	7.000	−1.035	−7.964	1.161	4.467
IS4	1.000	7.000	−0.808	−6.217	0.337	1.296
LK1	1.000	7.000	−1.141	−8.774	1.329	5.111
LK2	1.000	7.000	−0.995	−7.657	1.142	4.391
LK3	1.000	7.000	−0.938	−7.215	0.983	3.781
LK4	1.000	7.000	−0.931	−7.164	0.840	3.230
LK5	1.000	7.000	−0.980	−7.538	0.972	3.737
Multivariate	-	-	-	-	256.693	61.109

Source: Data processed (2024).

4.3. Outlier test

The Outlier test is data whose value is extreme and remote from the overall data. Whether observation data falls into the outlier category can be seen from the probability value at the Mahalanobis distance number. The test results included 24 respondents whose data was categorized as outliers, with probability values (p_1 and p_2) <0.001. The outlier test used in this study used Mahalanobis *d*-square using $p < 0.001$ criteria. The number of questions used in this study to evaluate the power distance including outliers using the value of X_2 using degrees of freedom. The value of X_2 is obtained by entering the Excel program with the formula =CHIINV (0.001.24) so that the value is obtained at 45.31474662. The test results obtained the value of Mahalanobis *d* square. Based on the results of the processing of SEM AMOS Mahalanobis *d*-square in annex 1, a value of $X_2 < 45.31474662$ was obtained so that it can be concluded that there is no outlier data. Endogenous variables in this study are financial literacy, investor skills, family ties, and friendship ties.

4.4. Confirmatory factor analysis (CFA)

4.4.1. CFA variable endogen

Endogenous variables in this study are financial literacy, investor skills, family ties, and friendship ties.

Based on the results of the CFA test for the model image above, it can be seen that the fit model has not met the criteria, namely the probability value (>0.05), CMIN (<2.00), AGFI (>0.90), TLI (≥0.90) and NFI (≥0.90).

The test results of the endogenous variable CFA test model show that the criteria of the fit model have been met both from the probability., CMIN, RMSEA, GFI, AGFI, TLI, and NFI numbers so that it is continued with the CFA test, which provides results as shown in **Table 2**.

Based on **Table 2**, it can be concluded that the question items used to predict endogenous variables, namely financial literacy variables (LK1, LK2, LK3, LK4, LK5), investor skills (IS1, IS2, IS3, IS4), family ties (FT1, FT2, FT3, FT4, FT5) and friendship ties (FRT1, FRT2, FRT3, FRT4, FRT5) are valid for use because they have a *C.R* value of >1.96 and a probability of <0.05.

Table 2. Endogenous variable CFA test.

		Estimate	***S.E.***	***C.R.***	**Information**
LK1	Financial Literacy	1.000	-	-	-
LK2	Financial Literacy	0.845	0.097	8.719	Valid
LK3	Financial Literacy	0.890	0.110	8.073	Valid
LK4	Financial Literacy	0.939	0.120	7.817	Valid
LK5	Financial Literacy	0.664	0.106	6.287	Valid
IS1	Skills Investor	1.000	-	-	Valid
IS2	Skills Investor	0.931	0.130	7.148	Valid
IS3	Skills Investor	0.801	0.120	6.672	Valid
IS4	Skills Investor	0.900	0.143	6.290	Valid
FT1	Family Ties	1.000	-	-	Valid
FT2	Family Ties	0.905	0.133	6.802	Valid
FT3	Family Ties	0.779	0.147	5.316	Valid
FT4	Family Ties	0.699	0.116	6.025	Valid
FT5	Family Ties	0.818	0.124	6.600	Valid
FRT1	Friendship Ties	1.000	-	-	Valid
FRT2	Friendship Ties	1.397	0.160	8.733	Valid
FRT3	Friendship Ties	1.283	0.171	7.510	Valid
FRT4	Friendship Ties	1.122	0.167	6.715	Valid
FRT5	Friendship Ties	0.949	0.154	6.168	Valid

Source: Data processed (2024).

4.4.2. Exogenous variable CFA test

The exogenous variable of this study is the overconfidence variable.

From the results of CFA testing using the model several criteria show the model is not fit, namely prob and NFI. Based on the model test for the modified model, the exogenous variable VFA test shows that the model shows fit because it meets all the criteria of the fit model used, namely probability, CMIN, RMSEA, GFI, AGFI, TLI, and NFI. Ensure that the indicator or question of exogenous variables is overconfident regarding *CR* values and probabilities with *CR* > 1.96 and <0.05 probability. The results of the CFA test for the overconfidence variable are shown in **Table 3**.

Based on **Table 3** shows the question items for the overconfidence variables, namely OC1, OC2, OC3, OC4, and OC5, are validly used to predict overconfidence because they have a *C.R* value of >1.96 and Probability.

Table 3. Exogenous variable CFA test results.

	Estimate	***S.E.***	***C.R.***	**Information**
OC1 → Overconfidence	1.000	-	-	-
OC2 → Overconfidence	0.979	0.094	10.411	Valid
OC3 → Overconfidence	0.947	0.113	8.394	Valid
OC4 → Overconfidence	0.976	0.117	8.365	Valid
OC5 → Overconfidence	0.835	0.107	7.829	Valid

Source: Data processed (2024).

Based on the hypothesis testing model above. Testing is carried out with the help of AMOS SEM software to obtain test results, as listed in **Table 4.** The criteria for accepting the hypothesis are the *CR* value > 1.96 and the probability <0.05.

Table 4. Summary of hypothesis test results.

Information	**Hypothesis**	***C.R.***	***P***	**Test results**
Gender → Overconfidence	Control Variables	−1.008	0.313	Insignificant
Age →Overconfidence	Control Variables	1.472	0.141	Insignificant
Education → Overconfidence	Control Variables	0.768	0.442	Insignificant
Financial Literacy → Overconfidence	H1	3.532	0.000	H1 accepted
Investor Skill → Overconfidence	H2	2.520	0.012	H2 accepted
Family Ties → Overconfidence	H3	4.650	0.000	H3 accepted
Friendship Ties → Overconfidence	H4	3.064	0.002	H4 accepted

Source: Data processed (2024).

Based on the test results, these **Table 4** shows that financial literacy, investor skills, family ties, and friendship ties significantly influence overconfidence in millennial stock investors because they have a *CR* value of >1.96 and a probability of <0.05. In addition to endogenous variables. This study used a control variable, namely gender. Age and education level are used to control the influence of the exogenous variables above. The results of the data analysis in **Table 4** show that the three control variables do not influence the overconfidence of millennial stock investors.

4.5. Hypo plant test

This study examined the effect of financial literacy. Investor Skill. Family and friendship ties against millennial investors' overconfidence behavior with gender, age, and education as control variables.

Based on the hypothesis testing model above. Testing is carried out with the help of AMOS SEM software to obtain test results, as listed in **Table 5**. The criteria for accepting the hypothesis are the *CR* value > 1.96 and the probability <0.05.

Based on the test results, **Table 5** shows that financial literacy, investor skills, family ties, and friendship ties significantly influence overconfidence in millennial stock investors because they have a *CR* value of >1.96 and a probability of <0.05. In addition to endogenous variables. This study used a control variable, namely gender. Age and education level are used to control the influence of the exogenous variables above. The results of the data analysis in **Table 5** show that the three control variables

do not influence the overconfidence of millennial stock investors.

Table 5. Summary of hypothesis test results.

Information	Hypothesis	*C.R.*	*P*	Test results
Gender → Overconfidence	Control Variables	−1.008	0.313	Insignificant
Age → Overconfidence	Control Variables	1.472	0.141	Insignificant
Education → Overconfidence	Control Variables	0.768	0.442	Insignificant
Financial Literacy → Overconfidence	H1	3.532	0.000	H1 accepted
Investor Skill → Overconfidence	H2	2.520	0.012	H2 accepted
Family Ties → Overconfidence	H3	4.650	0.000	H3 accepted
Friendship Ties → Overconfidence	H4	3.064	0.002	H4 accepted

Source: Data processed (2024).

5. Discussion

Overconfidence in millennial investors caused by a lack of literacy can be overcome by providing educational spaces for millennials with high commitment. The utilization of digital media plays an essential role in educating millennial investors. The utilization of digital media is crucial in providing education to millennial investors. Emphasize the importance of social media use among Generation Y, highlighting affordability as a predictor of social media penetration (Nivedhitha and Sheik Manzoor, 2020). The extensive use of social media by millennials, especially as digital natives, and the impact of social networking platforms on this demographic (X. Lei et al., 2022). Social media plays a vital role in millennial investors' information dissemination, decision-making support, and financial literacy development (Lei and Ramos Salazar, 2022).

Investors need to be self-aware about the limitations of their knowledge and skills in making investment decisions. Encouraging them to realistically evaluate their confidence levels and acknowledge the uncertainties in the decision-making process can help reduce the risk of overconfidence (Parveen et al., 2020). Enhancing abilities and recognising the possible hazards of overconfidence can be achieved through a grasp of market psychology (Nadeem et al., 2020). Fostering learning among investors, where they regularly evaluate their investment performance, analyze their decisions, and learn from past mistakes can help improve their skills and awareness of the potential risks of overconfidence (Chaudary et al., 2022). This learning can reduce investor overconfidence, which is usually caused by biased prior beliefs and biased learning. This learning can reduce investors' overconfidence, which is usually caused by biased prior beliefs and biased learning (Nguyen, 2022). It can also help investors understand what went wrong in their investment articles, so that they can reduce overconfidence and improve their investment decisions. This learning can be done through seminars, webinars, or even online education, which can help investors understand the concept of overconfidence and how to reduce it (S. Lei and Ramos Salazar, 2022).

To overcome inappropriate Family and Friendship Ties, millennial investors should set clear boundaries between personal relationships and investment activities. Do not let financial gains or losses influence your relationships. Avoid discussing

investments in depth with family or friends if you feel there is a tendency to become overconfident or obtain unreliable information (Gherghina et al., 2020). This can help them reduce overconfidence and bring awareness to the potential risks of overconfidence. The education level of individual investors is the factor that most influences individual investor decisions (Gherghina et al., 2020). Learning can increase awareness of the possible hazards of overconfidence. Examples of learning strategies include assessing investment performance, examining choices, and picking up lessons from previous failures.

Providing comprehensive financial education to millennial investors can help them understand the importance of long-term financial planning, managing risk, and avoiding impulsive investment decisions influenced by YOLO or FOMO views. The risk of overconfidence can be decreased by encouraging young investors to develop meaningful and practical investing plans. By setting clear financial goals and a suitable investment strategy, they can limit impulsive behavior and make more planned decisions. Financial literacy plays a crucial role in empowering millennial investors to navigate the complexities of the financial markets effectively (Hikmah et al., 2019). By enhancing their financial knowledge, millennials can better comprehend the implications of their investment choices, assess risks prudently, and plan for their long-term financial well-being (Bongomin et al., 2017; Mindra and Moya, 2017). Educating millennials about the potential pitfalls of impulsive decisions driven by YOLO or FOMO can help them cultivate a disciplined investment approach focused on long-term growth and stability (Brailovskaia et al., 2023; Gupta and Shrivastava, 2022). Underscores the positive impact of financial literacy on investment decisions among millennials. Equipping millennials with essential financial knowledge and skills enables them to make more informed investment choices, manage risks effectively, and avoid succumbing to behavioral biases such as overconfidence or impulsivity (Lee and Na, 2023). Emphasizes the importance of understanding investor behavior, particularly among millennials, to address challenges associated with impulsive decision-making and psychological biases. Millennial investors need a Risk Management Strategy to emphasize the importance of a robust risk management strategy to reduce the impact of overconfidence.

6. Conclusion

The conclusion of this study is that millennial investors' overconfidence behavior increases influenced by financial literacy, investor skills, family ties and friendship ties, low levels of financial literacy can strengthen overconfidence tendencies, due to a lack of understanding of investment risks and financial management strategies. Underdeveloped investment skills can make millennial investors more vulnerable to impulsive and irrational investment decisions. In addition, influences from family relationships and friendships can also affect investment behavior, especially if based on YOLO (you only live once) and FOMO (fear of missing out) views. Therefore, it is important for millennial investors to improve financial literacy, develop investment skills, and manage the influence of personal relationships wisely, to reduce the risk of overconfidence and make smarter, fact-based investment decisions. The contributions of this study provide a better understanding of the factors that influence

overconfidence behavior in millennial investors, including low financial literacy, underdeveloped investment skills, and influences from family and friendship relationships. With this understanding, concrete steps can be taken to improve financial literacy, develop investment skills, and manage the influence of personal relationships wisely, thus helping to reduce the risk of overconfidence and make smarter investment decisions. This research may have implications for improving. Behavioral Finance Integration Incorporating insights from behavioral finance into investment strategies can help mitigate the negative effects of overconfidence. For example, portfolio management techniques can be adjusted to account for biases such as being overly optimistic and trading too much.

Author contributions: Conceptualization, RA, HK and ZA; methodology, ZA; validation, RA, HK, ZA and S; formal analysis, RA; investigation, RA; resources, HK; data curation, ZA; writing—original draft preparation, RA and HK; writing—review and editing, ZA and S; visualization, S; supervision, HK; project administration, RA. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Aljifri, R. (2023). Investor psychology in the stock market: An empirical study of the impact of overconfidence on firm valuation. Borsa Istanbul Review, 23(1), 93–112. https://doi.org/10.1016/j.bir.2022.09.010

Aljughaiman, A. A., & Chebbi, K. E. (2022). Do Investor Overconfidence and Loss Aversion Drive Saudi Firm Market Performance? The Moderating Effect of Corporate Governance. Sustainability, 14(16), 10072. https://doi.org/10.3390/su141610072

Almansour, B. Y., Elkrghli, S., & Almansour, A. Y. (2023). Unravelling the Complexities of Cryptocurrency Investment Decisions: A Behavioral Finance Perspective from Gulf Investors. International Journal of Professional Business Review, 8(7), e03265. https://doi.org/10.26668/businessreview/2023.v8i7.3265

Ameliawati, M., & Setiyani, R. (2018). The Influence of Financial Attitude, Financial Socialization, and Financial Experience to Financial Management Behavior with Financial Literacy as the Mediation Variable. KnE Social Sciences, 3(10), 811. https://doi.org/10.18502/kss.v3i10.3174

Balletto, G., Ladu, M., Milesi, A., et al. (2022). Walkable City and Military Enclaves: Analysis and Decision-Making Approach to Support the Proximity Connection in Urban Regeneration. Sustainability, 14(1), 457. https://doi.org/10.3390/su14010457

Banstola, R. S., Ogino, T., & Inoue, S. (2020). Self-esteem, perceived social support, social capital, and risk-behavior among urban high school adolescents in Nepal. SSM - Population Health, 11, 100570. https://doi.org/10.1016/j.ssmph.2020.100570

Candiya Bongomin, G. O., Munene, J. C., Ntayi, J. M., et al. (2017). Financial literacy in emerging economies. Managerial Finance, 43(12), 1310–1331. https://doi.org/10.1108/mf-04-2017-0117

Bongomin, G. O. C., Munene, J. C., Ntayi, J. M., et al. (2018). Nexus between financial literacy and financial inclusion. International Journal of Bank Marketing, 36(7), 1190–1212. https://doi.org/10.1108/ijbm-08-2017-0175

Brailovskaia, J., Ozimek, P., Rohmann, E., et al. (2023). Vulnerable narcissism, fear of missing out (FoMO) and addictive social media use: A gender comparison from Germany. Computers in Human Behavior, 144, 107725. https://doi.org/10.1016/j.chb.2023.107725

Brunzel, J. (2021). Overconfidence and narcissism among the upper echelons: a systematic literature review. Management Review Quarterly, 71(3), 585–623. https://doi.org/10.1007/s11301-020-00194-6

Chaudary, S., Zafar, S., & Tang, T. L.-P. (2022). Investors' financial aspirations excite investment decisions: current income, future inheritance expectations, and short-term and long-term decisions—The Matthew Effect in Pakistan's emerging markets. International Journal of Emerging Markets, 19(5), 1306–1334. https://doi.org/10.1108/ijoem-07-2021-1098

Chen, M., Zheng, Q. P., Boginski, V., et al. (2021). Influence maximization in social media networks concerning dynamic user behaviors via reinforcement learning. Computational Social Networks, 8(1). https://doi.org/10.1186/s40649-021-00090-3

Cheng, C. C., & Shiu, E. C. (2019). How to enhance SMEs customer involvement using social media: The role of Social CRM. International Small Business Journal: Researching Entrepreneurship, 37(1), 22–42. https://doi.org/10.1177/0266242618774831

Danila, N., Noreen, U., Azizan, N. A., et al. (2020). Growth Opportunities, Capital Structure and Dividend Policy in Emerging Market: Indonesia Case Study. The Journal of Asian Finance, Economics and Business, 7(10), 1–8. https://doi.org/10.13106/jafeb.2020.vol7.no10.001

De Los Santos-Gutiérrez, A., Molchanova, V. S., González-Fernandez, R., & García-Santillán, A. (2022). Financial Literacy, Savings Culture and Millennials Students Behavior Towards Retirement. European Journal of Contemporary Education, 11(2), 491–503. https://doi.org/10.13187/ejced.2022.2.491

Devie, D., Liman, L. P., Tarigan, J., et al. (2020). Corporate social responsibility, financial performance and risk in Indonesian natural resources industry. Social Responsibility Journal, 16(1), 73–90. https://doi.org/10.1108/srj-06-2018-0155

El-Ansary, O., & Ahmed, A. M. (2023). Does overconfidence blur out the investment efficiency? The managerial overconfidence and internal financing effect on investment efficiency: evidence from MENA region. International Journal of Emerging Markets. https://doi.org/10.1108/ijoem-06-2021-0931

EL-Ansary, O., & Ahmed, A. M. (2023). The moderating role of CEO overconfidence on debt maturity decisions: evidence from the MENA region. Journal of Financial Reporting and Accounting. https://doi.org/10.1108/jfra-03-2023-0121

Endri, E., Sari, A. K., Budiasih, Y., et al. (2020). Determinants of Profit Growth in Food and Beverage Companies in Indonesia. Journal of Asian Finance, Economics and Business, 7(12), 739–748. https://doi.org/10.13106/JAFEB.2020.VOL7.NO12.739

Frihartina, S. R., & Nurjannah, D. (2021). Response of LQ45 Stock Market on Indonesia Legislative and Presidential Election Result in 2019. Jamanika (Jurnal Manajemen Bisnis Dan Kewirausahaan), 1(1), 30–36. https://doi.org/10.22219/jamanika.v1i1.16019

Gali, N., Niemand, T., Shaw, E., et al. (2020). Social entrepreneurship orientation and company success: The mediating role of social performance. Technological Forecasting and Social Change, 160, 120230. https://doi.org/10.1016/j.techfore.2020.120230

Gherghina, Ștefan C., Botezatu, M. A., Hosszu, A., et al. (2020). Small and Medium-Sized Enterprises (SMEs): The Engine of Economic Growth through Investments and Innovation. Sustainability, 12(1), 347. https://doi.org/10.3390/su12010347

Grohmann, A., Klühs, T., & Menkhoff, L. (2018). Does financial literacy improve financial inclusion? Cross country evidence. World Development, 111, 84–96. https://doi.org/10.1016/j.worlddev.2018.06.020

Gupta, S., & Shrivastava, M. (2021). Herding and loss aversion in stock markets: mediating role of fear of missing out (FOMO) in retail investors. International Journal of Emerging Markets, 17(7), 1720–1737. https://doi.org/10.1108/ijoem-08-2020-0933

Hermuningsih, S., Prima Sari, P., & Rahmawati, A. D. (2021). Abnormal returns on indonesia stock exchange during COVID-19 pandemic. JABE (Journal of Applied Business and Economic), 7(3), 367. https://doi.org/10.30998/jabe.v7i3.8198

Hikmah, R., Djuwita, D., & Widagdo, R. (2019). Effect of Financial Literation and Financing-Effectivity toward the Growth of Small Enterprises: Case Study in Bank Syariah Mandiri, Majalengka. AL-FALAH: Journal of Islamic Economics, 4(2), 163. https://doi.org/10.29240/alfalah.v4i2.941

In, C., Kim, T., & Park, S. (2020). Key Audit Matters for Production-To-Order Industry and Conservatism. International Journal of Financial Studies, 8(1), 5. https://doi.org/10.3390/ijfs8010005

Inghelbrecht, K., & Tedde, M. (2024). Overconfidence, financial literacy and excessive trading. Journal of Economic Behavior & Organization, 219, 152–195. https://doi.org/10.1016/j.jebo.2024.01.010

Lee, Y., & Na, S. (2023). Fear of Missing Out: An Antecedent of Online Fan Engagement of Sport Teams' Social Media. Communication & Sport, 216747952311745. https://doi.org/10.1177/21674795231174565

Lei, S. (2019). Financial advice and individual investors' investment decisions. Applied Economics Letters, 26(13), 1129–1132. https://doi.org/10.1080/13504851.2018.1540832

Lei, S., & Ramos Salazar, L. (2022). Use of social networks in stock investment. International Journal of Bank Marketing, 40(1), 110–127. https://doi.org/10.1108/IJBM-04-2021-0158

Lei, X., Wu, H., & Ye, Q. (2022). Pregnant women's coping strategies, participation roles and social support in the online community during the COVID-19. Information Processing and Management, 59(3). https://doi.org/10.1016/j.ipm.2022.102932

Li, L., Li, Y., Wang, X., Xiao, T., & Zhu, H. (2022). Hedge fund networks, information dissemination, and stock price comovement: Evidence from China. International Review of Financial Analysis, 83. https://doi.org/10.1016/j.irfa.2022.102224

Llopis-Amorós, M.-P., Gil-Saura, I., Ruiz-Molina, M. E., et al. (2019). Social media communications and festival brand equity: Millennials vs Centennials. Journal of Hospitality and Tourism Management, 40, 134–144. https://doi.org/10.1016/j.jhtm.2019.08.002

Mindra, R., & Moya, M. (2017). Financial self-efficacy: a mediator in advancing financial inclusion. Equality, Diversity and Inclusion: An International Journal, 36(2), 128–149. https://doi.org/10.1108/edi-05-2016-0040

Morgan, P. J., & Long, T. Q. (2020). Financial literacy, financial inclusion, and savings behavior in Laos. Journal of Asian Economics, 68, 101197. https://doi.org/10.1016/j.asieco.2020.101197

Nadeem, M. A., Qamar, M. A. J., Nazir, M. S., Ahmad, I., Timoshin, A., & Shehzad, K. (2020). How Investors Attitudes Shape Stock Market Participation in the Presence of Financial Self-Efficacy. Frontiers in Psychology, 11. https://doi.org/10.3389/fpsyg.2020.553351

Nguyen, B. (2022). Small business investment: The importance of financing strategies and social networks. International Journal of Finance & Economics, 27(3), 2849–2872. Portico. https://doi.org/10.1002/ijfe.2302

Nivedhitha, K. S., & Sheik Manzoor, A. K. (2020). Get employees talking through enterprise social media! Reduce cyberslacking: a moderated mediation model. Internet Research, 30(4), 1167–1202. https://doi.org/10.1108/intr-04-2019-0138

Parveen, S., Satti, Z. W., Subhan, Q. A., et al. (2020). Exploring market overreaction, investors' sentiments and investment decisions in an emerging stock market. Borsa Istanbul Review, 20(3), 224–235. https://doi.org/10.1016/j.bir.2020.02.002

Patil, S., & Bagodi, V. (2021). A study of factors affecting investment decisions in India: The KANO way. Asia Pacific Management Review, 26(4), 197–214. https://doi.org/10.1016/j.apmrv.2021.02.004

Prihandini, W. (2020). Analyst Coverage and Corporate Tax Aggressiveness in Indonesia Stock Exchange. Binus Business Review, 11(1), 59–69. https://doi.org/10.21512/bbr.v11i1.5996

Rahman, M. M., Vu, X.-B. & Nghiem, S. (2022). Economic Growth in Six ASEAN Countries: Are Energy, Human Capital and Financial Development Playing Major Roles? Sustainability, 14(8), 4540. https://doi.org/10.3390/su14084540

Rashid, K., Tariq, Y. B., & Rehman, M. U. (2022). Behavioural errors and stock market investment decisions: recent evidence from Pakistan. Asian Journal of Accounting Research, 7(2), 129–145. https://doi.org/10.1108/ajar-07-2020-0065

Rossi-Goldthorpe, R. A., Leong, Y. C., Leptourgos, P., et al. (2021). Paranoia, self-deception and overconfidence. PLOS Computational Biology, 17(10), e1009453. https://doi.org/10.1371/journal.pcbi.1009453

Septyanto, D., Sayidah, N., & Assagaf, A. (2021). The Intention of Investors in Making Investment Decisions in Sharia Stocks: Empirical Study in Indonesian. Academic Journal of Interdisciplinary Studies, 10(4), 141. https://doi.org/10.36941/ajis-2021-0105

Shrotryia, V. K., & Kalra, H. (2023). COVID-19 and overconfidence bias: the case of developed, emerging and frontier markets. International Journal of Emerging Markets, 18(3), 633–665. https://doi.org/10.1108/ijoem-09-2020-1019

So, M. (2022). Analysis of the influence of enterprise managers' overconfidence on the overinvestment behavior of listed companies under the media reports. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.1018189

Ungeheuer, M., & Weber, M. (2021). The Perception of Dependence, Investment Decisions, and Stock Prices. The Journal of Finance, 76(2), 797–844. https://doi.org/10.1111/jofi.12993

Xu, H., Liu, Y., Song, B., et al. (2024). Local social network structure and promotion effectiveness in social commerce. Information Technology & People. https://doi.org/10.1108/itp-10-2021-0737

Yang, A. S. (2020). Investors' trust and financial participation: Latent difficulty measurement. Asia Pacific Management Review, 25(2), 87–98. https://doi.org/10.1016/j.apmrv.2019.10.001

Yao, Q., Li, R. Y. M., Song, L., & Crabbe, M. J. C. (2021). Safety knowledge sharing on Twitter: A social network analysis. Safety Science, 143. https://doi.org/10.1016/j.ssci.2021.105411

Yeh, T.-M., & Ling, Y. (2022). Confidence in Financial Literacy, Stock Market Participation, and Retirement Planning. Journal of Family and Economic Issues, 43(1), 169–186. https://doi.org/10.1007/s10834-021-09769-1