European Economic Letters

ISSN 2323-5233
Vol 15, Issue 2 (2025)
http://eelet.org.uk

The intersection of esg and fintech

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Abstract:

ESG stands for Environmental, Social, and Governance. It's a framework used to evaluate a company's performance on these three dimensions. It's become increasingly important for investors and consumers alike, as they seek to support businesses that align with their values (BlackRock, 2022). Whereas, Fintech, or financial technology, is the use of technology to improve financial activities (Financial Stability Board, 2021).

In the era of complex sustainability challenges, Fintech companies are providing innovative solutions that consider ESG as a main point (World Economic Forum, 2023). The solutions align with broader societal goals. This research paper highlights how the intersection of Fintech innovations and Environmental, Social, and Governance (ESG) benefits society as a whole with sustainable finance. The study examines various technological advancements that impact the landscape by enhancing transparency, reducing costs, and improving overall performance, including blockchain, artificial intelligence (AI), and robo-advisors (Smith & Thompson, 2020). This paper also notes literature reviews that contribute to the growing body of knowledge in sustainable finance by illustrating the measurable impacts of Fintech on ESG investment strategies.

Keywords:

Sustainable finance, Fintech integration, sustainable economic growth, Environmental, Social, and Governance (ESG).

Introduction:

In today’s complex world, sustainability is a main objective for governments, regulators, corporations, and investors (United Nations Environment Programme Finance Initiative, 2022). The convergence of Environmental, Social, and Governance (ESG) principles with financial technology (Fintech) presents a significant opportunity for company growth and societal development, and the Fintech sector is well-equipped to cope with rapid changes in a complex environment (Deloitte, 2023). In recent years, the intersection of finance, technology, and sustainability with ESG has given rise to a powerful trend known as sustainable finance

ISSN 2323-5233
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(BlackRock, 2022). This innovative approach seeks to integrate environmental, social, and governance (ESG) factors into financial decision-making processes with a technology-driven foundation, aiming to create long-term value and address global challenges such as climate change, social inequality, and resource depletion (World Economic Forum, 2023).

Underpinned by agility and innovation, the growth of Fintech and sustainable finance is interconnected, as Fintech advancements drive sustainable finance forward (J.P. Morgan, 2023). In particular, artificial intelligence, blockchain, and big data analytics are used by Fintech firms to enhance the application of the ESG paradigm across core business operations, including investment strategies and risk management (Smith & Thompson, 2020).

From a global perspective, ESG is central to sustainable finance in Fintech firms. ESG impacts the environment, society, and corporate governance policies, supporting Fintech firms in sustaining profitability and stability while contributing to societal development (PwC, 2021). Both Fintech and ESG strongly influence investor values (BlackRock, 2022). Due to technological advancements, Fintech companies are introducing concepts across various sectors, such as renewable energy, ethical investments, increased information flow, and carbon emissions reduction (United Nations Environment Programme Finance Initiative, 2022). Environmental and social responsibility worldwide is made possible through Fintech innovations, which contribute to the demarcation of investment opportunities (International Monetary Fund, 2022).

Objectives:

1. To study the significant difference in the performance of ESG investments with and without Fintech integration
2. To study the impact of Fintech integration whether its significantly reduces the volatility of ESG investments.
3. To examine the Fintech integration and investor confidence in ESG reporting

Research Methodology

1. Research Design

In this section, researcher has covered the effect of Fintech on ESG investments, The study based on the review of existing literature and does quantification using actual data. This study is designed to seeks to understand how Fintech advances the nature and attractiveness of investments.

2. Data Collection

Primary Data: Researcher has taken I to account the real time data by observing the various numerical trend and investor behavior pattern and informal interview with the investors and expert. The controlled observation with respect to returns, volume, and the level of investor's confidence on the trends that are consistent with the market observations was carried out.
Secondary Data: The researcher has taken in to account the research papers, journal, books, online website ethe data available on fiancé website and annual reports of the various fintech company has been taken in to account for this study.

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3. Sample Data

The data was based on the two groups that is Investments into Fintech integrated ESG assets and Investments into non-Fintech integrated ESG assets. The data covers five years stating from 2019 to 2023 taking in to consideration key performance measures such as total returns, risk (volatility), and level of satisfaction among investors.

4. Statistical Analysis

T test was used to compare the Performance Evaluation i.e. comparison of the annual returns of ESG investments with and without integrating Fintech, the researcher has used this test to find out whether there is change in investment performance due to integration of fintech. Moreover, Researcher has carried out the same test to do the votality analysis. In this study votality analysis has considered the factors like investment strategies as a risk mitigator and deployment of the fintech company and one can reduce the votality to make more predictable and dependable investment ourocmes in respect of E signatures

• By using the T test ,Researcher has carried out the investor confidence evaluation by taking in to considering the effect of Fintech on the assurance of investors form the data which was included in the ESG reports was assessed by measuring the level of satisfaction for the investors under study. The hypothesis testing was validated to find out the Fintech increased investor confidence on investments in ESG.

Table 1: Performance of ESG Investments with and without Fintech Integration

Year	ESG Investment with Fintech Integration (Annual Return %)	ESG Investment without Fintech Integration (Annual Return %)
2019	7.2	5.8
2020	8.5	6.0
2021	9.1	6.2
2022	10.4	6.5
2023	11.0	6.7

Hypothesis Testing:

Hypotheses:

- Null Hypothesis (H0H_0H0): There is no significant difference in the mean returns of ESG investments with and without Fintech integration.

H0:μFintech=μNo Fintech

- Alternative Hypothesis (H1H_1H1): ESG investments with Fintech integration have significantly higher mean returns than those without Fintech integration.

H1:μFintech>μNo Fintech

Data Summary:

- Mean of ESG Investment with Fintech Integration = 9.24%
- Mean of ESG Investment without Fintech Integration = 6.24%
- Standard Deviation of ESG Investment with Fintech Integration = 1.46%
- Standard Deviation of ESG Investment without Fintech Integration = 0.38%
- Sample Size for both groups = 5

Test Statistic: Two-sample t-test for unequal variances.

ISSN 2323-5233
Vol 15, Issue 2 (2025)
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- **t-statistic**: 4.45
- **Critical value (one-tailed, 5% significance level)**: 2.06
- **Degrees of freedom**: 4.54

Interpretation:

Since the calculated t-statistic (4.45) is greater than the critical value (2.06), we reject the null hypothesis (H0H_0H0). This indicates that there is a statistically significant difference in the mean returns, and ESG investments with Fintech integration perform significantly better than those without Fintech integration.

Table 2: Volatility of ESG Investments with and without Fintech Integration

Year	ESG Investment with Fintech Integration (Volatility %)	ESG Investment without Fintech Integration (Volatility %)
2019	8.2	10.4
2020	7.5	9.8
2021	7.1	9.5
2022	6.8	9.1
2023	6.2	8.9

Hypothesis Test: Testing Volatility Reduction

Hypotheses:
- Null Hypothesis: There is no significant difference in the volatility of ESG investments with and without Fintech integration.
- Alternative Hypothesis: ESG investments with Fintech integration have significantly lower volatility.

Data Summary:
- Mean volatility of ESG Investment with Fintech = 7.16%
- Mean volatility of ESG Investment without Fintech = 9.54%
- Standard Deviation of Fintech volatility = 0.75%
- Standard Deviation of Non-Fintech volatility = 0.58%
- Sample Size = 5

Test Statistic: Two-sample t-test for unequal variances.

Results of Volatility Hypothesis Testing:
- **t-statistic**: -5.61
- **Critical value (one-tailed, 5% significance level)**: 1.87
- **Degrees of freedom**: 7.52

Interpretation:

Since the t-statistic (-5.61) is less than the negative critical value (-1.87), we reject the null hypothesis (H0H_0H0). This result suggests that ESG investments with Fintech integration have significantly lower volatility than those without Fintech, indicating a stabilizing effect of Fintech technologies on investment performance.

ISSN 2323-5233
Vol 15, Issue 2 (2025)
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Table 3: Investor Confidence in ESG Reporting (Percentage of Investors Satisfied)

Year	ESG Investment with Fintech Integration (Satisfaction %)	ESG Investment without Fintech Integration (Satisfaction %)
2019	70	55
2020	75	58
2021	78	60
2022	82	62
2023	85	65

Hypothesis Test 2: Testing Investor Confidence Improvement

. **Hypotheses**:

- Null Hypothesis (H0H_0H0): There is no significant difference in investor satisfaction levels between ESG investments with and without Fintech integration.
- Alternative Hypothesis (H1H_1H1): ESG investments with Fintech integration have significantly higher investor satisfaction.

Data Summary:

- Mean satisfaction with Fintech integration = 78%
- Mean satisfaction without Fintech integration = 60%
- Standard Deviation of Fintech satisfaction = 5.7%
- Standard Deviation of No Fintech satisfaction = 4.0%
- Sample Size = 5
-

Test Statistic: Two-sample t-test for unequal variances.

Results of Investor Confidence Hypothesis Testing:

- **t-statistic**: 5.78
- **Critical value (one-tailed, 5% significance level)**: 1.89
- **Degrees of freedom**: 7.17

Interpretation:

Since the t-statistic (5.78) is greater than the critical value (1.89), we reject the null hypothesis. This finding indicates that Fintech integration significantly enhances investor confidence in ESG reporting, demonstrating a clear preference for the transparency and reliability provided by Fintech solutions.

These analyses show that Fintech integration not only improves returns and reduces volatility but also significantly boosts investor confidence in ESG investments

ISSN 2323-5233
Vol 15, Issue 2 (2025)
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Conclusion:

The researcher effectively highlights the multifaceted impact of Fintech on ESG investments, providing robust evidence of its benefits in enhancing returns, reducing risk, and improving investor sentiment through analysis from 2019–2023. The findings underscore the importance of adopting Fintech solutions in sustainable finance to drive the growth of ESG investments (Deloitte, 2023). The results demonstrate higher returns, lower volatility, and increased investor satisfaction compared to traditional ESG investments (J.P. Morgan, 2023). The study also emphasizes the transformative potential of Fintech firms in advancing sustainable finance and achieving broader ESG goals (World Economic Forum, 2023).
In conclusion, sustainable finance in Fintech represents a promising development in financial services, where profit and sustainability are viewed as complementary (BlackRock, 2022). By embracing ESG principles and green solutions, Fintech companies are not only creating opportunities for clients and investors but also contributing to a resilient, equitable, and sustainable future (United Nations Environment Programme Finance Initiative, 2022).

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