

# SYNERGISTIC EFFECTS OF FINANCIAL LITERACY EDUCATION AND FINTECH TOOLS ON SUSTAINABLE INVESTMENT BEHAVIOUR IN CHINA

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## Article history

**Received date** : 10-9-2023

**Revised date** : 12-9-2023

**Accepted date** : 4-12-2023

**Published date** : 23-12-2023

## To cite this document:

Loang, O. K., & Lei, C. (2023). Synergistic effects of financial literacy education and fintech tools on sustainable investment behaviour in China. *International Journal of Accounting, Finance and Business (IJAFB)*, 8(52), 1 - 11.

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**Abstract:** *This study explores the role of financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment. Using a qualitative research approach, in-depth interviews were conducted with 30 individual investors from Shanghai and Beijing. The study findings suggest that financial literacy education and fintech tools have a positive impact on promoting sustainable investment behaviour. The use of fintech tools such as robo-advisors and social media platforms can increase the accessibility of green investment information and enable investors to make informed investment decisions. Financial literacy education can also increase investors' knowledge and understanding of sustainable investments. However, the study also highlights significant challenges related to the effectiveness of financial literacy education and Fintech in promoting sustainable investment behaviour, including information asymmetry, lack of access to technology, and behavioral biases among individual investors. The study contributes to the existing literature on sustainable investment behaviour by providing insights into the role of financial literacy education and fintech tools in promoting sustainable investment behaviour in green investment. The findings of this study have implications for practitioners, policymakers, and researchers seeking to promote sustainable investment behaviour in the context of green investment.*

**Keywords:** *Financial literacy education, Sustainable investment behaviour, Fintech tools, Green investment, Information asymmetry*

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## Introduction

Sustainable investment has gained increasing attention worldwide as investors recognize the importance of integrating environmental, social, and governance (ESG) factors into their investment decisions. In recent years, there has been a growing interest in the role of financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment (Ali, R. & Ahmad, Z. (2021)). However, the effectiveness of financial literacy education and fintech tools may vary across different populations and contexts.

While developed countries have been leading the trend in sustainable investment, developing countries such as China are also making progress in this area. China has been actively promoting green investment and sustainable finance to achieve its environmental targets under the Paris Agreement. With the rapid development of Fintech in China, there is potential for Fintech to play a significant role in promoting sustainable investment behaviour. However, there are also challenges related to the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour, including factors such as information asymmetry, lack of access to technology, and behavioural biases among individual investors.

The importance of financial literacy education and fintech tools such as robo-advisors and social media platforms in facilitating sustainable investment behaviour has been highlighted in previous studies. However, limited research has been conducted on the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment, particularly in developing countries such as China (Han, C., Wang, Y. and Xu, Y. (2019)). Given China's rapid growth in green investment, understanding the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour in the Chinese market is crucial. Moreover, while some studies have reported a positive relationship between financial literacy education, fintech tools, and sustainable investment behaviour, others have yielded contradictory findings (Loang, O. K., & Ahmad, Z. (2023)). Therefore, further research is necessary to investigate the effectiveness of financial literacy education and fintech tools, both individually and in combination, in promoting sustainable investment behaviour in the green investment market, specifically focusing on the Chinese context.

Another research gap pertains to the challenges and limitations associated with the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour. Factors such as information asymmetry, lack of access to technology, and behavioural biases among individual investors can hinder the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour (Fornaro, L. and Wolf, M. (2020)). It is important to address these challenges and limitations to enhance the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment in China.

Therefore, this study aims to investigate the role of financial literacy education and fintech tools in promoting sustainable investment behaviour in China's green investment context. Specifically, the study examines the impact of financial literacy education and fintech tools such as robo-advisors and social media platforms on the accessibility of green investment information and their effectiveness in promoting sustainable investment behaviour. The study also explores the synergistic effect of combining financial literacy education and fintech tools on sustainable investment behaviour. Finally, the study identifies the challenges and limitations

related to the effectiveness of financial literacy education and fintech tools in promoting sustainable investment behaviour in China.

## Literature Review

### Financial Literacy Education in Developed Countries and China

Financial literacy education has gained increasing attention in recent years as a means to promote responsible and sustainable investment behaviour in the financial market. The following literature review provides an overview of the existing research on financial literacy education in developed countries and China.

Several studies have examined the impact of financial literacy education on investment behaviour in developed countries. A study conducted by Borgards (2020) found that individuals who received financial literacy education were more likely to plan and save for retirement, make informed investment decisions, and avoid high-cost borrowing. Similarly, Rajan, Raghuram and Luigi (2021) found that financial literacy education was positively associated with investment behaviour and financial well-being. In contrast, other studies have found mixed results regarding the impact of financial literacy education on investment behaviour. Iqmal (2020) found no significant relationship between financial literacy education and investment behaviour, while a study conducted by Keho (2017) found that individuals who received financial literacy education were more likely to take on debt.

In China, financial literacy education is still in its infancy, and the level of financial literacy among Chinese individuals is relatively low compared to developed countries. Huo and Qiu (2020) found that individual Chinese investors often exhibit irrational investment behaviour, such as herding behaviour, overconfidence, and loss aversion. Chinese investors' lack of financial literacy has been identified as a key barrier to promoting responsible and sustainable investment behaviour.

Despite the challenges, several studies have highlighted the potential benefits of financial literacy education in China. Reddy (2020) found that financial literacy education can improve financial knowledge, behaviour, and well-being among Chinese individuals. Similarly, Fornaro and Wolf (2020) found that financial education can improve investment behaviour and financial literacy among Chinese university students. However, there is still a lack of research on the impact of financial literacy education on investment behaviour in the context of green finance products in China.

### Financial literacy education and Fintech on green investment

Financial literacy education has become increasingly important in the context of green investment. Green investment refers to investments that promote environmentally sustainable development and combat climate change. As the need for sustainable development increases, green investment has gained significant attention from individual investors and financial institutions. However, investing in green stocks or other green financial products can be challenging due to information asymmetry, lack of knowledge, and behavioural biases among individual investors. Financial literacy education has been identified as a potential solution to address these challenges.

Numerous studies have shown that financial literacy education is positively associated with investment decision-making, particularly in the context of green investment. Financial

education interventions increased participants' investment in socially responsible mutual funds (Shi, Y., Zheng, Y., Guo, K., Jin, Z., & Huang, Z. (2020)). Similarly, Fornaro and Wolf (2020) found that financial literacy education improved the understanding and motivation of participants to invest in renewable energy projects. In addition to financial literacy education, green Fintech has emerged as a key tool in promoting sustainable investment behaviour. Green fintech tools such as robo-advisors, crowdfunding platforms, and social media platforms have been found to improve the accessibility of green investment information, reduce information asymmetry, and facilitate sustainable investment behaviour. Frank (2021) found that robo-advisors increased the investment performance of participants in the green investment market. Similarly, Dynan (2020) found that social media platforms increased participants' investment intention and perception towards sustainable investment.

Furthermore, the combination of financial literacy education and green Fintech has been found to have a synergistic effect on sustainable investment behaviour. Sausan, Korawijayanti, and Ciptaningtias (2020) found that using a financial education app improved participants' financial literacy and led to increased investment in green stocks. The combination of social media and financial literacy education improved participants' investment intention and behaviour towards green investment (Loang, O. K., & Ahmad, Z. (2022)). However, some contradictory findings are related to the impact of financial literacy education and green Fintech on sustainable investment behaviour. Some studies have found no significant or negative relationship between financial literacy education, green Fintech, and investment decision-making). Specifically, the study examines the impact of financial literacy education, Fintech tools such as robo-advisors and social media platforms, and their combination on sustainable investment behaviour. Therefore, the following hypotheses are proposed

- H1: Financial literacy education plays a significant role in promoting sustainable investment behaviour in the context of green investment.
- H2: Fintech tools such as robo-advisors and social media platforms have a positive impact on the accessibility of green investment information and facilitate sustainable investment behaviour.
- H3: The combination of financial literacy education and Fintech has a synergistic effect on sustainable investment behaviour.
- H4: There are significant challenges related to the effectiveness of financial literacy education and Fintech in promoting sustainable investment behaviour in the context of green investment, including factors such as information asymmetry, lack of access to technology, and behavioural biases among individual investors.

## Methodology

### Population and Sampling

Based on the research objectives and the study's focus on the green investment market in China, the population for this study is individual investors in Shanghai and Beijing. The reason for choosing Shanghai and Beijing is because they are two of the largest and most influential cities in China, with a high concentration of financial institutions, green investment opportunities, and individual investors.

The sampling method for this study is purposive sampling, also known as judgmental sampling, which is a non-probability sampling technique used when the population is not easily accessible or when certain characteristics are required for the sample. In this case, the sampling criteria will be individual investors who have invested in green investment products in the past year,

are at least 18 years old, and have a basic understanding of financial literacy concepts. The sample size for this study is 30 participants, which is considered adequate for qualitative research using in-depth interviews. The participants are recruited through financial institutions and online investment forums and will be selected based on their willingness to participate in the study and their ability to provide valuable insights into the research objectives. The following is the personal information of the interviewer.

**Table 1: Personal information of the interviewer.**

	<b>Number of investors</b>	<b>Investor ratio</b>
male	15	50%
18-30years old	5	16%
30-45 years old	16	54%
45-60 years old	7	24%
Over 60 years old	2	6%
married	23	76%
University degree or above	22	73%
Less than \$1,000 a month	9	30%
Monthly income: \$1,000 - \$30,00	16	53%
More than \$3,000 a month	5	16%

### **Interview Questions**

The development of interview questions for this study was based on a thorough review of the literature on financial literacy education, fintech tools, and sustainable investment behaviour in the context of green investment. Therefore, the following semi-structured interview questions are developed:

**Table 2: Semi-structured interview questions**

<b>Hypothesis</b>	<b>Questions</b>	<b>Objective</b>	<b>Literature</b>
1	Have you received any financial literacy education in the context of green investment? If yes, how did it impact your investment behaviour?	To gather information on the participants' experience with financial literacy education in the context of green investment and how it has impacted their investment behaviour.	Loang and Ahmad (2020)
	What kind of financial literacy education do you think is necessary to promote sustainable investment behaviour in the context of green investment?	To identify the types of financial literacy education that participants believe are necessary to promote sustainable investment behaviour in the context of green investment.	
2	How did these fintech tools impact your understanding and accessibility of green investment information?	To explore how fintech tools have impacted participants' understanding and accessibility of green investment information.	Huo and Qiu (2020)
	What are some other fintech tools that you think could be	To identify other fintech tools that participants believe could	

	useful for promoting sustainable investment behaviour in the context of green investment?	be useful for promoting sustainable investment behaviour in the context of green investment.	
3	How do you think financial literacy education and fintech tools complement each other in promoting sustainable investment behaviour?	To understand how participants perceive the relationship between financial literacy education and fintech tools in promoting sustainable investment behaviour.	Rajan et al. (2021)
	Do you think this combination of financial literacy education and fintech tools is necessary for promoting sustainable investment behaviour in the context of green investment? Why or why not?	To gather participants' opinions on whether the combination of financial literacy education and fintech tools is necessary for promoting sustainable investment behaviour in the context of green investment.	
4	Have you experienced any challenges in accessing information on green investment? If yes, what were these challenges?	The purpose is to identify any barriers that hinder investors from making sustainable investment decisions, such as lack of access to information or difficulty in understanding the available information.	Fornaro and Wolf (2020)
	How do you think information asymmetry affects sustainable investment behaviour in the context of green investment?	To understand how information asymmetry affects sustainable investment behaviour in the context of green investment.	
	Are there any other challenges or limitations associated with financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment?	To explore the challenges and limitations associated with financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment.	

## Results and Discussion

### Financial literacy education and sustainable investment behaviour

For question 1, out of the 30 participants, 23 reported experiencing challenges in accessing information on green investment. Some common challenges mentioned were a lack of credible and trustworthy sources of information, difficulty in understanding technical terms and jargon, and limited access to information due to language barriers. For example, one participant stated, "I found it difficult to find reliable sources of information on green investment. There is a lot of information out there, but it's not always clear what's trustworthy and what's not." Another participant stated, "I'm not a financial expert, so some of the technical terms and jargon used in information on green investment can be confusing and hard to understand."

For question 2, Almost all participants (28 out of 30) agreed that information asymmetry can have a negative impact on sustainable investment behaviour in the context of green investment. Many participants noted that when investors do not have access to the same information as others, it can lead to unfair advantages for some investors and create a sense of distrust in the market. One participant stated, "When some investors have access to information that others don't, it creates an unfair advantage and can make people hesitant to invest in green projects." Another participant added, "It can also make it difficult to assess the true value and risks associated with green investments, which can lead to poor investment decisions."

### **Fintech and sustainable investment behaviour**

Regarding Question 3, of the 30 participants, 25 reported using fintech tools to access green investment information. Among these, 18 mentioned using robo-advisors, 10 mentioned using social media platforms, and 7 mentioned using other fintech tools such as mobile apps or online forums. The majority of participants (20) reported that these fintech tools had a positive impact on their understanding and accessibility of green investment information, with one participant stating, "Robo-advisors make it easy for me to access relevant information about green investments without having to do a lot of research on my own." However, 5 participants noted some limitations of fintech tools in this context. One participant mentioned that "sometimes the information provided by robo-advisors can be too general and not specific enough to make informed decisions." Another participant mentioned that "social media platforms can be overwhelming with too much information, making it difficult to filter out what is important." Overall, these results suggest that while fintech tools can have a positive impact on understanding and accessibility of green investment information, there may be some limitations that need to be addressed.

Regarding Question 4, of the 30 participants, 22 suggested some additional fintech tools that could be useful for promoting sustainable investment behaviour in the context of green investment. The most commonly suggested tools were mobile apps that provide personalized investment advice based on individual preferences and goals (mentioned by 14 participants), and online investment platforms that allow for easy comparison of green investment options (mentioned by 10 participants). One participant suggested the use of virtual reality tools that could simulate the impact of different green investment options on the environment. However, 8 participants mentioned that they were not aware of any other fintech tools that could be useful in this context. One participant mentioned, "I think the current tools available are already pretty comprehensive, so I'm not sure what else could be added." These results suggest that while there may be some potential for additional fintech tools to promote sustainable investment behaviour in the context of green investment, there may also be a need for education and awareness-raising among investors regarding the tools that are currently available.

### **Synergistic effect on sustainable investment behaviour**

Questions 5 and 6 aim to understand the participants' views on the combination of financial literacy education and fintech tools in promoting sustainable investment behaviour. Regarding question 5, participants were asked to share their thoughts on how financial literacy education and fintech tools complement each other in promoting sustainable investment behaviour. The responses showed that most participants believed that financial literacy education and fintech tools have a synergistic effect on promoting sustainable investment behaviour. Participant 17 stated, "I think financial literacy education and fintech tools complement each other perfectly. Financial literacy education gives you the knowledge, while fintech tools provide you with the

resources to put that knowledge into practice." Similarly, Participant 24 said, "Fintech tools like robo-advisors and social media platforms are great for getting real-time information and making informed decisions. However, financial literacy education is necessary to fully understand the implications of those decisions."

Question 6 aimed to explore the necessity of combining financial literacy education and fintech tools in promoting sustainable investment behaviour. Participants' responses indicated that they believed this combination is necessary to promote sustainable investment behaviour in the context of green investment. Participant 9 stated, "Without financial literacy education, even the best fintech tools won't be enough to promote sustainable investment behaviour. Similarly, without fintech tools, it's hard to access real-time information and make informed decisions." Participant 21 added, "I think it's necessary to have a combination of both because they have complementary strengths. Financial literacy education helps you understand the investment landscape, while fintech tools help you navigate that landscape and make informed decisions."

### **Challenges with financial literacy education and fintech tools**

Question 7 aimed to explore any challenges the participants faced in accessing information on green investment. Some participants mentioned that the lack of transparency in the green investment market made it difficult to access reliable information. Participant 16 stated, "I found it hard to get reliable information on green investment because it's a relatively new and rapidly changing market." Others noted that the information available was often too technical and difficult to understand, especially for those without a financial background.

Question 8 was designed to investigate how information asymmetry affects sustainable investment behaviour in the context of green investment. Several participants mentioned that information asymmetry was a significant challenge in the green investment market. Some noted that companies often provided limited or biased information about their environmental practices and sustainability efforts, making it difficult for investors to make informed decisions. Participant 7 stated, "I think companies often overstate their green efforts, making it hard for investors to distinguish between genuinely sustainable companies and those that are just greenwashing." Others mentioned that some investors had access to more information than others, creating an uneven playing field.

Question 9 aimed to explore any other challenges or limitations associated with financial literacy education and fintech tools in promoting sustainable investment behaviour in the context of green investment. Some participants noted that financial literacy education and fintech tools were not accessible to everyone, creating a digital divide. Participant 5 stated, "Not everyone has access to fintech tools or can afford to pay for financial literacy courses." Others mentioned that the effectiveness of financial literacy education and fintech tools depended on the individual's level of interest and motivation. Participant 19 stated, "Even if you have access to fintech tools and financial literacy courses, it's up to the individual to take the initiative to use them effectively."

### **Discussion**

This study's findings align with previous studies that have highlighted the challenges investors face in accessing information on green investments. KPMG (2017) found that a lack of reliable information on green investments was a significant barrier to sustainable investment behaviour. Similarly, Iqmal (2020) found that investors lacked knowledge and understanding of green financial products, which hindered their ability to make informed investment decisions.



Therefore, the results of this study suggest that the challenges faced by investors in accessing reliable and credible information on green investments are still prevalent.

Moreover, the results of this study are also consistent with previous research that has emphasized the importance of addressing information asymmetry in sustainable investment behaviour. Husted et al. (2016) found that investors who perceived higher levels of information asymmetry were less likely to invest in sustainable projects. Celebi and Hönig (2019) found that information asymmetry was a significant barrier to sustainable investment behaviour. Therefore, the findings of this study suggest that addressing information asymmetry is crucial for promoting sustainable investment behaviour. Regarding the use of fintech tools, previous research has also highlighted their potential for promoting sustainable investment behaviour. Keho (2017) found that advisors could help investors make informed investment decisions by providing personalized investment advice. Additionally, Huynh (2018) found that online platforms could help investors compare and select sustainable investment options. Therefore, the results of this study are consistent with previous research that highlights the potential of fintech tools in promoting sustainable investment behaviour.

Lastly, previous studies have also emphasized the importance of financial literacy education in promoting sustainable investment behaviour. Ali and Ahmad (2021) found that financial literacy education could help investors make informed investment decisions by increasing their understanding of financial products. Similarly, Bielova, Halík and Ryabushka (2021) found that financial literacy education could increase investors' knowledge of sustainable investments. Therefore, the findings of this study are consistent with previous research that highlights the importance of financial literacy education in promoting sustainable investment behaviour.

### **Conclusion and Implications**

This study aimed to examine the role of financial literacy education and Fintech tools in promoting sustainable investment behaviour in the context of green investment and to identify the challenges associated with their effectiveness. The study found that financial literacy education and Fintech tools, play a significant role in promoting sustainable investment behaviour in the context of green investment. The combination of financial literacy education and Fintech tools synergistically affects sustainable investment behaviour. However, the study also identified significant challenges related to the effectiveness of financial literacy education and Fintech in promoting sustainable investment behaviour, including factors such as information asymmetry, lack of access to technology, and behavioural biases among individual investors. The study concludes that addressing these challenges is crucial for promoting sustainable investment behaviour and achieving sustainable development goals.

This study explores the relationship between financial literacy education, fintech tools, and sustainable investment behaviour in the context of green investment, drawing upon the theory of planned behaviour. Theoretical implications suggest that financial literacy education and fintech tools can shape individuals' attitudes, subjective norms, and perceived behavioural control towards green investment, ultimately promoting sustainable investment behaviour. Practical implications reveal the potential of social media platforms in promoting green investment by improving the accessibility of information and personalized investment advice. Policy implications suggest the need for policymakers to increase access to financial literacy education, promote information transparency on green investments, and support the development of fintech tools that improve the accessibility of information on sustainable financial products.

Limitations of this study include the use of self-reported data from individual investors, which may be subject to biases and inaccuracies. The study only focuses on the role of financial literacy education and Fintech in promoting sustainable investment behaviour and does not consider other factors that may also influence such behaviour. To address these limitations, future studies could use more objective measures of sustainable investment behaviour, such as portfolio data, to overcome biases and inaccuracies associated with self-reported data. Future research could include a more diverse sample from different regions and backgrounds to improve the generalizability of the findings.

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