Social media impact on trading behavior: An examination among Indonesian young adult investors with capital market literacy as a mediator

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ABSTRACT

The decline in financial literacy about capital markets among Indonesians raises concerns that the growing number of investors is at risk of financial fraud. This study introduces a novel approach to comprehensively examine how Indonesian young adults make investment choices, mainly when influenced by social media and their different literacy levels about financial markets in the digital age context. The central and dual roles of capital market literacy as an independent and intervening variable expand upon the existing framework of related studies. An empirical online survey with a valid sample of 314 respondents from Indonesia is used as the primary data for the study. Using the partial structural equation model, our results indicate that both social media and capital market literacy directly and positively impact investors' trading behavior. This suggests that a deeper understanding of capital market literacy, coupled with the influence of social media, plays a crucial role in shaping how investors engage in trading activities. Furthermore, this study also found that the mediating role of capital market literacy significantly affects trading behavior, indicating its importance in explaining how social media influences investment decisions among young adults.

Keywords: Social Media; Trading Behavior; Capital Market Literacy; Stock Market; Investment

Introduction

Investments have gained significant popularity in recent times. According to data from the IDX, the number of mutual fund investors in Indonesia experienced a remarkable 78% surge in 2020, reaching a total of 3.2 million investors (Prasetyantoko, 2022). As of August 2021, a significant portion of these investors falls under the category of young investors, those under 40 years old, comprising 2.083 million investors, representing 78.9% of the total number of stock investors (Sonny, 2021). The prominent trend is the increasing involvement of Millennials and Gen Z, who dominate transactions in the country's capital market, making up a significant 80 percent share. However, despite its substantial growth and contribution to the number of stock market transactions, numerous investment fraud cases have plagued the nation over the past few decades. These scams have left victims not only defrauded of billions of rupiah but have resulted in losses reaching trillions of rupiah. The root cause of this issue lies in the lack of investment literacy and the massive influence of social media influencers among young investors. Many young individuals aspire to achieve substantial investment returns without fully understanding the associated risks.

The trading behavior of investors, whether buying, selling, or holding, is undoubtedly motivated by various factors. Factors related to investor behavior according to Loibl and Hira, (2009), namely the media used to obtain information, one of which is social media (Wang *et al*., 2016). Various kinds of information about stock performance platforms can be found on social media, like websites (Farkas & Keshk, 2019), blog (Rickett, 2016), and twitter (Chahine & Malhotra, 2018). Social media greatly influence young generations, and this influence is often mediated through social media influencers, as indicated by the research of (Arora *et al*., 2019) and (Jerslev, 2016). An influencer can be described as an individual who consistently generates content on various social media platforms and has many followers (Kim *et al*., 2021). A study from Handranata *et al*. (2022) found a positive and significant influence between stock influencers and stock market participation.

Interestingly, the study found that while they do listen to experts, individuals tend to follow the crowd more when influenced by friends, relatives, siblings, and parents (Gupta & Goyal, 2022). Sokolova & Kefi (2020) further support these findings by asserting that a strong engagement between social media influencers and their followers can also positively impact purchase intention, mirroring the effectiveness seen in the marketing domain (Yuan & Lou, 2020). However, despite these insights, it is noteworthy that more studies need to examine the influence of social media influencers as a determinant factor in stock

investments. This research gap highlights the need to further investigate this emerging area of interest.

In addition to social media influencers, financial literacy is recognized as a significant factor in shaping investor behavior (Dinç Aydemir & Aren, 2017). Proficiency in financial matters equips investors with a deeper understanding of monetary concepts and finance, which can be directly applied in the capital market. Numerous researchers from van Rooij *et al*. (2011), Klapper *et al*. (2013), Mouna & Jarboui (2015) and Sivaramakhrisnan *et al*. (2017) have posited a strong connection between financial literacy and decision-making processes within the capital market. Raut (2020) emphasized that investors with inadequate capital market knowledge may make irrational decisions, a phenomenon often observed in young adult investors. Previous studies consistently highlighted the worrisome fact that young adults often lack fundamental financial knowledge (Lusardi *et al*., 2014) and financial literacy (Lusardi & Scheresberg, 2013), leaving them not-prepared to confront the myriad financial challenges that life presents (Mottola, 2015). Therefore, it is becoming increasingly evident that acquiring financial literacy is not merely a desire but a necessary skill for young adults, as it can enable them to effectively navigate financial setbacks and make critical financial decisions (van Rooij *et al*., 2011). Financial literacy is "the understanding of fundamental economic and financial principles, coupled with the capacity to apply this knowledge and employ various financial skills to efficiently manage financial resources, thereby ensuring long-term financial stability and well-being" (Furrebøe & Nyhus, 2022).

Financial literacy plays a pivotal dual role in the context of investment behavior, serving as both an independent and mediator variable. Firstly, financial literacy is an independent variable, directly influencing investment behavior. Individuals with a higher level of financial literacy possess a better understanding of financial concepts, investment options, and risk factors (Lusardi *et al*., 2014; Copur & Gutter, 2019; Adil *et al*., 2022). Secondly, financial literacy is a mediator variable that facilitates the relationship between various external factors, such as media influence or social connections, and investment behavior (Fessler *et al*., 2020; Yahaya *et al*., 2019). For instance, when individuals are exposed to investment information on social media or through influencers, their level of financial literacy can determine how effectively they process and apply this information. Financially literate individuals are better equipped to discern credible sources, critically assess investment advice, and make rational decisions (Lusardi *et al*., 2014).

In contrast, those with lower financial literacy may struggle to differentiate between informed guidance and speculative recommendations, potentially leading to impulsive or

uninformed investment behaviors. To the best of our knowledge, limited research explores the nuanced ways financial literacy, specifically capital market literacy, mediates the influence of internal and external factors on investment decision-making. Bridging this gap, our study specifically focuses on the mediation role of capital market literacy, rather than general financial literacy, in the relationship between external influences, such as social media exposure or social connections, and investment behavior. The rationale for this focus is recognizing that capital market literacy is relevant for individuals engaged in investing and trading within the financial markets. Delving into this specialized subset of financial literacy, we aim to contribute to a more thorough understanding of the factors that shape investor behavior, especially among the young adult generation in Indonesia.

Literature Review

Trading Behavior

Investor trading behavior is part of financial behavior, which basically explains the biases that may occur when investors make investment decisions (Kapoor & Prosad, 2017). Investors are only sometimes rational in using information available in the market, so that investment decisions are no longer based on fundamental factors but rather follow the behavior of the majority of investors in the market or often called herding behavior. Herding behavior is characterized by investors mimicking the actions of their peers. At the same time, in the context of millennials, it refers to their inclination to trade stocks in alignment with the trading activities of fellow millennials.

In 2008, the Indonesian Capital Market witnessed a phenomenon characterized by herding behavior, where most foreign investors engaged in mass selling of their shares, primarily driven by liquidity needs. This behavior, in turn, triggered domestic investors, who did not necessarily require liquidity, to follow suit. Consequently, despite favorable macroeconomic and issuer fundamentals, the stock index experienced a significant and abrupt decline. In addition to herding behavior, investors occasionally succumb to rumors, market issues, or engage in noise trading activities. These behaviors often stem from investors' challenges in critically assessing circulating rumors or issues intentionally disseminated to sow uncertainty, particularly during bearish market conditions. The ultimate goal is to entice investors to buy shares when they encounter positive rumors and, conversely, to sell based on negative hearsay. However, trading shares based on rumors, without conducting thorough analysis, exposes investors to elevated levels of risk, potentially exceeding their acceptable risk thresholds

The explanation above places information as an important factor influencing investor decisions. This is by Ajzen's opinion that information consisting of knowledge, media, and experience will have an impact on investor behavior in the capital market. Therefore, this research will link the media as a source of information, knowledge and investor trading behavior.

Social Media

Researchers have used social media to explore the complex behavior of young adult investors in the capital market (Duz Tan & Tas, 2021). This is because the main capital market players, namely brokers and traders, really believe that content about the capital market on social media can move stock prices (Zhang *et al*., 2016). In its development, social media is not only a medium for providing data, information, and economic and financial news but has also become an online discussion medium for sharing ideas and information and getting solutions to problems related to investment decisions between investors and issuers (Chahine & Malhotra, 2018) or fellow investors (Talwar *et al*., 2021).

With interaction, investors' insight will increase and they can decide whether the information can be used in decision making. It can be concluded that interaction between investors and issuers as well as fellow investors can reduce information asymmetry, namely that no one party has more information than another party and can minimize biased investor behavior (Miller & Skinner, 2015), and increasing the level of financial literacy (Yanto *et al*., 2021). The ability of investors to interpret information read on social media is very important because often the content on social media is a repetition of news about the performance of certain shares and can lead some or even all investors to take irrational actions because they think the news is new information. In fact the news is "stale" news, even though (Jiao *et al*., 2016) found that shares that were often discussed on social media experienced an increase in volatility of around 50 percent and a 25 percent increase in trading volume from the previous period, and could form stock prices in a certain range (Sul *et al*., 2017).

In particular, the findings of Jiao *et al*. (2016) indicate that investors who take this opportunity are investors who have a good understanding of stock performance. Hence, they are able to get abnormal returns in that period, but in the following period these investors will categorize information repeatedly. discussed on social media as 'stale' news. Stock buying activities based on repeated news will lead investors to act speculatively and have the potential to influence stock price movements in a certain direction. The implication of the description above is that investors' ability to process information and news on social media is

very necessary (Ali Al Atoom *et al*., 2021), otherwise, social media will not have a significant impact on decision making (Ahmed *et al*., 2019), because investors do not understand the usefulness of the information read on social media. Based on the explanation above, the hypothesis proposed is as follows.

H_1:   Social media has a significant and positive effect on the trading behavior of young adult investors.

H_2:   Social media significantly and positively increases the capital market literacy of young adult investors.

Financial Literacy and Capital Market Literacy

Financial literacy is a concept of how an individual understands financial knowledge and the individual's ability to use this knowledge to improve the quality of decision making in order to achieve economic prosperity (Li, 2020). So even with limited resources, if individuals are equipped with good knowledge they will be able to make decisions in various fields, for example investment decisions (van Rooij *et al*., 2011; Gerrans & Hershey, 2017; Chahuan & Dey, 2020). Increasing individual financial literacy has become the main goal of capital market regulators because it has an impact on market efficiency. In this research, the terms financial literacy and capital market literacy are used interchangeably or are usually used for the same meaning as long as they are not specifically mentioned as terms for banking, insurance, pawnshops, and/or other financial institutions Even more, Ping *et al*. (2020) in their research have uses the term stock trading literacy as an equation for financial literacy.

Bannier & Neubert (2016) and Setiawan *et al*. (2022) using the term financial literacy, in their research found that individuals who understand well the benefits and risks of financial assets are more willing to invest in financial markets, including investing in risky assets and vice versa. The reluctance to invest in high-risk assets, like stocks, often stems from concerns about the rapid price fluctuations that can lead to capital losses. This is where the concept of segmented financial literacy, particularly capital market literacy, becomes crucial. Capital market literacy equips individuals with the knowledge and skills necessary to comprehend the dynamics of financial markets, including the intricacies of stock trading and the factors influencing stock prices. A higher level of capital market literacy empowers investors to make informed decisions, mitigating the perceived risks associated with stock market investments and recognize opportunities for capital growth. Understanding how the capital market works is one of the technical mastery skills because financial literacy is one way to

deal with market uncertainty and can increase positive sentiment towards the market return index and stock trading volume transactions simultaneously (Meng *et al*., 2020).

The central role of financial literacy in decision making is beyond doubt. However, it is necessary to pay attention to the measurement of financial literacy from several previous studies which still concentrated on knowledge of accounting information and financial analysis. In this research, the measurement of capital market literacy needs to be adjusted to the characteristics of the respondents, namely the majority of short-term investors. Hence, an understanding of technical analysis is essential.

H3: Capital market literacy significantly and positively affects the trading behavior of young adult investors.

The Mediating Role of Capital Market Literacy

The empirical studies described previously still concentrate on the role of capital market literacy as an independent variable. Several studies have found that the role of financial literacy as a mediating variable is powerful in the relationship between lotus of control and intention to invest in risk assets Dinc Aydemir & Aren (2017), overconfidence heuristic with biased investment decisions (Ahmad & Shah, 2022), as well as the impact of learning by level of participation in the stock market (Hermansson *et al*., 2022). This research will explore the relationship between social media and investors' stock trading behavior with the mediating role of capital market literacy because it can understand the complexity of bivariate relationships. Researchers consider the relationship between social media, capital market literacy and investor trading behavior to be linear, and this is proven by the findings of Xiao & Porto (2017) and Prasetya, *et al*. (2021) that financial literacy is a strong mediator between financial education, financial satisfaction, and comprehensive sustainability. Meanwhile, the non-linear relationship between variables actually places financial literacy not as a mediator between overconfidence and risk tolerance and investment decisions (Kasoga, 2021).

H4: Capital market literacy mediates the relationship between social media and trading behavior of young adult investors.

Methods

The primary objective of this study is to investigate the relationship between social media exposure, financial literacy, and investor behavior. Additionally, this study will assess the potential mediating role of financial literacy in the link between social media and investor

behavior. Data collection for this study utilized a standardized survey design to gather responses from individual investors. A convenience sampling technique was initially employed, where a message containing a link to the online questionnaire was disseminated across various social networking sites, including Instagram, Facebook, and LinkedIn. Furthermore, a snowball sampling method was applied to extend outreach to potential participants. A message with a questionnaire link was shared via WhatsApp and a query asking respondents if they would be willing to share the link with others.

Table 1. Constructs and Measurement Items

Constructs	Code	Items
Social Media (SM)	SM1	Social media makes it easier for me to get information about stock performance
	SM2	Social media displays comprehensive stock performance information
	SM3	Accurate stock performance information on social media
	SM4	Stock performance information on social media is up to date
	SM5	Stock performance information on social media is easy to understand
Capital Market Literacy (CML)	CML1	I can identify if the market is bullish
	CML2	I can identify if the market is bearish
	CML3	I can identify profitable stocks easily
	CML4	I can predict stock price movements
Investor Behavior (IB)	IB1	I was actively trading stocks
	IB2	I trade stocks, especially buy daily
	IB3	I trade stocks, especially sell daily
	IB4	I trade stocks, especially buy weekly
	IB5	I trade stocks, especially sell weekly
	IB6	I will be trading stocks shortly
	IB7	I will continue to trade stock in the future
	IB8	I encourage other investors to actively trade stocks
	IB9	I recommend certain stock to other investors

Table 2. Validity and Reliability

Constructs	Code	Loading Factor	AVE	CR	Cronbach Alpha
SM	SM1	0.820	0.701	0.950	0.929
	SM2	0.836			
	SM3	0.807			
	SM4	0.851			
	SM5	0.872			
CML	CML1	0.876	0.826	0.946	0.936
	CML2	0.928			
	CML3	0.903			
	CML4	0.926			
IB	IB1	0.746	0.662	0.921	0.893
	IB2	0.791			
	IB3	0.708			
	IB4	0.735			
	IB5	0.817			
	IB6	0.886			
	IB7	0.867			
	IB8	0.875			
	IB9	0.876			

The study's target population comprised individuals aged 18 to 29, specifically targeting young adults for several reasons. Firstly, this age group represents the largest demographic of social media users, spending the most time on social media compared to other age groups. Furthermore, young adults increasingly rely on social media as a primary source of information, including financial advice. By the recommendation by Hair *et al*. (2017), which suggests a sample size of at least 200 but not exceeding 400, a total of 388 individuals participated in the present study. However, 74 responses were excluded as they only completed part of the questionnaire. As a result, the final sample for this study comprised 314 respondents aged between 18 and 29 years old. The respondents' profile reveals that 66 percent of them are male investors, while 34 percent are female investors. Regarding their professions, the majority are private employees (33 percent), followed by self-employed individuals (26 percent), undergraduate students (23 percent), and others (18 percent). Approximately 73.8 percent of respondents report an income exceeding IDR 10,000,000

(with 1 USD equaling IDR 14,000), and the majority possess over a year of experience in stock trading. In terms of information sources, websites are the most commonly used by investors for gathering information on stock performance before making trading decisions, followed by Twitter and Instagram. The details of the constructs and measurement items used in the study are provided in Table 1, with social media items adapted from Ahn et al. (2007), capital market literacy items sourced from van Rooij et al. (2011), and investor behavior items drawn from Ahn et al. (2007).

The outer model evaluation examines the relationships between latent variables and the indicators that constitute them. This assessment involves three key tests: convergent, discriminant, and reliability tests. Assessment of loading factor values and average variance extracted (AVE) determines convergent validity. Validity is confirmed if loading factor values exceed 0.70, and AVE values exceed 0.50 (Hair *et al*., 2009). Reliability is assessed through composite reliability (CR) and Cronbach's alpha, with instrument reliability established if parameter values exceed 0.7. Table 2 shows that the validity and reliability tests have met the specified requirements, therefore, hypothesis testing can be continued.

Furthermore, the inner model evaluation conducted to assess the magnitude of relationships between constructs. Three key evaluations, including the coefficient of determination (R^2), predictive relevance (Q^2), and goodness of fit (GoF), are employed to examine the inner model's results. Table 3 shows that the R^2 evaluation results indicate that the CML and IB constructs can be accounted for by the exogenous variables to the extent of 45.2% and 43.3%, respectively, categorizing their relationship as moderate (Ghozali & Latan, 2012). In the Q^2 assessment, it is revealed that 68.9% of the IB variable's variation can be anticipated by the CML and SM constructs, with the remaining portion attributable to external variables not included in the research model. This 68.9% value falls into the strong model category (Hair *et al*., 2017). Furthermore, the calculated goodness of fit (GoF) value of 0.568 signifies the model's robust capability to elucidate empirical data. It categorizes it as "GoF Large," as it exceeds the threshold of 0.38 (Tenenhaus *et al*., 2005).
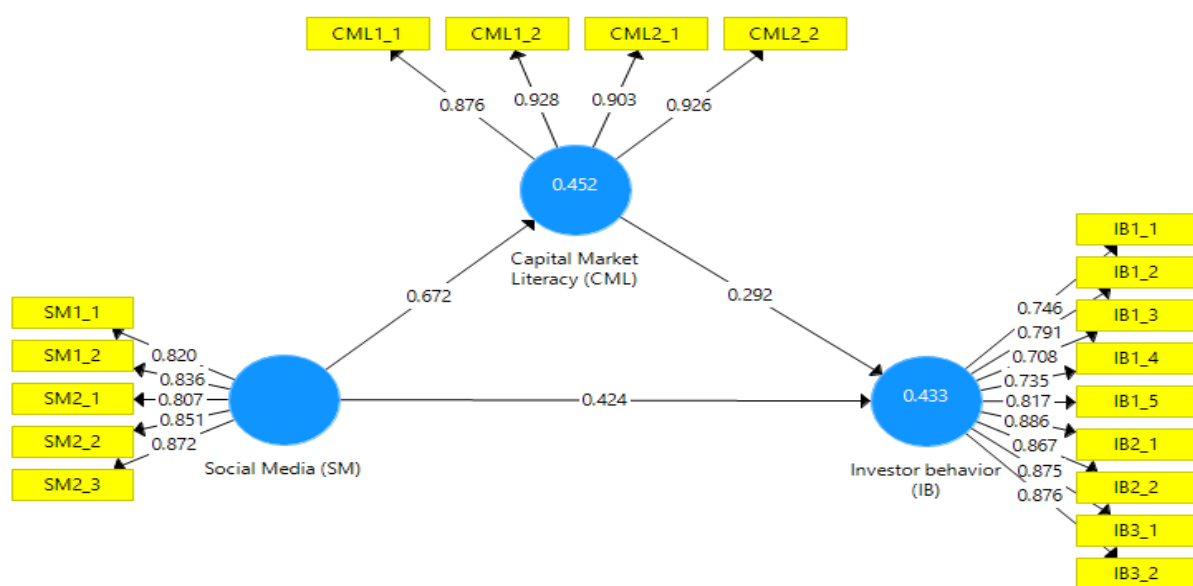
Table 3. Inner Model Evaluation

	R^2	Q^2	GoF
CML	0.452		
IB	0.433	0.689	0.568

Result and Discussion

Table 4. Results of Structural Model

Hypotheses	Std. Error	t-Statistics	P-Values	Decision
H_1 SM -> IB	0.108	3.939	0.000	Supported
H_2 SM -> CML	0.066	10.258	0.000	Supported
H_3 CML -> IB	0.111	2.626	0.009	Supported
H_4 SM -> CML -> IB	0.203	3.426	0.016	Supported

Figure 1. Validated Model

The results, as presented in Table 4, demonstrate a statistically significant relationship between social media (SM), capital market literacy (CML), and investor behavior (IB). social media (SM) exhibits a positive association with investor behavior (IB) and capital market literacy (CML), indicated by p-values less than 0.05 (0.000). moreover, capital market literacy (CML) is significantly related to investor behavior (IB) with a p-value of 0.009. Consequently, all hypotheses formulated in this study are supported. These findings suggest that the quality of stock performance information and the efficiency of the system on social media platforms positively influence investors' trading activity (H_1). Furthermore, H_2 receives significant and positive acceptance, implying that the better the quality of stock performance information and system on social media, the more informed investors become about stock market conditions. Likewise, the confirmation of H_3 implies that enhanced capital market literacy among investors leads to increased trading activity. The significant results of

the indirect effect test, represented by H_4, further affirm that capital market literacy is a mediating factor in the relationship between social media and trading behavior. In summary, capital market literacy plays a vital role in mediating the influence of social media on investors' trading behavior.

Social media has a positive effect on investor behavior, which means that the quality of information on social media can increase the trading of millennial investors. The loading factor of social media that contributes to increasing investor trading is that stock performance information on social media is easy to understand. This finding aligns with the theory of planned behavior that information media is related to individual behavior. In addition, the results of this study are consistent with previous studies that signal quality of information has an impact on investors' trading behavior (Epstein & Schneider, 2008). As global capital market risks increase substantially in response to the pandemic (Meng *et al*., 2020), the use of information on websites, especially clearly stated information such as buying or selling recommendations, is increasing (Miller & Skinner, 2015). Submission of stock performance information in easy-to-understand and straightforward sentences enables investors to make decisions as quickly as possible, whether to sell or buy shares. This is indicated by the activeness of investors in buying and selling trading by utilizing various information about the stock market on social media. But during the pandemic, the majority of investors sell daily, although there are still investors who buy weekly. The selling action by investors is a response to the declining stock price performance in the short term (Huang *et al*., 2015), and is a form of preventive investors to avoid losses.

Social media has a positive effect on the capital market literacy or CML of millennial investors. The social media loading factor that gives the biggest contribution to increasing investor CML is that stock performance information on social media is easy to understand. Investors perceive positively the information contained in social media which means that investors benefit from the information (Ahn *et al*., 2007). Various kinds of information related to stock performance indicators can be easily found on social media, both the opinions of capital market experts and reviews of investments that can increase investors' knowledge (Karaa & Kuğu, 2016) about capital market conditions. Submission of information easily really helps investors identify the performance of the capital market, whether in bullish or bearish conditions. In addition, this information is used as a guide by investors to predict stock price movements and identify profitable stocks. This knowledge is very much needed by investors, given the negative effects caused by the pandemic on stock returns (Alfaro *et*

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al., 2020), so that investors are able to determine when is the right time to enter and exit the market.

Capital market literacy has a positive effect on investors' trading behavior. The loading factor that gives the biggest contribution to investor behavior in trading is the ability of investors to identify capital market conditions, especially when the performance of the capital market is declining or bearish. This finding is consistent with studies conducted by Sivaramakrishnan *et al*., (2017); van Rooij *et al*., (2011) and Mouna & Jarboui (2015) that the main factor influencing investors' decisions to participate in the capital market is knowledge of stock instruments. The better investors' understanding of capital market instruments, the higher the involvement of investors in the capital market. The results of this study also prove that with high capital market literacy, young adult investors can minimize herding behavior, because at the same time not all investors have the same response to the information they receive. Different responses are a sign that investors have the ability to process information well because they understand the usefulness of the information received. This presentation supports the findings of Ali Al Atoom *et al*., (2021) and Yanto *et al*., (2021). However, in contrast to the study conducted by Hassan Al-Tamimi & Anood bin Kalli (2009), investors' financial knowledge has a negative effect on investors' investment decisions, this is due to differences in the characteristics of investors who are respondents (Haridas & Uchil, 2020). The findings of this study indicate that Indonesian millennial investors have good knowledge of the capital market. Investors with knowledge of capital market conditions, especially when the market is bearish, tend to sell. It makes sense that well-informed investors are well aware of the potential loss if they don't sell their shares immediately when market performance declines. However, because of their knowledge, investors still buy stocks during the pandemic. This is because investors tend to choose shares of companies that get good ratings even though the stock market is in a declining condition (Peng *et al*., 2015).

The study also proved that capital market literacy is able to mediate social media relations and investor trading behavior. In the midst of fluctuating Indonesian capital market conditions, capital market literacy has an extraordinary role for investors. Investor knowledge about capital market conditions can be obtained from various media, one of which is social media as a medium that is inseparable from the activities of the millennial generation (Wang *et al*., 2016). Information about stock performance on social media, especially websites as the media most often used by both male and female investors can significantly increase knowledge so that it will guide investors to make decisions, whether to sell or buy, especially

when buying actions because it is related to placing funds in certain shares, and if you misinterpret market conditions, the loss will be in the form of capital loss that investors will obtain. Therefore, the majority of investors buy, but on a weekly basis; this is a form of caution from investors. However, investors are selling daily and weekly because it is the right momentum to release share ownership amid rapidly changing and unpredictable market conditions due to the pandemic. Over time, investor confidence in the performance of the Indonesian capital market has begun to increase, this can be seen in the response of investors who are willing to trade in the future.

Conclusion and Suggestion

This study explores the impact of social media on investor trading behavior, with a focus on the mediating role of capital market literacy. The findings indicate that investors tend to exhibit rational behavior when the information they access on social media platforms is clear and easily comprehensible. Moreover, the research results highlight that capital market literacy has a positive effect on increasing investor participation in the capital market. Specifically, capital market literacy acts as a full mediator in the relationship between social media and investor trading behavior. This mediation is based on linear relationships and contributes to enhancing investors' understanding of the capital market dynamics. As a practical implication, the study suggests that investors should not solely rely on information for their investment decisions but should also consider their trading experience. Future research endeavors could delve into investigating the sustainability of investor trading, particularly in the context of Indonesia, given the prevalence of passive investors in the market.

References

Ahn, T., Ryu, S., & Han, I. (2007). The impact of Web quality and playfulness on user acceptance of online retailing. In Information and Management (Vol. 44, Issue 3). https://doi.org/10.1016/j.im.2006.12.008

Adil, M., Singh, Y., & Ansari, M. S. (2022). How financial literacy moderate the association between behaviour biases and investment decision? *Asian Journal of Accounting Research*, *7*(1), 17–30. https://doi.org/10.1108/AJAR-09-2020-0086

Ahmad, M., & Shah, S. Z. A. (2022). Overconfidence heuristic-driven bias in investment decision-making and performance: mediating effects of risk perception and moderating effects of financial literacy. *Journal of Economic and Administrative Sciences*, *38*(1),

60–90. https://doi.org/10.1108/jeas-07-2020-0116

Ahmed, Y. A., Ahmad, M. N., Ahmad, N., & Zakaria, N. H. (2019). Social media for knowledge-sharing: A systematic literature review. *Telematics and Informatics*, *37*(January), 72–112. https://doi.org/10.1016/j.tele.2018.01.015

Alfaro, L., Chari, A., Greenland, A. N., & Schott, P. K. (2020). *Aggregate and firm-level stock returns during pandemics, in real time* (No. w26950). National Bureau of Economic Research.

Ali Al Atoom, S., Khalaf Alafi, K., & Mohammad Al-Fedawi, M. (2021). The Effect of Social Media on Making Investment Decisions for Investors in Amman Financial Market. *International Journal of Innovation, Creativity and Change. Www.Ijicc.Net*, *15*(6), 934. www.ijicc.net

Arora, A., Bansal, S., Kandpal, C., Aswani, R., & Dwivedi, Y. (2019). Measuring social media influencer index- insights from facebook, Twitter and Instagram. *Journal of Retailing and Consumer Services*, *49*, 86–101. https://doi.org/10.1016/j.jretconser.2019.03.012

Bannier, C. E., & Neubert, M. (2016). Gender differences in financial risk taking: The role of financial literacy and risk tolerance. *Economics Letters*, *145*, 130–135. https://doi.org/10.1016/j.econlet.2016.05.033

Chahine, S., & Malhotra, N. K. (2018). Impact of social media strategies on stock price: the case of Twitter. *European Journal of Marketing*, *52*(7/8), 1526-1549. https://doi.org/10.1108/EJM-10-2017-0718

Chauhan, Y., & Dey, D. K. (2020). Does financial literacy affect the value of financial advice? A contingent valuation approach. *Journal of Behavioral and Experimental Finance*, *25*, 100268. https://doi.org/10.1016/j.jbef.2020.100268

Copur, Z., & Gutter, M. S. (2019). Economic, Sociological, and Psychological Factors of the Saving Behavior: Turkey Case. *Journal of Family and Economic Issues*, *40*(2), 305–322. https://doi.org/10.1007/s10834-018-09606-y

Dinç Aydemir, S., & Aren, S. (2017). Do the effects of individual factors on financial risk-taking behavior diversify with financial literacy?. *Kybernetes*, *46*(10), 1706-1734. https://doi.org/10.1108/K-10-2016-0281

Duz Tan, S., & Tas, O. (2021). Social Media Sentiment in International Stock Returns and

Trading Activity. *Journal of Behavioral Finance*, *22*(2), 221–234. https://doi.org/10.1080/15427560.2020.1772261

Epstein, L. G., & Schneider, M. (2008). Ambiguity, information quality, and asset pricing. *The Journal of Finance*, *63*(1), 197-228. https://doi.org/10.1111/j.1540-6261.2008.01314.x

Farkas, M., & Keshk, W. (2019). How Facebook influences non-professional investors' affective reactions and judgments: The effect of disclosure platform and news valance. *Journal of Financial Reporting and Accounting*, *17*(1), 80-103. https://doi.org/10.1108/JFRA-10-2017-0092

Fessler, P., Silgoner, M., & Weber, R. (2020). Financial knowledge, attitude and behavior: evidence from the Austrian Survey of Financial Literacy. *Empirica*, *47*, 929-947. https://doi.org/10.1007/s10663-019-09465-2

Furrebøe, E. F., & Nyhus, E. K. (2022). Financial self-efficacy, financial literacy, and gender: A review. *Journal of Consumer Affairs*, *56*(2), 743-765. https://doi.org/10.1111/joca.12436

Gerrans, P., & Hershey, D. A. (2017). Financial Adviser Anxiety, Financial Literacy, and Financial Advice Seeking. *Journal of Consumer Affairs*, *51*(1), 54–90. https://doi.org/10.1111/joca.12120

Ghozali, I & Latan, H. (2012). *Partial Least Square, "Konsep Teknik dan Aplikasi" Smart PLS 2.0*. Semarang: Badan Penerbit Universitas Diponegoro

Gupta, P., & Goyal, P. (2022). Herding the influencers for investment decisions: millennials bust the gender stereotype. *Journal of Financial Services Marketing*, 1-13. https://doi.org/10.1057/s41264-022-00195-4

Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial management & data systems*, *117*(3), 442-458. https://doi.org/10.1108/IMDS-04-2016-0130

Handranata, Y. W., Arief, M., Warganegara, D. L., & Hamsal, M. (2022). Does stock influencer on social media and financial well-being affect the stock market participation of the young generations during the Covid-19 pandemic? *Global Business and Finance Review*, *27*(5), 115–128. https://doi.org/10.17549/gbfr.2022.27.5.115

Haridas, H.P. & Uchil, R. (2020). Influence of investor sentiment and its antecedent on investment decision-making using partial least square technique. *Management Research Review, 43*(11), 1441-1459. https://doi.org/10.1108/MRR-06-2019-0254

Hassan Al-Tamimi, H. A., & Anood Bin Kalli, A. (2009). Financial literacy and investment decisions of UAE investors. *The journal of risk finance*, *10*(5), 500-516. https://doi.org/10.1108/15265940911001402

Hermansson, C., Jonsson, S., & Liu, L. (2022). The medium is the message: Learning channels, financial literacy, and stock market participation. *International Review of Financial Analysis*, *79*(June 2021), 101996. https://doi.org/10.1016/j.irfa.2021.101996

Huang, D., Jiang, F., Tu, J., & Zhou, G. (2015). Investor sentiment aligned: A powerful predictor of stock returns. *The Review of Financial Studies*, *28*(3), 791-837. https://doi.org/10.1093/rfs/hhu080

Jerslev, A. (2016). In the time of the microcelebrity: Celebrification and the YouTuber Zoella. *International Journal of Communication*, *10*, 5233–5251.

Jiao, P., Veiga, A., Walther, A., Grassi, B., Ito, R., Quigley, D., Ramadorai, T., Walther, S., & Wilson, M. (2016). *DEPARTMENT OF ECONOMICS DISCUSSION PAPER SERIES Social media, news media and the stock market Social media, news media and the stock market *. *805*. http://www.wsj.com/articles/tweets-give-birds-eye-view-

Kapoor, S., & Prosad, J. M. (2017). Behavioural Finance: A Review. *Procedia Computer Science*, *122*, 50–54. https://doi.org/10.1016/j.procs.2017.11.340

Karaa, I. E., & Kuğu, T. D. (2016). Determining advanced and basic financial literacy relations and overconfidence, and informative social media association of university students in Turkey. *Educational Sciences: Theory & Practice, 16*(6).

Kasoga, P. S. (2021). Heuristic biases and investment decisions: multiple mediation mechanisms of risk tolerance and financial literacy—a survey at the Tanzania stock market. *Journal of Money and Business*, *1*(2), 102–116. https://doi.org/10.1108/jmb-10-2021-0037

Kim, S., Chen, J., Cheng, T., Gindulyte, A., He, J., He, S., Li, Q., Shoemaker, B. A., Thiessen, P. A., Yu, B., Zaslavsky, L., Zhang, J., & Bolton, E. E. (2021). PubChem in 2021: New data content and improved web interfaces. *Nucleic Acids Research*, *49*(D1), D1388–D1395. https://doi.org/10.1093/nar/gkaa971

Klapper, L., Lusardi, A., & Panos, G. A. (2013). Financial literacy and its consequences: Evidence from Russia during the financial crisis. *Journal of Banking & Finance*, *37*(10), 3904-3923. https://doi.org/10.1016/j.jbankfin.2013.07.014

Li, X. (2020). When financial literacy meets textual analysis: A conceptual review. *Journal of Behavioral and Experimental Finance*, *28*, 100402. https://doi.org/10.1016/j.jbef.2020.100402

Loibl, C., & Hira, T. K. (2009). Investor information search. *Journal of economic psychology*, *30*(1), 24-41. https://doi.org/10.1016/j.joep.2008.07.009

Lusardi, A., Mitchell, O. S., & Curto, V. (2014). Financial literacy and financial sophistication in the older population. Journal of pension economics & finance, 13(4), 347-366. https://doi.org/10.1017/S1474747214000031

Meng, X., Zhang, W., Li, Y., Cao, X., & Feng, X. (2020). Social media effect, investor recognition and the cross-section of stock returns. *International Review of Financial Analysis*, *67*. https://doi.org/10.1016/j.irfa.2019.101432

Miller, G. S., & Skinner, D. J. (2015). The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of Accounting Research*, *53*(2), 221-239. https://doi.org/10.1111/1475-679X.12075

Mottola, G. R., & Kieffer, C. N. (2017). Understanding and using data from the national financial capability study. *Family and Consumer Sciences Research Journal*, *46*(1), 31-39. https://doi.org/10.1111/fcsr.12227

Mouna, A., & Jarboui, A. (2015). Financial literacy and portfolio diversification: an observation from the Tunisian stock market. *International Journal of Bank Marketing*, *33*(6), 808-822. https://doi.org/10.1108/IJBM-03-2015-0032

Peng, Y., & Jiang, H. (2015). *Leverage financial news to predict stock price movements using word embeddings and deep neural networks*. arXiv preprint arXiv:1506.07220.

Ping, L. Y., Heng, L. K., Ean, T. C. G., & Kai, O. J. (2020). Investigating the Effectiveness of Inter-Varsity Stock Challenge to Inculcate Stock Trading Literacy Amongst Youth. *International Journal of Academic Research in Business and Social Sciences*, *10*(5). https://doi.org/10.6007/ijarbss/v10-i5/7176

Prasetya, A., Rahardjo, K., Mawardi, M. K., Hidayat, R. R., & Prakasa, Y. (2021). The

mediation role of financial literation in ensuring MSMEs sustainability: An organizational characteristics perspective. *JEMA: Jurnal Ilmiah Bidang Akuntansi dan Manajemen*, *18*(1), 61-79.

Prasetyantoko, A. (2022, October 21). Nobel Prize in Economics and Recession. *Kompas*. https://www.kompas.id/baca/english/2022/10/21/nobel-prize-in-economics-and-recession

Raut, R. K. (2020). Past behaviour, financial literacy and investment decision-making process of individual investors. *International Journal of Emerging Markets*, *15*(6), 1243-1263. https://www.emerald.com/insight/content/doi/10.1108/IJOEM-07-2018-0379/full/html

Rickett, L. K. (2016). Do financial blogs serve an infomediary role in capital markets?. *American Journal of Business*, *31*(1), 17-40. https://doi.org/10.1108/AJB-08-2015-0024

Setiawan, M., Effendi, N., Santoso, T., Dewi, V. I., & Sapulette, M. S. (2022). Digital financial literacy, current behavior of saving and spending and its future foresight. *Economics of Innovation and New Technology*, *31*(4), 320–338. https://doi.org/10.1080/10438599.2020.1799142

Sokolova, K., & Kefi, H. (2020). Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of Retailing and Consumer Services*, *53*(January). https://doi.org/10.1016/j.jretconser.2019.01.011

Sonny. (2021, October 14). Millennial Generation, the Main Factor Increasing Retail Investors in the Capital Market. *Faculty of Economics and Business, Universitas Gadjah Mada*. https://feb.ugm.ac.id/en/news/3371-millennial-

Sul, H. K., Dennis, A. R., & Yuan, L. I. (2017). Trading on Twitter: Using Social Media Sentiment to Predict Stock Returns. *Decision Sciences*, *48*(3), 454–488. https://doi.org/10.1111/deci.12229

Sivaramakrishnan, S., Srivastava, M., & Rastogi, A. (2017). Attitudinal factors, financial literacy, and stock market participation. *International journal of bank marketing*, *35*(5), 818-841. https://doi.org/10.1108/IJBM-01-2016-0012

Talwar, M., Talwar, S., Kaur, P., Tripathy, N., & Dhir, A. (2021). Has financial attitude impacted the trading activity of retail investors during the COVID-19 pandemic? *Journal of Retailing and Consumer Services*, *58*(October 2020), 102341.

https://doi.org/10.1016/j.jretconser.2020.102341

Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M., & Lauro, C. (2005). PLS path modeling. *Computational statistics & data analysis*, *48*(1), 159-205. https://doi.org/10.1016/j.csda.2004.03.005

van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial Literacy and Stock Market. *Journal of Financial Economics*, *101*(2), 449–472.

Wang, Y., & Wang, Y. (2016, March). Using social media mining technology to assist in price prediction of stock market. In 2016 *IEEE International conference on big data analysis (ICBDA)* (pp. 1-4). IEEE.

Xiao, J. J., & Porto, N. (2017). Financial education and financial satisfaction: Financial literacy, behavior, and capability as mediators. *International Journal of Bank Marketing*, *35*(5), 805–817. https://doi.org/10.1108/IJBM-01-2016-0009

Yahaya, R., Zainol, Z., Osman, J. H., Abidin, Z., & Ismail, R. (2019). The effect of financial knowledge and financial attitudes on financial behavior among university students. *International Journal of Academic Research in Business and Social Sciences*, *9*(8), 22-32.

Yanto, H., Ismail, N., Kiswanto, K., Rahim, N. M., & Baroroh, N. (2021). The roles of peers and social media in building financial literacy among the millennial generation: A case of indonesian economics and business students. *Cogent Social Sciences*, *7*(1). https://doi.org/10.1080/23311886.2021.1947579

Yuan, S., & Lou, C. (2020). How Social Media Influencers Foster Relationships with Followers: The Roles of Source Credibility and Fairness in Parasocial Relationship and Product Interest. *Journal of Interactive Advertising*, *0*(0), 133–147. https://doi.org/10.1080/15252019.2020.1769514

Zhang, W., Li, X., Shen, D., & Teglio, A. (2016). Daily happiness and stock returns: Some international evidence. *Physica A: Statistical Mechanics and Its Applications*, *460*, 201–209. https://doi.org/10.1016/j.physa.2016.05.026