



Interdisciplinary Journal of Information, Knowledge, and Management

An Official Publication
of the Informing Science Institute
InformingScience.org

IJIKM.org

Volume 19, 2024

THE RELATIONSHIP BETWEEN ELECTRONIC WORD-OF-MOUTH INFORMATION, INFORMATION ADOPTION, AND INVESTMENT DECISIONS OF VIETNAMESE STOCK INVESTORS

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ABSTRACT

Aim/Purpose	This study investigates the relationship between Electronic Word-of-Mouth (EWOM), Information Adoption, and the stock investment of Vietnamese investors.
Background	Misinformation spreads online, and a lack of strong information analysis skills can lead Vietnamese investors to make poor stock choices. By understanding how online conversations and information processing influence investment decisions, this research can help investors avoid these pitfalls.
Methodology	This study applies Structural Equation Modelling (SEM) to investigate how non-professional investors react to online information and which information factors influence their investment decisions. The final sample includes 512 investors

Accepting Editor Ahmad Samed Al-Adwan | Received: April 8, 2024 | Revised: July 12, July 30, 2024 | Accepted: August 3, 2024.

Cite as: Vu, M. H., Doan, A. N. T., Dinh, A. X., Trinh, H. M., & Tran, L. P. (2024). The relationship between electronic word-of-mouth information, information adoption, and investment decisions of Vietnamese stock investors. *Interdisciplinary Journal of Information, Knowledge, and Management*, 19, Article 20. <https://doi.org/10.28945/5346>

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from 18 to 65 years old from various professional backgrounds (including finance, technology, education, etc.). We conducted a combined online and offline survey using a convenience sampling method from August to November 2023.

Contribution	This study contributes to the growing literature on Electronic Word-of-Mouth (EWOM) and its impact on investment decisions. While prior research has explored EWOM in various contexts, we focus on Vietnamese investors, which can offer valuable insights into its role within a developing nation's stock market. Investors, particularly those who are new or less experienced, are often susceptible to the influence of EWOM. By examining EWOM's influence in Vietnam, this study sheds light on a crucial factor impacting investment behavior in this emerging market.
Findings	The results show that EWOM has a moderate impact on the Information Adoption and investment decisions of Vietnamese stock investors. Information Quality (QL) is the factor that has the strongest impact on Information Adoption (IA), followed by Information Credibility (IC) and Attitude Towards Information (AT). Needs for Information (NI) only have a small impact on Information Adoption (IA). Finally, Information Adoption (IA) has a limited influence on investor decisions in stock investment. We also find that investors need to verify information through official sites before making investment decisions based on posts in social media groups.
Recommendations for Practitioners	The findings suggest that state management and media agencies need to coordinate to improve the quality of EWOM information to protect investors and promote the healthy development of the stock market. Social media platform managers need to moderate content, remove false information, prioritize displaying authentic information, cooperate with experts, provide complete information, and personalize the experience to enhance investor trust and positive attitude. Securities companies need to provide complete, accurate, and updated information about the market and investment products. They can enhance investor trust and positive attitude by developing news channels, interacting with investors, and providing auxiliary services. Listed companies need to take the initiative to improve the quality of information disclosure and ensure clarity, comprehensibility, and regular updates. Use diverse communication channels and improve corporate governance capacity to increase investor trust and positive attitude. Investors need to seek information from reliable sources, compare information from multiple sources, and carefully check the source and author of the information. They should improve their investment knowledge and skills, consult experts, define investment goals, and build a suitable investment portfolio.
Recommendations for Researchers	This study synthesized previous research on EWOM, but there is still a gap in the field of securities because each nation has its laws, regulations, and policies. The relationships between the factors in the model are not yet clear, and there is a need to develop a model with more interactive factors. The research results need to be further verified, and more research can be conducted on the influence of investor psychology, investment experience, etc.
Impact on Society	This study finds that online word-of-mouth (EWOM) can influence Vietnamese investors' stock decisions, but information quality is more important. Policymakers should regulate EWOM accuracy, fund managers should use social media to reach investors, and investors should diversify their information sources.
Future Research	This study focuses solely on the stock market, while individual investors in Vietnam may engage in various other investment forms such as gold, real estate, or

cryptocurrencies. Therefore, future research could expand the scope to include other investment types to gain a more comprehensive understanding of how individual investors in Vietnam utilize electronic word-of-mouth (EWOM) and adopt information in their investment decision-making process. Furthermore, while these findings may apply to other emerging markets with similar levels of financial literacy as Vietnam, they may not fully extend to countries with higher financial literacy rates. Hence, further studies could be conducted in developed countries to examine the generalizability of these findings. Finally, future research could see how EWOM's impact changes over a longer period. Additionally, a more nuanced understanding of the information adoption process could be achieved by developing a research model with additional factors.

Keywords Electronic Word-of-Mouth (EWOM), information adoption, investment decisions, social media groups, stock investors

INTRODUCTION

Vietnam, one of the fastest-growing economies in Asia, is expected to be promoted from frontier market status to emerging market status. The Vietnamese economy is expected to grow by 5.5% in 2024, making it one of the fastest-growing economies in the world, according to the East Asia and Pacific Economic Update released by the World Bank (WB) on April 1, 2024. Based on the statistics of the IMF in 2023, Vietnam continues to lead the top five largest economies in Southeast Asia. It ranks first in the group of emerging Asian economies (including ASEAN countries, China, and India). Thus, it can be said that Vietnam is a rising star in emerging markets and is representative of the Asian market.

The trading activities of investors on stock exchanges have become more dynamic since the COVID-19 pandemic, largely due to the explosion of information technology and the rise of powerful communication platforms. Social media groups that focused on stocks, such as those on Facebook and Zalo, have emerged as leading sources of information (Kumar & Luo, 2023).

For investors, especially newcomers, social media groups serve as crucial channels for finding, updating, and exchanging market information. The stock market is particularly vulnerable to false rumors, which can cause significant fluctuations in stock prices. Given the popularity, convenience, and growth of social media platforms, information spreads swiftly among investors (Huang et al., 2022). The sheer volume of shared content and discussions is immense, reflecting the market's frenzy and the influx of new investors. This has led to the creation of thousands of social media groups dedicated to stock trading (L. Luo et al., 2020).

However, while these groups can be valuable reference channels, many have also become hotspots for the dissemination of false information (Meel & Vishwakarma, 2019). As a result, Electronic Word-of-Mouth (EWOM) about stocks proliferates across social media platforms like Facebook, Zalo, and YouTube, often with chaotic, dangerous, and misleading news. This environment complicates information gathering for investors and significantly impacts their investment decisions.

Empirical studies have identified specific characteristics and trends in the Vietnamese stock market. Cao et al. (2021) show that psychological factors such as heuristics, framing, and sentiment play a key role in shaping the investment behavior of investors in the Vietnamese stock market, and EWOM through social media and stock forums has a significant influence on the investment decisions of individual investors. Some Vietnamese studies, such as Nguyen (2020), have specifically analyzed the influence of EWOM on investor behavior. The study finds that EWOM on stock forums has a significant impact on the investment behavior of individual investors in Vietnam; in addition, factors such as credibility, quality, and usefulness of EWOM information play an important role in shaping

investment decisions. Overall, these research findings provide empirical evidence on the role of psychology, EWOM, and media coverage in the Vietnamese stock market and emphasize the importance of EWOM in investor behavior. However, there are still limitations in our understanding of how these factors interact and influence investor decision-making in the Vietnamese context. More research is needed to explore areas such as the long-term impact of EWOM on investment decisions and portfolio performance, as well as the effectiveness of potential interventions such as social media regulations or educational programs in mitigating negative behavioral tendencies. By addressing these gaps in knowledge, we can gain a more comprehensive understanding of the Vietnamese stock market and develop strategies to improve market efficiency and investor well-being.

This paper examines the relationship between EWOM, information adoption, and the stock investments of Vietnamese individual investors. The goal is to identify actionable recommendations for government agencies, securities companies, and social media platforms to enhance the quality and accuracy of EWOM. By optimizing the EWOM landscape, this study aims to empower individual investors with reliable and trustworthy information sources, ultimately improving their experience and decision-making in the Vietnamese stock market. Our study seeks to answer these research questions:

- (1) What are the fundamental theoretical concepts related to EWOM information, and what factors influence individual investors' acceptance of EWOM information regarding stock investments?
- (2) What is the current state of application and development of EWOM information in stock information services on social media platforms in Vietnam?
- (3) How do individual investors assess the quality of EWOM on Vietnamese social media platforms?
- (4) What are the positive/negative factors of EWOM? What is the degree of impact of these factors on individual investors' acceptance of EWOM regarding stock investments?
- (5) Are there differences in the degree of impact of factors among different demographic groups of individual investors in the Vietnamese stock market?
- (6) What recommendations should be made so that government agencies, securities companies, investment funds, etc., can apply and develop electronic word-of-mouth to improve the quality of EWOM for individual investors?

To address these questions, we conducted a combined online and offline survey. The final sample involved 512 individual investors from Vietnam who were 18 years old or above and had the right to trade stocks on the stock exchanges in Vietnam. The participants represented a diverse range of age groups, including Gen X (born between 1959 and 1980), Gen Y (born between 1981 and 1995), and Gen Z (born between 1995 and 2006). They also came from various professional backgrounds (including finance, technology, education, etc). We apply Structural Equation Modelling (SEM) to investigate how non-professional investors react to online information as well as what information factors influence their investment decisions. The results indicate that the information quality of EWOM is the strongest factor influencing information adoption, followed by information credibility and attitude toward information. The need for information has a minimal impact on information adoption. Lastly, information adoption has only a small influence on investors' investment decisions.

The structure of this study is as follows. The next section provides the literature review in EWOM. The following section describes the data and methodology. Then, the results are analyzed, followed by the conclusion.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

LITERATURE REVIEW

Developed from the concept of Word-of-Mouth, Electronic Word-of-Mouth is defined as “all activities that transmit information about the features or characteristics of a specific type of goods and services or their providers on an Internet platform aimed at customers” (Litvin et al., 2008). In the stock investment process, investors are customers, whereas business owners and stock brokerage companies are the providers of goods and services. Information about stocks, shares, and investments is widely spread in the media and social media groups in the form of EWOM, making investors approach this type of information much easier.

The impact of EWOM on investors’ adoption of information and investment behavior can be explained by two theories. The first one is behavioral finance theory (Shefrin, 2000). According to Shefrin (2000), behavioral finance is the study of how psychology affects financial decisions. Behavioral finance studies the influence of psychology on the behavior of market participants and their behavior in the market. EWOM that is strongly shared on social media groups will have a significant impact on the psychology of investors.

The second theory explaining how EWOM can affect the investment behavior of stock investors is the signaling theory (Ross, 1977). This study shows that when a company sends a signal about its status, investors will buy or sell the stock based on the signal. Cotter et al. (2012) suggest that the quality of the signal depends on the reputation of communication channels, such as forums or social media groups. For information to be more reliable, it needs to be sent through the most visible signals, which are easy to approach. Naveed et al. (2019) suggest that investors make buy or sell decisions using information from social media groups. Acting as a signal, EWOM can substitute for unavailable information and thus help investors in the market compare and evaluate the quality of different investment options (Sanders & Boivie, 2004). Companies are not the only source of signals about investment activities. External information channels, such as EWOM, can also signal investment activities (Fombrun & Shanley, 1990). An increase in the number of EWOMs can increase awareness and familiarity about investments, thereby making these investments more likely to be considered by investors. Some studies find evidence supporting this argument (i.e., Bi et al., 2017; Naveed et al., 2020).

To study the behavior of investors, many studies use the Information Adoption Model (IAM). Sussman and Siegal (2003) have proposed IAM by integrating the Technology Acceptance Model (TAM) (Silva, 2015) with the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986). The model indicates that the information adoption of individuals is impacted by two independent factors: source credibility and argument quality. IAM is widely used in research on online communication in many studies related to EWOM, such as M. Y. Cheung et al. (2009), Shu and Scott (2014), Erkan and Evans (2016), etc. Studies use this model to study the psychology and behavior of individual investors in the stock groups, which contain EWOM with characteristics such as information quality, reliability of information sources, and adoption of information.

There are several studies on EWOM and its impact on stock investment. Innayah et al. (2022) examine the impact of EWOM on investment intentions in the capital market. The results show that EWOM directly affects corporate brand image and trust, and brand trust affects investment intention. Xun and Guo (2017) investigate the relationship between customers’ EWOM on Twitter about service experience with businesses and business value. The results show that positive EWOM is associated with higher stock returns and lower stock volatility, while negative EWOM is associated with lower stock returns and higher stock volatility. This suggests that investors use social media information to make investment decisions, which can cause stock price fluctuations. Chaitanya and Nordin (2021) investigated the investment determinants of investors and their decision-making process

in the stock market. The results show that social media groups do not have a direct impact on investors' investment decisions in the stock market, but they can enhance the effectiveness of psychological factors in investment decision-making. Khatik et al. (2021) investigate the impact of social media on the investment decisions of Gen Z investors. The study shows a significant link between social media and investment. Gen Z is more likely to be influenced by news, which can affect their decision-making process. Nisar et al. (2020) report that Internet-based EWOM forums have aggregated huge amounts of information related to company strategies and operations. This study shows that EWOM, when transmitted through social media communities, enhances a company's reputation, making investors more likely to invest in that company's stock.

Previous studies on the impact of EWOM on the stock market and other industries in other countries have highlighted some notable points. In the stock market, a study in the US found that "the positivity and volume of online comments about a company have a significant impact on the trading volume and stock price volatility of that company" (Tumarkin & Whitelaw, 2001). Similarly, a study in the UK also concluded that "EWOM is an important information source that investors use to support their investment decisions" (Antweiler & Frank, 2004). In industries such as tourism, hotels, and restaurants, studies in the US, Europe, and South Korea have all found that "EWOM has a significant impact on customer behavior, such as booking or reservation decisions" (Vermeulen & Seegers, 2009; Zhao et al., 2016). Factors such as "the credibility, usefulness, and quality of EWOM" have been identified as important factors influencing customer choice (Filieri & McLeay, 2014). However, when looking at the context of Vietnam, research on the impact of EWOM in these areas is still limited. As noted by Nguyen (2020), "the role of EWOM in areas other than consumption in Vietnam has not been thoroughly investigated yet." Therefore, more in-depth studies are still needed to better understand the impact of EWOM in different contexts in Vietnam compared to other developed countries.

EWOM is a relatively new topic, commonly researched in various countries around the world from 2009 to the present, with a particular focus during and after the COVID-19 period (about the last 4-5 years). We have identified the following issues through systematizing the theoretical basis and reviewing a large number of relevant research studies, both domestically and internationally. First, in Vietnam, we found that very few studies on EWOM have been incorporated into the investment field in the stock market. Instead, research on EWOM is usually applied to the areas of shopping, consumption, marketing, tourism, etc. Second, globally, there are still relatively few studies on the impact of EWOM information on investment decisions in the stock market. The following limitations still exist: (1) the social media applications studied are mostly Facebook, while Vietnamese investors tend to follow stock information from diverse sources (online newspapers, YouTube, Zalo, TikTok, etc.); (2) some studies have been conducted during the COVID-19 pandemic, which may have harmed people's psychology and the thought process of investors when completing the survey questionnaire; and (3) The observed content is limited, as other studies did not observe or omit the different stages in the investor's decision-making process, and instead only focused on the final investment decision. Third, domestic and international studies on stock investment decisions lack demographic factors, especially age and gender.

Our research not only focuses on a specific social media application (Facebook) but expands the survey to cover all popular Internet platforms and applications (online news, Facebook, Zalo, YouTube, TikTok, etc.). Additionally, we have observed the entire process of individual investors' decision-making on securities investment, from selecting information sources to making investment decisions to ensure the comprehensiveness and objectivity of the study on the influence of electronic word-of-mouth (EWOM). Furthermore, to ensure diverse research samples and reduce demographic bias while increasing the representativeness of the overall investor population, we have studied across three generations (Gen X, Gen Y, and Gen Z). We have also made an effort to survey as many female investors as possible, as the number of female investors in Vietnam, although increasing compared to previous years, is still much lower than male investors.

HYPOTHESIS DEVELOPMENT

Park et al. (2007) define information quality as comprehensive, accurate, clearly explained information relevant to recipients' needs. Through in-depth interviews, the research team discovered the characteristics that investors pay attention to when evaluating the quality of EWOM information, including word usage, technicality of arguments, source citations, and layout of the content in every post. Participants always value the correctness and precision of EWOM information because it displays excellent content quality, which increases confidence and the chance that the recipient will use the information (Awad & Ragowsky, 2008).

Unlike information quality (measured by specific criteria), information credibility is assessed from the subjective perspective of the recipient, not specifically quantified. According to M. Y. Cheung et al. (2009), information credibility of EWOM is defined as "credible, objective and factual online information, which the recipients perceive."

In summary, the research group considers information quality with a focus on the attributes and characteristics of the information, including accuracy, completeness, relevance, reliability, and timeliness. On the other hand, information credibility revolves around users' perceptions of the trustworthiness, authenticity, and expertise of the information sources. Both information quality and information credibility play important roles in influencing users' adoption and utilization of information within the IAM framework.

Based on Behavioral Finance Theory, Signaling Theory, and Information Adoption Model (IAM), we propose the following independent variables: Needs of Information, Information Quality, Information Quantity, Information Credibility, and Attitude Towards Information. Mediating variable Information Adoption has a direct impact on the dependent variable Investment Decisions.

Needs of Information

Needs of Information is considered as a promoting and amplifying factor of EWOM (Sundaram et al., 1998). Moreover, Zaichkowsky (1985) argues that the recipients of information about a product or service always evaluate information based on their personal needs and desires. Social media is a valuable source of information for individuals who actively seek information, especially when that information aligns with their specific needs (Leong et al., 2022). Investors in Vietnam frequently seek to consult with others before making investing decisions. This demonstrates the enormous need for stock investment information (K. C. Phan & Zhou, 2014). Hence, EWOM on social media is more likely to be adopted by investors if it is relevant to their needs. Therefore, we propose hypothesis H1 as follows:

H1: Needs of Information have a positive impact on Information Adoption.

Information Quality and Information Quantity

Information Quality is a critical component to consider when mentioning EWOM. Information Quality has always been recognized as an important predictor of information effectiveness (DeLone & McLean, 1992). Recipients always value the accuracy and utility of EWOM, and when EWOM demonstrates high content quality, it strengthens their tendency to trust it (Awad & Ragowsky, 2008). Previous research has emphasized the important role of the content of EWOM in developing positive attitudes and stimulating the behavioral intentions of consumers (Leong et al., 2022; C. Lou & Yuan, 2019). Along with the quality of information, Information Quantity allows the recipient to access a wider range of opinions (C. M. K. Cheung & Thadani, 2010). The number of EWOMs on social media being discussed becomes a scale to measure the attractiveness and trendiness of a product or service (Leong et al., 2022). Some studies (i.e., Park et al., 2007; Sher & Lee, 2009) provide evidence that the amount of EWOM has a positive impact on recipients' trust and thereby affects Information Adoption.

In Vietnam, we conducted in-depth interviews and discovered that investors are quite diligent about their investments. They are often terrified about losing money after being scammed. Therefore, Information Quality is one of the factors predicted to have the strongest influence on individual investors' investment decisions. As a result, we propose hypotheses H2 and H3 as follows:

H2: Information Quality has a positive impact on Information Adoption.

H3: Information Quantity has a positive impact on Information Adoption.

Information Credibility

Information Credibility is defined by whether the recipient considers an EWOM to be credible, honest, and accurate (M. Y. Cheung et al., 2009). Some studies show that when recipients rate EWOM as more credible, their probability of adopting that information increases (i.e., Fan & Miao, 2012; K. T. Lee & Koo, 2012). According to Ko et al. (2005), the more reliable the information, the more valuable it is. Individual investors in Vietnam frequently rely on subjective judgments of information's reliability rather than blindly trusting it since there are now far too many people providing unverified information on the market. Information Credibility facilitates better adoption and application of that EWOM. Therefore, we develop hypothesis H4 as follows:

H4: Information Credibility has a positive impact on Information Adoption.

Attitude towards Information

Attitude towards Information is how individuals perceive the information in the process of Information Adoption (Erkan & Evans, 2016). Social media users' Attitudes Toward Information can positively influence the perceived Value of Information (Shen et al., 2016). Attitudes will change when EWOM has a large opinion consensus on social media (C. H. Lee & Cranage, 2014). Investors, like consumers, tend to pay more attention to negative EWOM than positive ones (Ren et al., 2012). Attitude Towards Information should be explored further since the decision-making process is extremely complicated, needing investors to have the proper attitude to analyze most honestly and impartially. Thus, we propose hypothesis H5 as follows:

H5: Attitude towards Information has a positive impact on Information Adoption.

Information Adoption

Fan and Miao (2012) define Information Adoption as "a psychological action due to the information, evaluation, and comments received in the environment." Erkan and Evans (2016) suggest that the adoption of EWOM on social media can influence actual purchasing behavior. EWOM created by consumers and organizations can have a significant impact on Information Adoption, and when they adopt the information, consumers are likely to purchase (Bronner & de Hoog, 2011; Tsao & Hsieh, 2015). Similarly, obtaining stock information can be the primary motivator influencing investors' investing decisions. This suggests that when investors adopt information, they are more likely to make investment decisions. Therefore, we develop hypothesis H6 as follows:

H6: Information Adoption has a positive impact on investment decisions.

RESEARCH METHODOLOGY

DATA

We chose the convenience sampling method for its ease and cost-effectiveness. We used both online and offline survey methods. The online survey was conducted as a questionnaire using Google Forms, and participants received the survey questionnaire through messaging applications (mail generated using Mail Merge tools). The offline survey was carried out by directly distributing the questionnaire to selected financial firms, investment companies, universities, offices, and coworking spaces. The scales used to construct the questionnaire in this study were adopted from previous related studies (see Appendix). Specifically, the questionnaire has four parts:

Part 1 – Introduction. This section provides an overview of the basic information, purpose, and significance of the research. It also explains the definition of EWOM information and the abbreviations used. Additionally, it provides instructions for conducting surveys and processing information according to the principle of anonymity.

Part 2 – Stock investment situation in Vietnam. This part consists of survey questions that gather information about the respondents' securities investment process. The data collection method involves a set of multiple-choice questions with one or more answers depending on the nature of each question. The objective is to examine the trends, needs, habits, etc., of the respondents to support analysis, evaluation, and recommendation formulation.

Part 3 – Assessing the impact of EWOM information on stock investment. This section evaluates the influence of EWOM information on stock investment based on the respondents' level of expectation and agreement with each statement. These dimensions serve as the research measures for independent, mediating, and dependent variables (including seven scales of Information Quality, Needs of Information, Information Credibility, Information Quantity, Attitude Towards Information, Information Adoption, and Investment Decision). The respondents will rate their agreement with the statements on a 5-point Likert scale: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly Agree.

Part 4 – Personal information. This part includes questions related to the respondents' personal information, such as age, gender, current employment, educational and professional background, undergraduate and vocational majors, and educational and employment status. The data collection method involves multiple-choice questions or short-answer questions, depending on the nature of each question.

The population size of this study is 11,504 people in Vietnam. We used a convenience sampling method, randomly reaching 11,504 individuals (10,215 online mail and 1289 offline hard copies). The survey response rate was 2,416/11,504 people. After filtering out 1872 individuals who confirmed never investing in the Vietnam stock market, we collected responses from 544 individual investors. However, 32 low-quality responses were removed. Our final sample includes 512 individual investors. We used SPSS 26 software to analyze the data by running descriptive statistics, Cronbach's alpha, exploratory factor analysis (EFA), and Pearson correlation table. Then, we used AMOS 24 to run Structural Equation Modelling (SEM).

Table 1. Demographics of the research sample

512 investors	Option	Frequency	Percent (%)
Condition	Currently investing	470	91.7%
	Stopped investing	42	8.3%
Age	Gen X (44 - 65)	99	19.4%
	Gen Y (29 - 43)	142	27.8%
	Gen Z (18 - 29)	270	52.8%
Gender	Male	370	72.2%
	Female	142	27.8%
Majors	Finance-related	230	45%
	Non-finance	282	55%
Employment	University student	174	34%
	Administrative institution	99	19.4%
	Bank officer	86	16.7%
	Fund & securities	102	20%
	Others	51	9.9%

According to the survey results, most investors are investing in stocks (91.7%) and only 8.3% have stopped investing in stocks. In terms of investor age, approximately 19.4% of investors belong to Gen X, 27.8% belong to Gen Y, and the majority, 52.8%, belong to Gen Z. Although there was no gender discrimination, the survey received more responses from male investors (72.2%), with the remainder being female investors (27.8%). In terms of majors studied by investors, 45% of respondents studied finance-related majors, such as corporate finance, auditing, investment economics, and business administration. Regarding the employment of investors, 34% of investors participating in the survey are university students, 19.4% are working in administrative institutions, and 16.7% are bank officers. 20% of individual investors are working at equity funds or securities companies, and 9.9% are investors in other occupations.

RESEARCH MODEL

Based on behavioral finance theory, signaling theory, and Information Adoption Model, we present the following research model to examine the relationship between EWOM, Information Adoption, and Investment Decisions.

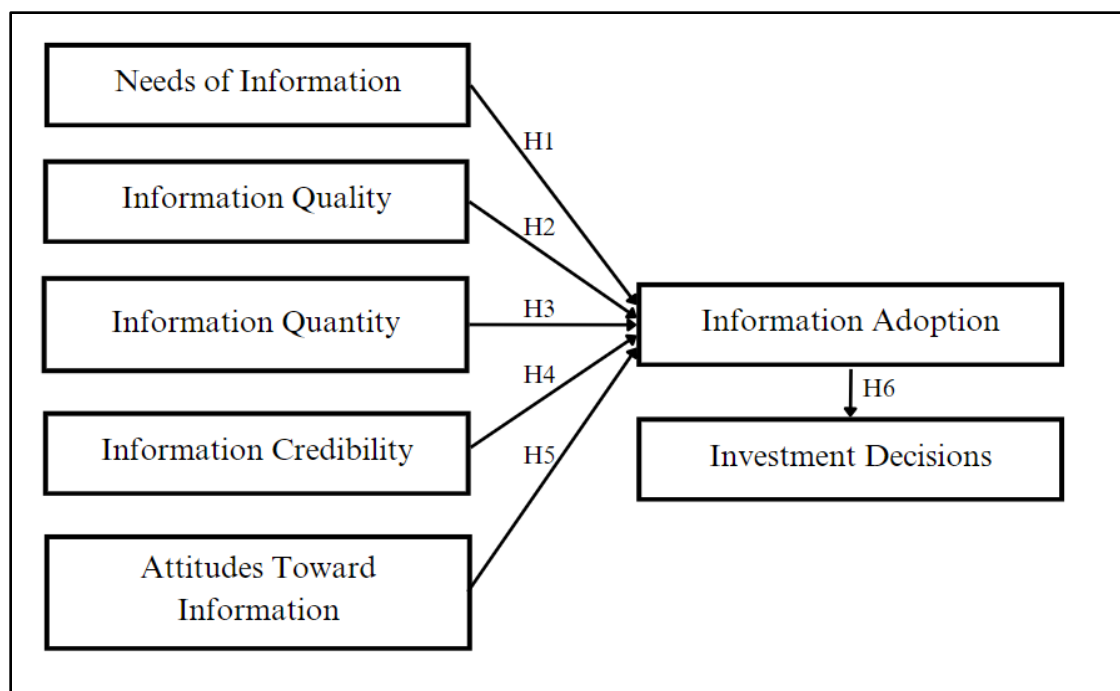


Figure 1. Research model

We evaluated questionnaire scale reliability using Cronbach’s alpha. Then, we analyzed the data using Exploratory Factor Analysis (EFA). The Pearson correlation table is presented next. Finally, we employed Structural Equation Modelling (SEM) to explore the impact of EWOM on Information Adoption and Investment Decisions.

FINDINGS

Table 2 shows Cronbach’s alpha analysis of variables employed in this study. The findings indicate that all variables have dependable Cronbach alpha coefficients (>0.7), with Information Adoption and investment decision variables showing robust coefficients (>0.8). All the scales meet the required level, with the correlation coefficients of the total variables in the scales reaching the required level (>0.3). Therefore, these variables are used in the following section of the EFA analysis.

Table 2. Results of verifying the reliability of the scale

Var.	Cr. alpha	Items*
(AT)	.724	(1) I always read stock information in social media groups before investing (2) I like reading reference information about stock in social media groups (3) I feel more confident investing after reading stock information in social media groups (4) I think my investment is better after reading stock information in social media groups
(QL)	.732	(1) Posts in social media groups have specific evidence and data cited from reputable sources (2) Posts about stock in social media groups are updated quickly (3) Stock information in social media groups is specific and understandable (4) Stock information in social media groups is posted in a good format
(NI)	.738	(1) I actively search for stock information in social media groups (2) Reading posts in social media groups helps enrich my investment knowledge (3) I want to be informed of the latest information about stock in social media groups (4) I often analyze the psychology of other investors in social media groups
(IC)	.749	(1) Stock information in popular social media groups and trending posts is credible (2) Posts in social media groups by experienced, famous investors are credible (3) Posts shared by my relatives and friends in social media groups are credible (4) The stock information provided by my familiar broker is credible
(QA)	.750	(1) Many social media groups post comments on stocks (2) There are many comments about stock information in each social media group (3) I'm interested in a stock that's being hotly discussed in a social media group (4) I'm interested in stocks being evaluated in many social media groups
(IA)	.801	(1) Social media groups provide many different perspectives on stocks and companies (2) Social media groups help me update reference information about stocks and companies (3) I often invest based on information I find useful in the social media group (4) I believe in the posts in social media groups after checking through reputable sources
(ID)	.817	(1) I invest in stocks that many people in the social media group are investing in (2) I placed stock orders according to a post in the social media group (3) I bought stocks shared by relatives and friends on a social media group (4) I invest in stocks that have many good reviews and comments in the social media group (5) I invest in stocks chosen by large, reputable investors in the social media group

* Edited items from Sussman and Siegal (2003); Park et al. (2007); M. Y. Cheung et al. (2009); C. M. K. Cheung and Thadani (2012); Fan and Miao (2012); Erkan and Evans (2016)

Table 3a reports the Kaiser-Meyer-Olkin (KMO) and Bartlett Test of EFA for all variables employed in this study. Regarding the independent variables, the results indicate that the KMO value is higher than 0.5, the p-value of the Bartlett test is significant at the 1 percent level, and the Eigenvalue is higher than 1, suggesting that most measurement items for the independent variables converge appropriately into their respective latent variable groups, ensuring reliability and intercorrelation among the measurement items.

Table 3a. Results of KMO and Bartlett test

Variable	KMO (>0.5)	Bartlett (<0.05)	Eigenvalue (>1)	Extraction sums of sqr. loadings
Dep. Var. (ID)	0.836	0.000	2.897	57.935%
Mediator. Var. (IA)	0.780	0.000	2.535	63.371%
Indep. Vars.	0.883	0.000	1.046	55.310%

Regarding the dependent variables Information Adoption and Investment Decision, the results show that the KMO values corresponding to IA and ID are 0.780 and 0.836, respectively, which are higher than 0.5. Additionally, the p-values of the Bartlett test of IA and ID are both significant at the 1 percent level. The Eigenvalues of IA and ID are 2.535 and 2.897, respectively, which are higher than 1. These results reveal a strong correlation in the data. Overall, the findings from EFA suggest that the factor groupings retain their original names, and the proposed model is deemed suitable for subsequent regression analysis.

We statistically examine the common method bias using Harman's single-factor test results (Table 3b). The cumulative % value of the composite factor in the Extraction Sums of Squared Loadings column of the Total Variance Explained table is less than 50%, so the data does not have Common Method Bias. We used anonymous responses in the form to ensure respondent anonymity and reduce social desirability bias. In our questionnaires, we shuffled the order of questions to minimize carryover effects. The items in Table 2 are presented in an easy-to-understand manner, minimizing the ambiguity of questions. Moreover, we collected data from different sources (online forms and of-line forms) to mitigate the bias arising from a single data source.

Table 3b. Results of Harman's single-factor test

Total variance explained		
Extraction sums of squared loadings		
Total	% of Variance	Cumulative %
7.640	26.344	26.344

Extraction method: Principal component analysis

Next, before conducting SEM analysis, we used the Pearson correlation table (Table 4) and Kolmogorov-Smirnov test (Table 5) to check for variable correlations and identify multicollinearity. Because all p-values are less than 0.05 (5%), we conclude that the variables are correlated with each other. None of the coefficients exceeds 0.8, so there is no multicollinearity.

Table 4. Pearson correlation table

Correlations						
	ID	IA	QL	NI	IC	QA
ID	1					
IA	0.045*	1				
QL	-0.009*	.621**	1			
NI	.178**	.663**	.469**	1		
IC	0.056*	.618**	.413**	.557**	1	
QA	0.066*	.626**	.451**	.501**	.557**	1
AT	0.044*	.624**	.297**	.394**	.457**	.561**

*Note: ***, **, * denotes significance level of 1%, 5% and 10%, respectively*

Table 5. Normality test results

Tests of normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ATtb	0.221	512	0.000	0.821	512	0.000
ICtb	0.224	512	0.000	0.828	512	0.000
QAtb	0.229	512	0.000	0.824	512	0.000
QLtb	0.235	512	0.000	0.820	512	0.000
NItb	0.241	512	0.000	0.815	512	0.000
IAtb	0.215	512	0.000	0.850	512	0.000
IDtb	0.182	512	0.000	0.879	512	0.000

a. Lilliefors Significance Correction

The study sample is large, with 512 observations. The Kolmogorov-Smirnov test was used. All variable's Sig. < 0.05, so the distributions are normal. The Pearson correlation coefficient test and Kolmogorov-Smirnov test met the requirements, and we continued to perform the next step of data analysis. We performed the SEM analysis to analyze the multi-dimensional relationship between the five independent variables of EWOM, the mediating variable Information Adoption, and the dependent variable Investment Decision. The results from the analysis are presented in Figure 2, Table 6, and Table 7.

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The results indicate that the value of each fit index of the model falls into the acceptable range, suggesting that our model is suitable for the research data and that the values are satisfactory, good, and meaningful for the study. The research model is built according to the theory and has enough grounds to evaluate reality.

Regarding the impact of EWOM on investment adoption, the result shows that the coefficients of variables Information Credibility, Attitude toward Information, Information Quality, and Needs of Information are positive and significant at the 5% level. These results suggest that the four variables have a positive impact on Information Adoption. Although the coefficient of variable Information Quantity is positive, it is statistically insignificant. Concerning the impact of Information Adoption on investment decisions, the result shows that the coefficient of variable investment adoption is significantly positive at the 1% level. This implies a positive impact of Information Adoption on investment decisions. Overall, our findings support hypotheses H1, H2, H4, H5, and H6.

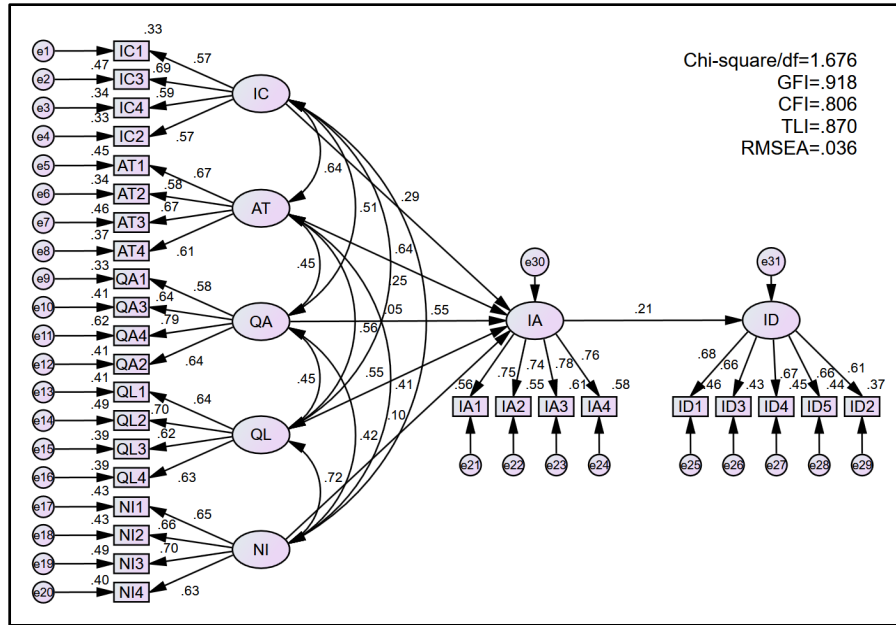


Figure 2. Structural Equation Modelling (SEM) results

Table 6. Model fit for SEM model

Indicators	Index	Results
Chi-square/df	1.676	Good (< 3)
GFI	0.918	Acceptable (>0.8)
CFI	0.806	Acceptable (>0.8)
TLI	0.870	Acceptable (>0.8)
RMSEA	0.036	Good (<0.08)

Table 7. SEM regression results

Hypothesis	Dependent variable		Independent variable	Standardized coefficient	P-value
H1	IA		IC	0.290***	0.00
H2	IA		AT	0.247***	0.00
H3	IA		QA	0.545	0.13
H4	IA		QL	0.549***	0.00
H5	IA		NI	0.104**	0.015
H6	ID		IA	0.208***	0.00

Note: ***, **, and * indicate the significance level of 1%, 5%, and 10%, respectively

DISCUSSION

EWOM INFLUENCES INVESTORS' INFORMATION ADOPTION

H1: Needs of Information has a positive impact on Information Adoption

Needs of Information has little impact on Information Adoption, with an impact coefficient of 0.104. This result is consistent with Wang and Wei's (2006) and Erkan and Evans' (2016) studies,

which concluded that Needs of Information has a positive impact on Information Adoption. However, this is contrary to Leong et al. (2022) results, which show that there is no statistically significant relationship between Needs of Information and Information Adoption. The study's findings indicate that stock investors' needs for information vary based on their interest level to analyze the behavior and opinions of other investors in social media groups. As a result, additional study is needed on the relationship between Needs of Information and Information Adoption, as the impact coefficient is insufficient to indicate evident influence on Information Adoption.

H2: Information Quality has a positive impact on Information Adoption

Information Quality is the strongest impact factor on Information Adoption, with an impact level of 0.549. Hypothesis 2 agrees with most of the researchers (Erkan & Evans, 2016; Fan & Miao, 2012; Leong et al., 2022; Shen et al., 2016). Surveyed investors believe that Information Quality is affected by the subjective intention of the poster. Moreover, the accuracy of EWOM is usually re-checked by investors by referencing other official sources online. They chose the item "quickly, good format and cited from reputable sources" to demonstrate the quality of posts in social media groups. In brief, posts with understandable content, good evidence, and cited sources are more likely to enhance investors' adoption of information.

H4: Information Credibility has a positive impact on Information Adoption

Information Credibility has a significant impact level of 0.29 on Information Adoption. This result also agrees with the study findings of many researchers about the impact of IC on IA (M. Y. Cheung et al., 2009; Erkan & Evans, 2016; Leong et al., 2022; Shen et al., 2016). In answering survey questions, most respondents focused on the EWOM sender's background (i.e., profile and reputation) and believed it was the most important factor in determining the credibility of the EWOM. This conclusion is consistent with Aghakhani and Karimi (2013), who pointed out that the attractiveness and personal reputation of the information provider determine information credibility. Yu and Natalia (2013) and Wang et al. (2015) also indicated that information providers with expertise and credibility tend to make recipients more trusting. Furthermore, respondents chose the item EWOM from familiar brokers, close friends, and relatives as it is likely to be considered more credible. On the contrary, trending posts are not trusted by respondents since media groups can be manipulated. In short, investors who receive information from someone they know are more likely to accept it since the material is perceived as more credible.

H5: Attitude towards Information has a positive impact on Information Adoption

Attitude towards Information has an influence level of 0.247 on Information Adoption. The results are similar to those of Shen et al. (2016) and Leong et al. (2022). Nevertheless, Erkan and Evans (2016) showed opposite research results that AT does not have a significant relationship with IA. Although hypothesis H5 is accepted, this impact is not significant. Combined with the qualitative interview results, we concluded that investors' attitudes towards information are a bit skeptical and hesitant to adopt it. They tend to question the motives and authenticity of the news, are hesitant to receive information, especially information relevant to their needs, and will often double-check it to decide whether to trust it. This emphasizes the cautious and skeptical attitude of investors when accessing EWOM in the context of the number of EWOM stocks on social media platforms trending up.

INFORMATION ADOPTION AND INVESTMENT DECISIONS OF INDIVIDUAL INVESTORS

H6: Information Adoption has a positive impact on Investment Decisions

As mentioned above, Information Adoption has an influence coefficient of 0.208 on investors' stock Investment Decisions. This result agrees with Khatik et al.'s (2021) findings, which confirmed a substantial link between social media and investment decisions. Moreover, our result agrees with Naveed et al. (2020), whose study confirmed that non-financial information positively influenced individual investors' investment decisions. Furthermore, Tham (2018) indicates that the information adopted by

investors through social media is statistically significant in investment decision-making. However, the result partly differs from the results of Innayah et al. (2022), which reveal that EWOM does not directly affect investment decisions, but EWOM can enhance the image and trust of the corporation, indirectly affecting the investment decisions of investors in the corporation. According to Ross (1977) and Cotter et al. (2012), investors use signals from comments and reactions on posts as investing signals. This helps them understand the stock market better, therefore developing suitable investment strategies. They use EWOM as a support tool to make investment decisions, believing that the information is carefully analyzed by people with in-depth knowledge, specific evidence, and technological applications, which will help them make better decisions.

IMPLICATIONS

The results of this study contribute to the literature on the relationship between EWOM, information adoption, and stock investment decisions. First, the literature on EWOM shows that EWOM can impact the investment behaviors of individual investors, such as gold or real estate. Our findings extend this understanding by demonstrating that EWOM also plays a substantial role in shaping the information adoption behaviors of individual investors within the stock market context. Second, previous studies indicate that many factors can affect the adoption of information by individual investors, ranging from socioeconomic factors to cognitive biases. By incorporating EWOM, we contribute to this line of literature by showing that EWOM is also a significant factor that affects investment decisions. Third, while prior research has acknowledged the importance of behavioral factors in shaping investment decisions, few have explored how information adoption influences this process comprehensively. Our study bridges this gap by highlighting EWOM as a crucial factor in the Information Adoption journey, thereby improving the understanding of the behavioral dynamics underlying investment decision-making.

Our study suggests some practical implications. To enhance investor protection and foster a healthy stock market, government bodies and media outlets should collaborate to improve the quality of electronic word-of-mouth (EWOM) information. Social media platforms should actively moderate content, eliminate false information, and prioritize reliable sources. Additionally, they can partner with experts to offer comprehensive and personalized information, thereby increasing investor trust and promoting a positive attitude toward the market. Securities firms should ensure they provide accurate, up-to-date market data and investment product details. They can further build trust by establishing news channels, engaging with investors, and offering additional support services. Listed companies should prioritize transparent and understandable information disclosure, utilizing various communication channels and enhancing corporate governance to bolster investor confidence. Investors themselves should actively seek information from trustworthy sources, compare information across platforms, and verify the credibility of sources and authors. They should also focus on improving their investment knowledge and skills, seeking expert advice when needed, and establishing clear investment goals to build a suitable portfolio.

CONCLUSION

This study aimed to investigate how EWOM affects the adoption of information and the stock investment of Vietnamese individual investors. We collected clean responses from 512 investors from 18 to 65 years old, using a convenience sampling method from August to November 2023. Structural Equation Modelling (SEM) was utilized to analyze the data and uncover the relationships between variables. The research findings indicate that EWOM has a mild impact on information adoption and investment decisions of Vietnamese stock investors. Information quality is the strongest factor influencing information adoption, followed by information credibility and attitude toward information.

Needs of information has only a minimal impact on information adoption. Lastly, information adoption has a small influence on the investment decisions of stock investors. The results indicate that investors often verify information from official sources before making decisions based on social media posts.

LIMITATIONS AND FUTURE RESEARCH

One limitation of this study is that it focuses solely on the stock market, while individual investors in Vietnam may engage in various other investment forms such as gold, real estate, or cryptocurrencies. Therefore, future research could expand the scope to include other investment types to gain a more comprehensive understanding of how individual investors in Vietnam utilize electronic word-of-mouth (EWOM) and adopt information in their investment decision-making process. Furthermore, while these findings may apply to other emerging markets with similar levels of financial literacy as Vietnam, they may not fully extend to countries with higher financial literacy rates. Hence, further studies could be conducted in developed countries to examine the generalizability of these findings. Finally, future research could see how EWOM's impact changes over a longer period, and a more nuanced understanding of the information adoption process could be achieved by developing a research model with additional factors.

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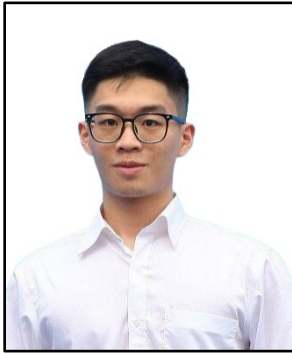
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APPENDIX: QUESTIONNAIRE FORM

Construct	Item	Source
Attitudes Toward Information	(1) I always read stock information in social media groups before investing (2) I like reading reference information about stock in social media groups (3) I feel more confident investing after reading stock information in social media groups (4) I think my investment is better after reading stock information in social media groups	Park et al. (2007); Erkan and Evans (2016)
Information Quality	(1) Posts in social media groups have specific evidence and data cited from reputable sources (2) Posts about stock in social media groups are updated quickly (3) Stock information in social media groups is specific and understandable (4) Stock information in social media groups is posted in a good format	M. Y. Cheung et al. (2009); Erkan and Evans (2016)
Needs of Information	(1) I actively search for stock information in social media groups (2) Reading posts in social media groups helps enrich my investment knowledge (3) I want to be informed of the latest information about stock in social media groups (4) I often analyze the psychology of other investors in social media groups	Sussman and Siegal (2003); Fan and Miao (2012)
Information Credibility	(1) Stock information in popular social media groups and trending posts is credible (2) Posts in social media groups by experienced, famous investors are credible (3) Posts shared by my relatives and friends in social media groups are credible (4) The stock information provided by my familiar broker is credible	M. Y. Cheung et al. (2009); C. M. K. Cheung and Thaidani (2012)
Information Quantity	(1) Many social media groups post comments on stocks (2) There are many comments about stock information in each social media group (3) I'm interested in a stock that's being hotly discussed in a social media group (4) I'm interested in stocks being evaluated in many social media groups	Park et al. (2007); C. M. K. Cheung and Thadani (2012); Fan and Miao (2012)
Information Adoption	(1) Social media groups provide many different perspectives on stocks and companies (2) Social media groups help me update reference information about stocks and companies (3) I often invest based on information I find useful in the social media group (4) I believe in the posts in social media groups after checking through reputable sources	M. Y. Cheung et al. (2009); Fan and Miao (2012)
Investment Decisions	(1) I invest in stocks that many people in the social media group are investing in (2) I placed stock orders according to a post in the social media group (3) I bought stocks shared by relatives and friends on a social media group (4) I invest in stocks that have many good reviews and comments in the social media group (5) I invest in stocks chosen by large, reputable investors in the social media group	Chen (2007); N. Y. X. Phan and Le (2022)

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