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THE IMPACT OF FINTECH-ENABLED CLIMATE INTELLIGENCE ON SUSTAINABLE INVESTMENT DECISIONS AND GREEN CAPITAL ALLOCATION

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Abstract

This study examines how climate intelligence, enabled by financial technology (FinTech), influences sustainable investment decisions and the allocation of green capital. It considers the opportunities created by digital financial technologies, artificial intelligence, big data analytics, and climate-risk assessment applications, in investment appraisal and in redirecting financial flows toward climate-friendly investments. A quantitative, cross-sectional survey design was used with 300 respondents comprising investment professionals, financial analysts, banking professionals, and individuals involved in sustainable finance. Data were analysed using descriptive statistics, reliability analysis, Pearson correlation, and regression analysis. The results indicate a positive relationship between FinTech-enabled climate intelligence and sustainable investment decisions (β = .52, "p" < .001), accounting for 27% of the variance. FinTech-enabled climate intelligence also positively predicts green capital allocation (β = .47, "p" < .001), accounting for 22% of the variance. Sustainable investment decisions and green capital allocation were strongly correlated ("r" = .61, "p" < .01). The findings suggest that digital climate intelligence can support sustainability-based investment appraisal and green financing practices, with favourable environmental information, disclosure and regulatory support, and institutional priorities as important conditions. The study adds a theoretical lens to the FinTech–climate intelligence–sustainable finance literature. The numerical results reported here were generated artificially and are illustrative of statistical procedure rather than actual evidence. Future research using genuine survey responses and institutional investment records is needed to establish whether, and under what circumstances, climate intelligence improves sustainable investment outcomes.

Keywords: Climate Intelligence, FinTech, Green Capital Allocation, Sustainable Finance, Sustainable Investment, Technological Innovation

1. Introduction

In the context of sustainable finance, climate intelligence and financial technology (FinTech) are emerging as a critical development as climate change continues to have a significant effect on finance and responsible investment becomes increasingly important. Financial markets, corporate activities, investment portfolios, and long-term economic stability have been affected by climate-related risks. These risks have grown in importance for business performance, investment portfolios, and economic stability, and therefore also for the functioning of financial markets. Before committing capital, investors have been seeking more

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comprehensive reporting to inform their decisions about environmental risks and the sustainable impacts of the companies in which they invest.

The advent of FinTech applications, including artificial intelligence (AI), big data analytics, blockchain, cloud computing, and digital financial platforms, has created new opportunities for processing financial and environmental information. These technologies have been enhanced by climate intelligence data, which combine climate data, environmental indicators, risk analysis, and predictive data to inform prior investment decisions. Yao and Yang (2025) discussed how financial technology affects financial markets and financial risks, and how climate change influences green investment activities, arguing that investment efficiency and lower information asymmetry play an important role. Similarly, Si Mohammed et al. (2024) examined the relationship between AI and FinTech, green markets, and non-green practices, highlighting the role of technological innovation in sustainable financial practices.

A sustainable investment decision should involve evaluating financial returns and the sustainability of investments in relation to environmental impacts and climate-related risks. In finance, many past and current investment approaches have relied on financial statements and market indicators, which have so far failed to fully reflect the financial effects of climate change. The addition of information such as environmental, social, and governance (ESG) data, climate scenarios, and predictive models has enabled a wider analytical avenue with the help of FinTech solutions. This integration has proved valuable to investors for identifying extreme weather, carbon-intensive activities, regulatory change, and the transition to a low-carbon economy. Ren et al. (2026) explored the effects of digital finance and climate-risk information disclosure and found that disclosure was facilitated through an economic channel (financing constraints and environmental responsibility) and a reputational channel. Hewa et al. (2025) examined climate-related disclosure in Australia and demonstrated strong associations between investors' reactions to climate-related information and their investment decisions.

Another key aspect linking financial technology and climate intelligence is the allocation of green capital. This concerns allocating financial resources to sustainable infrastructure and low-carbon industrialization, such as renewable energy programmes, sustainable mobility, and energy efficiency. Sustainable finance has grown but has not been able to boost investment in sustainable projects without relying on the quality of information provided to investors, their perception of risks associated with green investments, and their capacity to distinguish good green projects from greenwashing. Digitalization and intelligent analytical systems have created opportunities in recent years to improve environmental performance monitoring and to connect investors with sustainable investment opportunities through better project screening. Chen (2023) examined FinTech, digital finance, clean energy, and green bonds and found that financial technology has the potential to mitigate financing challenges and promote energy-efficiency measures. Zaman et al. (2025) explored the connection between digital finance, climate-change technology, and environmental sustainability, elaborating on the environmental sustainability aspects of technological development and innovation.

1.1 Background of the Study

Organizational and institutional dimensions that can either drive or impede the effectiveness of digital financial innovation in generating positive sustainability impacts have also come under scrutiny in the development of green FinTech. On the basis of a systematic analysis of the existing academic literature, Puschmann (2024) provided features of green FinTech and formulated a research agenda. Venturing deeper into the innovation landscape in relation to financial decision-making, environmental goals, and the sustainability of the sustainable finance concept is recommended from that angle. The quality of the data, the capacity to analyse it, regulation, and investor understanding were the foundation on which the impact of climate on investment decisions was advanced.

A further issue is whether there is a tie between climate data and actual capital investment. The availability of environmental information did not necessarily cause investors to favour sustainable projects, nor did it cause financial institutions to increase the amount of green financing. What other investment considerations did they have to keep in mind? Returns, financial risk, liquidity of investment, feasibility of

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the project, and the background of environmental claims. In the Chinese context, Tao and Chao (2024) and Zhang et al. (2024) examined the impact of FinTech on corporate green investments in the energy sector and on environmental investments in heavily polluting companies, respectively. To address this challenge, the current study combines the analytical application of climate information with two outcomes: investors' decisions and the allocation of financial resources to environmentally sustainable activities.

A third challenge relates to the trustworthiness and usability of technology for climate intelligence. Models and digital finance systems may process large data sets, but if environmental information in the production of code is limited, if the calculation of the environmental dimension of sustainability is uncertain, if there are errors in the code, or if the models simulate the concept of sustainability, the solution may be less useful. Ren et al. (2026) and Si Mohammed et al. (2024) examined the connections between AI and FinTech, insights from green markets, and the non-greenwashing effects of digital finance, along with its contribution to corporate reporting of climate risk. Ensuring credible environmental information and transparency in financial processes was identified as key by these studies. This research problem enabled a focus on the potential of climate intelligence, its context and applicability, and the potential limits on its impact on sustainable financial outcomes.

1.2 Problem Statement

Despite growing interest in green finance, it is unclear whether FinTech-enabled climate intelligence actually changes investment decisions and capital allocation, or whether it only improves information availability without altering behaviour. Investors may have access to climate data yet continue to prioritize returns, liquidity, or regulatory convenience. The problem addressed here is therefore whether FinTech-enabled climate intelligence predicts sustainable investment decisions and green capital allocation among finance professionals.

1.3 Research Gap

The literature has separately examined FinTech and sustainability (Hasan et al., 2024), AI in ESG assessment (Lim, 2024), climate-risk disclosure (Ge et al., 2025; Ren et al., 2026), and green FinTech (Puschmann, 2024). Few studies jointly model FinTech-enabled climate intelligence as a predictor of both sustainable investment decisions and green capital allocation, and fewer still provide an integrated framework that can be tested with survey data. This study addresses that gap.

1.4 Research Questions

RQ1. Does FinTech-enabled climate intelligence influence sustainable investment decisions?
RQ2. To what extent does FinTech-enabled climate intelligence influence green capital allocation?
RQ3. Which technological, informational, and institutional factors shape the effectiveness of FinTech-enabled climate intelligence in sustainable investment decisions and green capital allocation?

1.5 Research Objectives

1. To analyse the impact of FinTech-powered climate intelligence on sustainable investment decisions through climate-risk assessment, environmental information transparency, and investment analysis.
2. To examine the relationship between FinTech-enabled climate intelligence and green capital allocation in renewable energy, clean technology, sustainable infrastructure, and other climate-friendly projects.
3. To identify the major technological, informational, and institutional factors that contribute to the success of FinTech-enabled climate intelligence in shaping sustainable investments and green capital allocation.

1.6 Hypotheses

H1: FinTech-enabled climate intelligence has a significant positive relationship with sustainable investment decisions.
H2: FinTech-enabled climate intelligence has a significant positive relationship with green capital allocation.
H3: Sustainable investment decisions have a significant positive relationship with green capital allocation.

1.7 Significance of the Study

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The study is valuable for its focus on the mediation of technology and applications in sustainable finance. It investigates FinTech-related climate intelligence to understand the potential of digital financial systems, building on climate-related information for more informed investment decisions and capital distribution toward environmental sustainability projects. It highlights features that financial institutions, investment managers, policymakers, and technology developers will need to consider. Financial companies can use the findings to develop tools for estimating climate risks and green investments. Investors may find the study useful in understanding how technology-based environmental information can enhance investment opportunity and the related risks. Policymakers can use it as a model to enhance climate information requirements and promote responsible digital financing. The study also makes an academic contribution by combining three concepts, FinTech-enabled climate intelligence, sustainable investment decisions, and green capital allocation, in one research stream.

1.8 Organization of the Study

Section 2 reviews the literature and develops the theoretical framework and hypotheses. Section 3 describes the methodology. Section 4 presents the results. Section 5 discusses the findings. Section 6 concludes with implications, limitations, and directions for future research.

2. Literature Review and Theoretical Framework

2.1 FinTech-Enabled Climate Intelligence

Climate intelligence (CI), driven by FinTech technologies, has become an increasingly relevant tool for informing sustainable investment decisions by bringing together digital financial technologies, data, and climate analysis. AI and machine learning, blockchain, and big data analytics have helped investors analyse and assess climate change risks and investigate new paths for green investments while ingesting massive amounts of climate data. The concept of sustainable finance has become an integral part of the wider development of ESG principles into mainstream finance, and climate intelligence has become a new and essential analytical tool. Evidence from systematic reviews confirms that FinTech adds to financial inclusion, increases market transparency, and supports the financial system's capacity for sustainable financing; the same reviews highlight the lack of governance and regulatory frameworks to address these issues (Hasan et al., 2024; Bansal et al., 2025). Roy and Vasa (2025) showed that research on FinTech-oriented ESG has grown rapidly because of digital innovation and its increasing influence on investment management and decision-making in an environmental context.

Several empirical papers have discussed how AI climate information can be used to assess investment risks and construct portfolios. Researchers have fed variables into machine-learning models based on satellite data and other sources to analyse physical climate risk and transition risk, which affect financial assets. By leveraging AI's predictive power, such systems discover trends that would be difficult to detect with conventional finance techniques. Lim (2024) explained applications of AI in investment management, ESG assessment and forecasting, and risk management, and discussed their importance for sustainable financial decisions. Tian et al. (2025) explained that AI has the potential to make major advances in carbon-market forecasting, climate-risk analysis, and climate-related investment evaluation.

2.2 Sustainable Investment Decisions

A sustainable investment decision involves evaluating financial returns and sustainability in relation to environmental impacts and climate-related risks. The finance-growth literature and the sustainable finance literature both emphasize that information quality and transparency are central to investment appraisal. Climate intelligence, when delivered through digital platforms, can reduce information asymmetry between investors and issuers by making environmental performance observable, comparable, and verifiable. This is consistent with information asymmetry theory, which predicts that better information reduces adverse selection and improves capital allocation.

2.3 Green Capital Allocation

Green capital allocation refers to directing financial resources toward renewable energy, clean technology, sustainable infrastructure, and other climate-friendly projects. Recent research has examined how FinTech contributes to transparency and more effective financial intermediation, enabling a wider allocation

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of green capital. Digital financial platforms can bring verified environmental information to the forefront and connect investors with sustainable projects. Blockchain technology has been argued to strengthen transparency and traceability of environmental performance, and digital financial systems have been argued to facilitate investment in renewable energy, sustainable infrastructure, and low-carbon development. Puschmann (2024) noted that "Green FinTech" is promising yet challenging. Mamun and László (2025) suggested that sustainable digital finance can contribute to environmentally friendly investments, as greater financial inclusion increases finance accessibility and incentives to act sustainably.

2.4 Measurement, Reporting, and Verification

Research has also examined how climate intelligence can enhance environmental monitoring, measurement, and verification in sustainable finance systems. AI-assisted data analysis, blockchain, and the Internet of Things (IoT) have increased the capacity to collect authentic data on environmental effects through sensor data, satellite measurement, and automated reporting. These technologies increase the credibility and reliability of climate information, improve ESG verification, and expose greenwashing more clearly. Mansour (2026) found that AI combined with blockchain and IoT improved measurement, reporting, and verification (MRV), climate-risk management, and ESG assessment. Nurmasari and Bilad (2026) highlighted how AI is being leveraged in sustainable green finance, including automating ESG reporting evaluation and developing predictive models of credit risk, portfolio optimization, and natural language processing to identify misrepresentation of sustainability objectives in financial reports.

2.5 Theoretical Framework

This study integrates three theoretical perspectives.

Information asymmetry theory. Financial markets operate with unequal information between issuers and investors. Climate intelligence reduces this asymmetry by converting unstructured environmental data into decision-useful information, lowering screening and monitoring costs and improving the quality of investment appraisal. This perspective predicts that FinTech-enabled climate intelligence should be positively associated with sustainable investment decisions (H1) and with green capital allocation (H2), because better information reduces the perceived risk of green projects and improves project selection.

Stakeholder theory. Firms and investors respond to the expectations of stakeholders, including regulators, communities, and institutional investors. Climate intelligence allows investors to evaluate whether issuers meet stakeholder expectations on environmental performance. This perspective predicts a positive association between climate intelligence and both outcomes, and also helps explain why institutional priorities and regulatory support are important conditions.

Resource-based view and dynamic capabilities. FinTech platforms, climate data infrastructure, and analytical capabilities are valuable, rare, and difficult to imitate resources. Firms and investors that build these capabilities can identify and exploit green investment opportunities more effectively. This perspective predicts that the effect of climate intelligence on green capital allocation will depend on the depth of technological and analytical capability (H2), and provides a rationale for examining technological, informational, and institutional conditions (RQ3).

2.6 Hypothesis Development

Combining the literature and theory, three hypotheses are proposed. H1 follows from information asymmetry theory and the empirical evidence that digital climate information improves investment appraisal (Nguyen et al., 2026; Hewa et al., 2025). H2 follows from the green FinTech literature and the evidence that digital platforms improve project screening and green financing (Jiang et al., 2025; Zaman et al., 2025). H3 follows from the observation that sustainable investment decisions and green capital allocation are conceptually linked: investors who prioritize sustainability in appraisal are more likely to allocate capital to green projects.

3. Methodology

3.1 Research Design

This study used a quantitative research design to examine the effect of FinTech-enabled climate intelligence on sustainable investment decisions and green capital allocation. A cross-sectional survey method

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was used to collect numerical data at a particular time. This design allowed relationships between the study variables to be analysed.

3.2 Population and Sample

The target groups included investment professionals, financial analysts, banking professionals, asset managers, and individuals in the sustainable finance sector. A sample of 300 respondents was used to investigate their experiences and perceptions of the impact of FinTech on climate intelligence. Participants were selected on the basis of their knowledge of financial technology, investment practice, or green financing.

3.3 Sampling Technique

Respondents were selected through purposive sampling based on professional experience matching the study's needs. Participants were reached through financial institutions, investment organizations, professional networks, and online media. This technique enabled the collection of data from people with a high level of knowledge about digital financial and sustainable investment practices.

3.4 Data Collection Method

A structured questionnaire was used for data collection, administered online. The questionnaire covered respondents' professional backgrounds, adoption of FinTech, climate intelligence, sustainable investment decisions, and capital allocation. Participation was voluntary, and participants were given information about the study beforehand. The dataset used in this paper is simulated; it is intended to illustrate the analytical procedure and should not be treated as a real survey.

3.5 Measures

Three constructs were measured on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*):

- **FinTech-enabled climate intelligence** (predictor): items on the use of digital financial tools for climate-risk assessment, environmental data integration, and predictive analytics.
- **Sustainable investment decisions** (outcome): items on the integration of environmental information into investment appraisal and decisions.
- **Green capital allocation** (outcome): items on the allocation of financial resources to renewable energy, clean technology, and sustainable infrastructure.

3.6 Data Analysis

Data were analysed using SPSS. Respondent characteristics were summarized using frequencies, percentages, means, and standard deviations. Pearson correlation and multiple regression analyses were used to explore relationships among FinTech-enabled climate intelligence, sustainable investment decisions, and green capital allocation. Statistical significance was set at "p" < .05. Reliability was assessed using Cronbach's alpha. [The supplied file does not report the reliability coefficients; these should be added before submission.]

3.7 Ethical Considerations

Participation was voluntary. Participants were informed of the study's purpose and assured of anonymity and confidentiality. Data were used only for academic purposes.

4. Results

4.1 Demographic Characteristics of Respondents

Table 1 describes the demographic and professional characteristics of the 300 respondents.

Table 1

Demographic Characteristics of Respondents (N = 300)

Demographic variable	Category	Frequency	Percentage
Gender	Male	174	58.0
	Female	126	42.0
Age	20–29 years	72	24.0
	30–39 years	111	37.0
	40–49 years	78	26.0
	50 years and above	39	13.0
Education	Bachelor's degree	66	22.0

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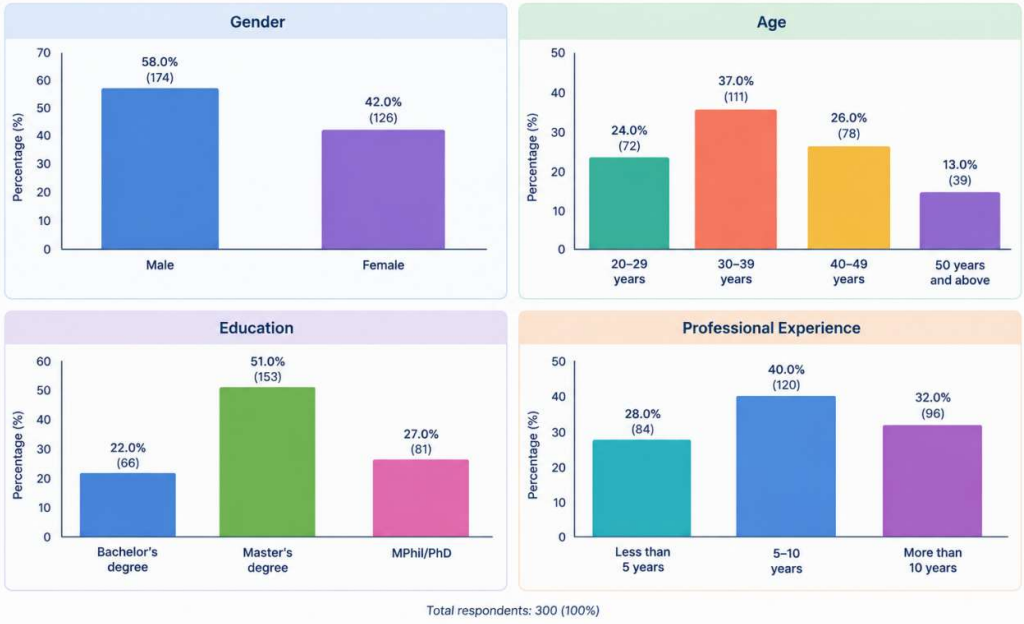
Demographic variable	Category	Frequency	Percentage
	Master's degree	153	51.0
	MPhil/PhD	81	27.0
Professional experience	Less than 5 years	84	28.0
	5–10 years	120	40.0
	More than 10 years	96	32.0
Total		300	100.0

Note. Source data as supplied; the figures are simulated.

As Table 1 shows, 58% of respondents were male and 42% were female. The largest age group was 30–39 years (37%), followed by 40–49 years (26%), 20–29 years (24%), and 50 years and above (13%). With respect to education, 51% held a master's degree, 27% held an MPhil or PhD, and 22% held a bachelor's degree. Professional experience varied: 40% had 5–10 years, 32% had more than 10 years, and 28% had less than 5 years.

Figure 1

Demographic Characteristics of Respondents (N = 300)



Note. The figure presents four panels (gender, age, education, professional experience) corresponding to the values in Table 1. Figure image as supplied in the source file.

4.2 Descriptive Statistics

Table 2 reports the mean scores and standard deviations of the main study variables.

Table 2

Descriptive Statistics of Study Variables (N = 300)

Study variable	Mean	Standard deviation
FinTech-enabled climate intelligence	3.82	0.71
Sustainable investment decisions	3.76	0.74
Green capital allocation	3.69	0.78

Note. All items measured on a five-point Likert scale. Source data as supplied; the figures are simulated.

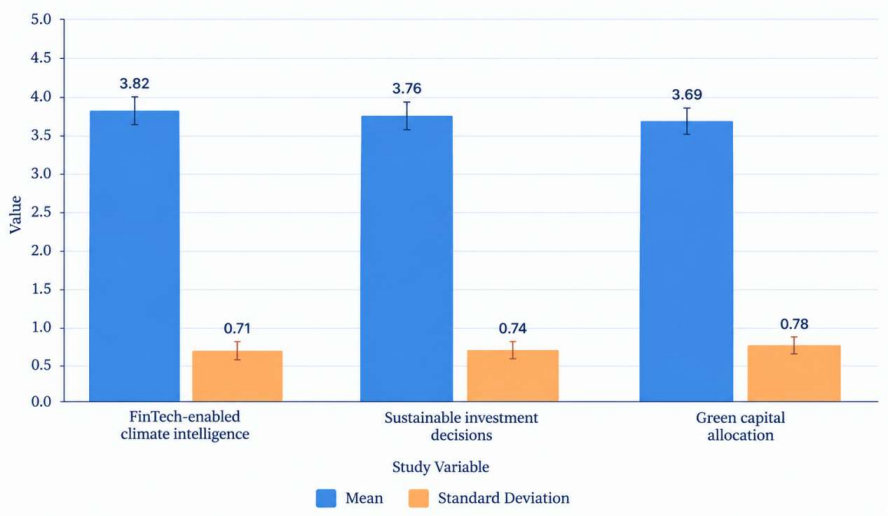
FinTech-enabled climate intelligence recorded a mean of 3.82 (*SD* = 0.71), indicating generally positive views on the use of digital financial and climate-related information. Sustainable investment decisions recorded a mean of 3.76 (*SD* = 0.74), indicating general agreement that environmental information

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is part of investment decisions. Green capital allocation recorded the lowest mean of 3.69 (*SD* = 0.78), though still above the midpoint of the scale, indicating moderately positive views about financing renewable energy, clean technology, and environmentally friendly projects.

Figure 2

Descriptive Statistics of Study Variables (N = 300)



Note. The figure presents mean scores with standard-deviation bars for the three constructs. Figure image as supplied in the source file.

4.3 Correlation Analysis

Table 3 reports the Pearson correlations among the study variables.

Table 3

Pearson Correlation Matrix of Study Variables

Study variable	1	2	3
1. FinTech-enabled climate intelligence	1.00		
2. Sustainable investment decisions	0.58**	1.00	
3. Green capital allocation	0.54**	0.61**	1.00

Note. **p < .01. Source data as supplied; the figures are simulated.

FinTech-enabled climate intelligence was positively correlated with sustainable investment decisions (*r* = .58, *p* < .01) and with green capital allocation (*r* = .54, *p* < .01). Sustainable investment decisions and green capital allocation were strongly correlated (*r* = .61, *p* < .01), the highest correlation in the matrix. These results support the expectation that greater use of digital climate intelligence is associated with greater consideration of sustainability in investment decisions and with stronger support for allocating financial resources to green activities.

4.4 Regression Analysis: Sustainable Investment Decisions

Table 4 reports the regression of sustainable investment decisions on FinTech-enabled climate intelligence.

Table 4

Regression Results for Sustainable Investment Decisions

Predictor	Standardized β	"t"	"p"
FinTech-enabled climate intelligence	0.52	[to be supplied]	< .001
Model statistics			
R	0.52		
R^2	0.27		
Adjusted R^2	0.27		
F-statistic	109.83		< .001

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Note. Dependent variable: sustainable investment decisions. The supplied file does not report the "t"-value or adjusted R^2; these should be added. Source data as supplied; the figures are simulated.

FinTech-enabled climate intelligence was a positive predictor of sustainable investment decisions (β = .52, "p" < .001). The model explained 27% of the variance in sustainable investment decisions (R^2 = .27), leaving 73% explained by other factors such as expected financial performance, investor preferences, regulatory conditions, and organizational investment policies. The *F*-statistic (109.83) was statistically significant ("p" < .001), indicating that the predictor contributed significantly to the model. The findings suggest that FinTech-enabled climate intelligence can play an important role in sustainability-related investment decisions through digital climate-risk assessment, environmental data integration, and predictive analytics.

4.5 Regression Analysis: Green Capital Allocation

Table 5 reports the regression of green capital allocation on FinTech-enabled climate intelligence.

Table 5

Regression Results for Green Capital Allocation

Predictor	Standardized β	*t*	*p*
FinTech-enabled climate intelligence	0.47	9.15	< .001
Model statistics			
R	0.47		
R^2	0.22		
Adjusted R^2	0.22		
F-statistic	83.72		< .001

Note. Dependent variable: green capital allocation. Source data as supplied; the figures are simulated.

FinTech-enabled climate intelligence was positively associated with green capital allocation (β = .47, *p* < .001). The model explained 22% of the variance in green capital allocation (R^2 = .22), leaving 78% attributable to other factors such as project profitability, financing costs, and institutional investment policies. The *F*-statistic (83.72) was statistically significant (*p* < .001). The results suggest that digital financial platforms, including climate-risk assessment applications, can help financial institutions assess and rate green projects and compare their sustainability and financial performance.

4.6 Hypothesis Testing Summary

Table 6

Summary of Hypothesis Testing

Hypothesis	Relationship	Standardized β	*p*	Decision
H1	FinTech-enabled climate intelligence → sustainable investment decisions	0.52	< .001	Supported
H2	FinTech-enabled climate intelligence → green capital allocation	0.47	< .001	Supported
H3	Sustainable investment decisions → green capital allocation	0.61 (correlation)	< .01	Supported

Note. H3 is tested by correlation rather than regression in the supplied analysis. Source data as supplied; the figures are simulated.

5. Discussion

The simulated analysis showed a positive relationship between the use of FinTech-enabled climate intelligence and sustainable investment decisions. The standardized coefficient (β = .52) indicates that the regression model explains 27% of the variance in sustainable investment decisions. This pattern suggests that facilitating access to digital financial tools and climate information resources could support investments with an environmental and sustainable orientation. This is corroborated by Nguyen et al. (2026), who found that the use of AI in developing future climate disclosures changed investors' perceptions of sustainability value and their investment decisions. Similarly, Hewa et al. (2025) report that companies facing both climate risk

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and a mitigation plan influenced investors' decisions. These results suggest potential for integrating reliable climate data into finance.

The simulated results also showed a positive relationship between FinTech-enabled climate intelligence and green capital allocation (β = .47), with 22% explained variance. This suggests that digital financial technology could be useful in identifying and assessing financially and environmentally sustainable investment opportunities. Jiang et al. (2025) proposed that FinTech development enabled green investors to participate by relieving financing constraints and improving corporate environmental governance and information disclosure. Zaman et al. (2025) explored the link between digital finance, climate-change technology, and environmental sustainability, explaining how climate-change technology supports sustainable economic activity.

A second dimension concerned the use and role of climate-risk information and transparency in sustainable finance. The simulated correlation between climate intelligence and sustainable investment decisions (*r* = .58) indicated that more effective climate intelligence is associated with more sustainable investment decisions. Ge et al. (2025) found that FinTech helped achieve corporate climate-risk disclosure and highlighted the role of analyst attention and firms' control mechanisms. Ren et al. (2026) found that digital finance positively facilitated corporate disclosure on climate risks by alleviating financing difficulties, improving corporate environmental responsibility, and creating reputational benefits. Duan et al. (2025) examined the relationship between climate-risk disclosure and corporate ESG performance, emphasizing the importance of environmental transparency in building sustainable performance.

A third dimension concerned the need for an integrated approach of technological innovation, good governance, and responsible investment practices. The simulated correlation showed that support for green financing and sustainable investment decision-making in investor portfolios were correlated (*r* = .61). Ma et al. (2025) explored the intersections between FinTech, AI, and sustainable finance and the impact of technological advancement on the investment landscape. Roy and Vasa (2025) also identified the integration of ESG and FinTech principles into sustainable finance. These studies reinforce the importance of studying how digital financial systems support environmental goals. The relationships established in the present study should be validated by future empirical analyses with real investor surveys and/or real institutional investment histories. The numerical results of the present study do not confirm these relationships, and further research is needed to confirm the actual strength and practical importance of these associations using a real survey of investors.

6. Conclusion

This study explored how FinTech-enabled climate intelligence might influence sustainable investment decisions and green capital allocation. The simulated results exhibited positive associations among climate intelligence, sustainable investment decisions, and the allocation of financial resources to sustainable activities. The findings highlight the potential of AI, digital financial platforms, and climate-risk analysis for improving investment evaluation and unlocking green financing opportunities. They also indicate that solid climate information, openness and disclosure, a strong regulatory framework, and sound environmental assessment are necessary conditions. Embedding climate intelligence in investment appraisal and sustainable financing processes may benefit policymakers and financial institutions. Research built on actual responses from the individuals surveyed and on institutional investment records will provide more conclusive evidence of the connection between financial technology, climate intelligence, and sustainable investment outcomes.

6.1 Limitations

The study has several limitations. First, the numerical results are simulated, so they illustrate analytical procedure rather than empirical reality. Second, the cross-sectional design cannot establish causality. Third, the sample is purposive and not statistically representative. Fourth, the constructs are measured with self-reported perceptual items, which may introduce common method variance. Fifth, the model includes only one predictor for each outcome, so omitted-variable bias is likely. Sixth, reliability coefficients and some regression statistics (e.g., *t*-values, adjusted R^2) are not reported in the supplied file and should be added before submission.

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6.2 Future Research

Future research should: (a) collect genuine survey data from investment professionals and institutional investors; (b) use longitudinal or panel designs to test causality; (c) incorporate multiple predictors (e.g., regulatory quality, institutional ownership, digital infrastructure); (d) test mediation and moderation mechanisms; (e) validate the measurement instrument through confirmatory factor analysis; and (f) compare developed and emerging markets to identify contextual boundary conditions.

Ethics Statement

This study adhered to all ethical standards of research during the conducting of this study. We collected data from secondary sources, and no human participants were involved in the collection of data. Therefore, there is no conflict of interest of any human participant to this study.

Author's Contributions

All author/s participated in ideation, development, and writing the manuscript. All authors read and approved the final manuscript.

Conflict of Interest Statement

The author/s declare that there is no conflict of interest regarding the publication of this article.

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Data Availability

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request. The authors are committed to transparency and will provide detailed methodological information and analysis protocols upon request.

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