

Investment Readiness in U.S. Sustainable FinTech Ventures: An Interpretive Analysis of Founder, Organizational, Ecosystem, and Investor Factors

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Abstract

Investors evaluating sustainable FinTech startups must consider financial viability alongside sustainability readiness, governance quality, and technology-related risk. Existing due-diligence approaches provide limited guidance on how these factors interact in early-stage investment decisions. This study addresses that gap through a two-phase design combining interpretative phenomenological analysis (IPA) and interpretive structural modeling (ISM). Semi-structured interviews with seventeen FinTech founders, sustainability-oriented investors and fund managers, and ecosystem actors produced sixteen constructs across macro-, founder-, organizational-, investor-, and outcome-level dimensions. Eight participants subsequently evaluated the relationships among these constructs through ISM. The findings position regulatory alignment and national sustainability priorities as upstream influences. Founder orientation and leadership capability connect these external expectations to organizational practices, including data governance, sustainability reporting, technological scalability, and impact measurement. Investor evaluation practices and ecosystem validation then shape investment readiness, capital access, and due-diligence outcomes. The resulting framework explains how institutional conditions, founder characteristics, organizational capabilities, and investor judgments interact in the evaluation of sustainable FinTech ventures. It also provides investors, founders, policymakers, and ecosystem intermediaries with a structured basis for assessing investment readiness in the U.S. sustainable FinTech market.

Keywords: Sustainable finance, FinTech, ESG, investment due diligence, investment readiness, interpretive structural modeling, interpretative phenomenological analysis

Introduction

The shift toward a low-carbon and socially resilient economy is reshaping how capital is deployed across financial markets. In the United States, this shift is no longer optional. The Executive Order on Climate-Related Financial Risk (The White House, 2021) directs federal agencies and financial regulators to integrate climate and sustainability considerations into investment, supervision, and risk-management practices. Its message is straightforward: climate and social risks are financial risks and ignoring them threatens the country's long-term economic stability (U.S. Department of the Treasury, 2021). At the same time, financial technology is reshaping how capital flows through the economy. Digital lending, AI-based risk modeling, blockchain infrastructure, and decentralized financial services are accelerating financial inclusion and efficiency (Luo et al., 2022; Wang & Zeng, 2025).

Despite this momentum, traditional due-diligence practices struggle to capture the intertwined environmental, social, governance, and innovation characteristics that define sustainable fintech startups. ESG factors are multi-layered and often poorly standardized, with inconsistent data quality across firms and markets (Amel-Zadeh & Serafeim, 2018). Most studies rely on macro-level indicators such as ESG scores or regional fintech indices, offering limited guidance for investor decisions at the startup level (Zhang et al., 2023). This study addresses that gap by developing a practical due-diligence framework tailored specifically to sustainable FinTech ventures through IPA and ISM, producing a holistic, experientially

grounded framework that integrates financial viability with meaningful sustainability impact and advances U.S. competitiveness in global financial markets.

Theoretical Background

FinTech as a Driver of Sustainable Finance

Research over the past several years has increasingly recognized financial technology (FinTech) as a catalyst for sustainable finance. Recent bibliometric analyses indicate that the intersection of FinTech and ESG is expanding rapidly and becoming one of the most dynamic frontiers in financial innovation scholarship (Singh et al., 2025). Empirical evidence suggests that FinTech enhances financial inclusion, reduces transaction costs, and improves capital access for underserved populations (Chen & Zhang, 2024; Sahoo, 2025). Regional FinTech development has been linked to stronger ESG performance by easing financing constraints and facilitating access to environmental subsidies (Luo et al., 2022), while more recent work shows that advanced digital finance tools enhance environmental and governance performance by strengthening data governance and real-time risk assessment (Rahman et al., 2025). Altogether, this

literature supports the view that FinTech serves as an enabling infrastructure for sustainable finance, mobilizing capital toward climate-aligned projects and strengthening financial system resilience.

ESG–FinTech Integration

The convergence between ESG and FinTech has received extensive scholarly attention, yet the theoretical landscape remains fragmented. Systematic reviews reveal emerging research clusters including blockchain-based green finance, sustainable digital banking, and algorithmic ESG analytics (Rahim et al., 2024; Xu & Li, 2024; Cen et al., 2021). Despite this growth, much scholarship remains descriptive, relying on high-level indicators such as regional FinTech penetration or aggregated ESG scores (Ahmed et al., 2024; Wang et al., 2020), and few studies explore the relationships between technological innovation, governance quality, investor decision-making, and sustainability performance at the startup level (Zhang & Huang, 2025; Clark et al., 2015). This fragmentation points to a fundamental gap: the field lacks integrated due diligence frameworks that evaluate ESG, FinTech capabilities, entrepreneurship, and investment behavior in early-stage FinTech ventures.

Sustainable FinTech Due Diligence

Several interconnected challenges undermine effective due diligence in this space. Although ESG reporting has

expanded since 2015, persistent inconsistencies in ESG metrics, disclosure quality, and verification raise greenwashing concerns that are especially acute in early-stage ventures lacking formal reporting infrastructures (Berg et al., 2020; Christensen et al., 2022; Amel-Zadeh & Serafeim, 2018). Most ESG assessment frameworks were developed for large corporations or banks, leaving few tools that address FinTech-specific characteristics such as algorithmic risk, data governance, cybersecurity, and fast-paced innovation cycles (Gai et al., 2018; Ahmed et al., 2024; Bocken, 2015). Scholars increasingly observe the need to integrate micro-, meso-, and macro-level variables into a single explanatory model (Cumming & Groh, 2022; Xu & Li, 2024), yet existing theoretical frameworks rarely address the distinct dynamics of early-stage FinTech ventures including governance immaturity, regulatory fluidity, and rapid technological change. Research also tends to demonstrate correlation rather than validate causal mechanisms, weakening its relevance for investors seeking evidence-based decision tools (Zhang et al., 2023). Industry surveys consistently confirm rising demand for ESG due diligence alongside major obstacles including data reliability and limited ESG expertise (KPMG, 2024; Deloitte, 2023; PwC, 2022; VentureESG, 2024). Table 1 summarizes the gaps in the sustainable FinTech and ESG literature.

Table 1
Summary of Gaps in Sustainable FinTech and ESG Literature

Gap Area	Literature
1. Lack of sector-specific due-diligence frameworks	ESG models overwhelmingly target large corporations and banks (Berg et al., 2020)
2. Fragmented theoretical integration	Research isolates technology, ESG, or entrepreneurship without connecting them in a unified model (Zhang et al., 2023)
3. Persistent ESG data inconsistency and greenwashing risk	Studies highlight inconsistent ESG metrics, voluntary disclosure limitations, and verification challenges (Christensen et al., 2022).
4. Limited causal analysis of ESG-FinTech relationships	Most studies document correlations but rarely test causal pathways with advanced modeling (Zhang et al., 2023).
5. Underexplored founder-level ESG drivers	Focus remains on corporate-level ESG; the role of founder orientation, leadership, and sustainability logic is understudied (Ozili, 2018).
6. Insufficient integration of policy context	Few studies link climate-risk regulation with startup financing dynamics (Thakor, 2020).
7. Lack of practical tools for investors	Industry reports show strong demand for ESG due diligence but limited operational tools (KPMG, 2024).

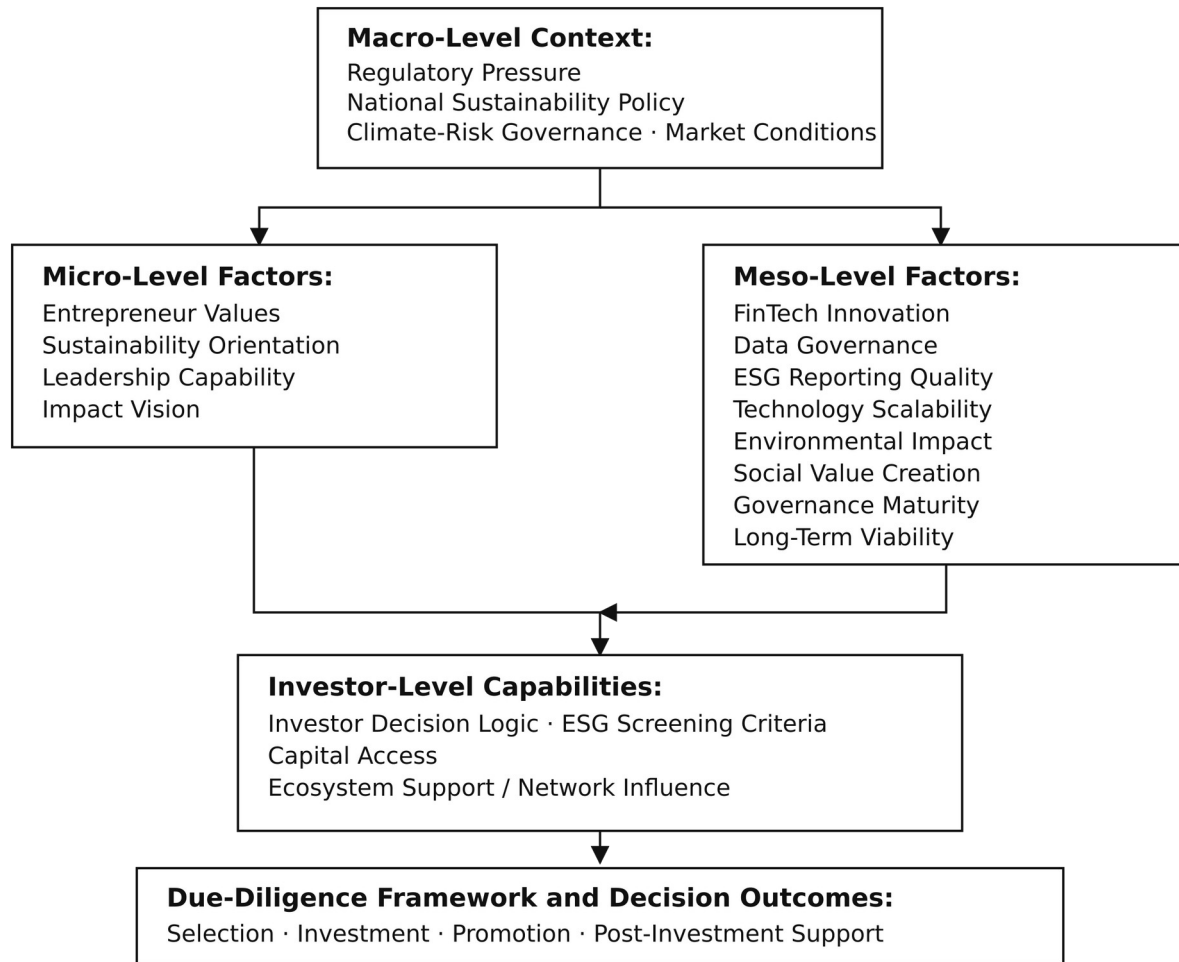
The literature points to a clear paradox: FinTech has the potential to strengthen sustainable finance and accelerate ESG-aligned investment, yet investors lack reliable tools to evaluate sustainability claims at the startup level. Given national priorities, including the U.S. Executive Order on Climate-Related Financial Risk (The White House, 2021), this gap poses both an academic and practical challenge. The present study addresses these issues by developing a multilevel due-diligence framework grounded in qualitative insight and systems modeling.

Conceptual Model and Research Questions

The conceptual model depicts the multilevel structure of factors that shape sustainable FinTech evaluation and investment decision-making (see Figure 1). Macro-level contextual forces provide the foundational environment shaping expectations across the ecosystem, influencing both micro- and meso-level factors, which jointly inform investor-level capabilities. The interaction among these levels ultimately shapes due-diligence outcomes including selection, investment, promotion, and post-investment support.

Figure 1

Conceptual Model of Multilevel Factors Influencing Sustainable FinTech Due Diligence



The primary research question asks: How do FinTech founders, investors, and ecosystem actors experience and interpret the role of sustainability, ESG expectations, and technological risk within the broader macro-level policy and regulatory environment, and how can these experiential insights be structured into a hierarchical model to inform a due-diligence framework for sustainable FinTech ventures? Secondary questions examine which multilevel factors emerge from stakeholders' lived experiences (RQ2), how emergent factors interact to influence selection and promotion processes (RQ3), how relationships among factors can be structured hierarchically (RQ4), and which factors serve as driving versus dependent variables (RQ5).

Method and Materials

This study employed a two-phase mixed-methods design integrating interpretative phenomenological analysis (IPA) and interpretive structural modeling (ISM). Because sustainable FinTech operates at the intersection of technology, governance, finance, and national sustainability policy, it presents a complex sociotechnical context benefiting from methodological designs capable of capturing both depth and structure (Creswell & Plano Clark, 2018; Sushil, 2018; Warfield, 1974).

Ethical Considerations

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. The empirical data used in this study were collected directly by the author through original semi-structured interviews conducted between November 2024 and February 2025. No secondary interview data or previously published datasets were used.

Table 2
Participant Characteristics and Study-Phase Involvement

Participant code	Role category	Years of experience	Study phase
P01	FinTech founder (Series Seed)	3	IPA
P02	FinTech founder (Series B)	4	IPA and ISM
P03	FinTech founder (Series A)	5	IPA
P04	FinTech founder (Seed)	6	IPA
P05	FinTech founder (Series A2)	7	IPA and ISM
P06	FinTech founder (Series B)	4	IPA and ISM
P07	FinTech founder (Series Seed)	6	IPA
P08	Sustainability-oriented investor	12	IPA
P09	Sustainability-oriented investor	15	IPA and ISM
P10	Sustainability-oriented investor	18	IPA
P11	Sustainability fund manager	14	IPA and ISM
P12	Sustainability fund manager	16	IPA
P13	Sustainability fund manager	20	IPA and ISM
P14	Ecosystem actor (accelerator)	11	IPA and ISM
P15	Ecosystem actor (accelerator)	13	IPA
P16	Ecosystem actor (incubator/policy)	17	IPA
P17	Ecosystem actor (incubator/policy)	14	IPA and ISM

Note. All participants contributed to the IPA phase, and eight participants subsequently participated in the ISM phase. Participant codes are used throughout the findings to preserve confidentiality.

Data Collection and Analysis

Semi-structured interviews lasting 60–90 minutes were conducted between November 2024 and February 2025. The interview protocol explored participants' experiences with sustainability orientation, ESG-related investment decisions,

All seventeen participants were professionals recruited voluntarily through the author's professional networks in the sustainable FinTech investment ecosystem. Prior to each interview, participants were fully informed of the research purpose, the voluntary nature of their participation, and their right to withdraw at any time without consequence. Verbal informed consent was obtained from all participants before interviews commenced. No personal identifying information was collected or retained. All data were anonymized during transcription and analysis, and participant identities remain confidential throughout this study. As an independent researcher without institutional affiliation at the time of the study, formal IRB review was not available; however, the research was designed and conducted in full adherence to established ethical standards for qualitative research involving professional participants.

Phase 1: Interpretative Phenomenological Analysis (IPA)

Participants and Sampling

The IPA phase included seventeen sustainable FinTech professionals recruited through purposive sampling. Participants were eligible if they had direct professional experience founding, financing, advising, regulating, or supporting sustainable FinTech ventures. The sample included founders of seed- through Series B-stage ventures, sustainability-oriented investors and fund managers, and ecosystem actors from accelerator, incubator, and policy settings. This composition captured perspectives across the sustainable FinTech investment process, consistent with the principles of IPA (Smith et al., 2009). Participant characteristics and involvement in each phase of the study are summarized in Table 2.

data governance, regulatory uncertainty, technological risk, and ESG reporting. With participants' informed consent, interviews were audio-recorded, transcribed verbatim, and anonymized before analysis.

Analysis followed the IPA procedures described by Smith et al. (2009). Each transcript was read multiple times and analyzed individually. Initial descriptive and interpretative notes were developed before emergent themes were identified within each account. Themes were then compared across

cases to identify recurring patterns and meaningful differences. Conceptually related themes were consolidated into sixteen experiential constructs spanning macro-, micro-, meso-, investor-, and outcome-level dimensions. These constructs subsequently formed the basis of the ISM analysis.

The study followed established principles of credibility, dependability, confirmability, and transferability in qualitative research (Cope, 2011). Credibility was supported by including participants from multiple stakeholder groups and examining convergence and variation across their accounts. Dependability and confirmability were supported by maintaining a documented progression from interview extracts to emergent themes and final constructs. The description of the sample, research context, and analytical procedures enables readers to assess the transferability of the findings.

Phase 2: Interpretive Structural Modeling (ISM)

Eight participants from the IPA sample subsequently participated in the ISM phase, as identified in Table 2. Following established ISM procedures (Warfield, 1974; Jena et al., 2017; Sushil, 2018), panel members evaluated the pairwise relationships among the sixteen IPA-derived constructs. Their judgments were synthesized into a Structural Self-Interaction Matrix and converted into a binary reachability matrix. Transitivity was applied where an indirect relationship between constructs was logically supported. Level partitioning was then conducted to determine the hierarchical position of each construct. The resulting structure was reviewed by the panel to assess the interpretability and contextual relevance of the final model.

Results

IPA-Derived Experiential Constructs

The IPA analysis generated sixteen experiential constructs reflecting how founders, investors, fund managers, and ecosystem actors interpreted sustainability-oriented due diligence in the FinTech sector. The constructs were organized across macro-, micro-, meso-, investor-, and outcome-level dimensions. Tables 3–7 present each construct alongside supporting evidence from participant accounts.

Table 3
Macro-Level Constructs: External Forces

Construct	Experiential Description
M1. Alignment with Data Integrity and ESG Disclosure	Participants repeatedly emphasized that new regulatory expectations around ESG-risk reporting, data integrity, and financial transparency "set the minimum bar" (P07) for what FinTechs must demonstrate during due diligence. Investors described regulation as "the floor, not the ceiling" (P09), shaping what evidence founders must provide.
M2. Alignment with the National Goals of Environmental Resilience and Social Equity	Policymakers and investors interpreted federal climate-risk directives and sustainability policies as "clear signals" (P08) that capital will increasingly favor solutions enabling environmental resilience and social equity. Participants viewed this as changing the competitive logic of the market: "Alignment with national goals is now part of investor logic" (P13).
M3. Alignment with Responsible Innovation Criteria	Interviewees pointed to market-level concerns, public scrutiny of greenwashing, increasing ESG-linked capital flows, and reputational risk, as forces pushing startups to demonstrate credible sustainability practices. One founder noted, "The market punishes anything that looks superficial." (P01)

Table 4
Micro-Level Constructs: What Founders Bring into the Due-Diligence Equation

Construct	Experiential Description
m1. Founder's Ethical Commitment to Sustainability	Founders described sustainability as "part of who we are, not something we bolt on" (P06), and investors said they could "sense authenticity in the first meeting" (P10). This construct reflects personally held commitments that shape decision-making and operational choices.
m2. Leadership Capability to Operationalize ESG Values	Participants highlighted that sustainability values only matter if founders can translate them into processes. As one investor stated, "Values without execution capacity are useless" (P12). Leadership competence was repeatedly named as an early red flag or green light during due diligence.
m3. Vision for Long-Term Societal and Environmental Impact	Many founders articulated a long-term impact vision. Investors viewed this not as idealism but as a proxy for resilience: "Founders with a long view tend to build better governance and risk processes" (P08).

Table 5
Meso-Level Constructs: How Startups' Internal Capabilities Show Up in Due Diligence

Construct	Experiential Description
s1. Maturity of Data Governance and Algorithmic Transparency	Investors consistently described data governance as "the new ESG foundation" (P11) for FinTechs. Founders highlighted challenges around "algorithmic transparency" (P02), "bias mitigation" (P06), and "auditability" (P06). These emerged as key due-diligence items.
s2. Quality and Credibility of ESG Reporting Processes	Participants noted that investors now look for "clean, consistent, auditable reporting" (P15), not marketing claims. Several founders admitted their early ESG reporting was "a patchwork" (P05), illustrating a common weakness that becomes a due diligence sticking point.
s3. Technological Scalability for Sustainable Impact	Founders emphasized the need to prove that their technology can scale "without compromising integrity or sustainability" (P04). Investors confirmed that scalability is "a non-negotiable factor" (P08) tied to risk and long-term viability.
s4. Embeddedness of Governance Practices in Daily Operations	Governance maturity emerged as central. Interviewees noted that investors increasingly expect formalized governance, even at Seed stage. One founder said, "If you don't have governance early, investors assume you'll fail later" (P07).
s5. Demonstrated Environmental or Social Value-Creation Mechanisms	Stakeholders stressed that sustainability claims must be backed by mechanisms, not aspirations. As one investor put it, "Show me the mechanism of impact, not just the mission" (P11).

Table 6
Investor-Level Constructs: What Investors Grasp During Due Diligence

Construct	Experiential Description
i1. ESG-Driven Investment Logic and Risk Interpretation	Investors described how sustainability is used to evaluate governance quality, operational discipline, and long-term strategic alignment. One investor said, "ESG tells me if this team can survive shocks" (P12).
i2. Rigor and Structure of ESG Screening Tools	Investors acknowledged using checklists, scoring rubrics, and frameworks, but also admitted their imperfect nature. Still, these tools influence what gets measured: "What we screen for becomes what startups build toward" (P09).
i3. Capital Access Shaped by Sustainability Readiness	Founders repeatedly noted that "capital follows readiness" (P03). Investors indicated that startups with strong governance and credible reporting "move to the top of the funnel" (P08), while weaker ones "never make it to partner meeting" (P08).
i4. Ecosystem Endorsement and Validation	Multiple founders stated: "Investors trust us more when we come through respected accelerators" (P06). Investors affirmed this: "Ecosystem endorsements reduce perceived risk and accelerate due diligence decisions" (P05).

Table 7
Outcome-Level Construct

Construct	Experiential Description
o1. Due-Diligence Outcomes (Selection, investment, promotion, post-investment support)	Participants saw due-diligence outcomes as the culmination of interactions among all other factors. Investors said decisions are "rarely about one thing, it's a system" (P10). Founders described successful due diligence as "a validation of both our technology and our values" (P02).

ISM Results

The ISM analysis examined the contextual relationships among the sixteen constructs derived from the IPA phase. Based on the panel's pairwise judgments, the constructs were organized into six hierarchical levels. Macro-level factors occupied the most upstream position, followed by founder-level orientations, organizational capabilities, investor evaluation mechanisms, capital-access factors, and due-diligence outcomes. This structure represents the panel's collective interpretation of how the constructs influence one another; it does not establish statistical causality.

The panel's judgments indicated a predominantly top-down pattern of influence. Macro-level factors (M1–M3) were positioned upstream of the micro-, meso-, investor-, and outcome-level constructs. Founder-level factors (m1–m3) connected the external environment to organizational practices, while meso-level capabilities (s1–s5) shaped the evidence available for investor evaluation. Investor-level constructs (i1–i4) were positioned closer to capital-access and due-diligence outcomes. The full SSIM and Binary Reachability Matrix are presented in Tables 8 and 9.

Table 8
Structural Self-Interaction Matrix (SSIM): Rows = *i*, Columns = *j* (Only *i* < *j* Shown)

<i>i \ j</i>	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 M1	O	O	V	V	V	V	V	V	V	V	V	V	V	V	V
2 M2		O	V	V	V	V	V	V	V	V	V	V	V	V	V
3 M3			V	V	V	V	V	V	V	V	V	V	V	V	V
4 m1				O	O	V	V	V	V	V	V	V	V	V	V
5 m2					O	V	V	V	V	V	V	V	V	V	V
6 m3						O	V	V	V	V	V	V	V	V	V
7 s1							O	O	O	O	V	V	V	V	V
8 s2								O	O	O	V	V	V	V	V
9 s3									O	O	V	V	V	V	V
10 s4										O	V	V	V	V	V
11 s5											O	V	V	V	V
12 i1												O	O	O	V
13 i2													O	O	V
14 i3														O	V
15 i4															V
16 o1															

Note. V = construct *i* leads to *j*; O = no direct causal link agreed upon.

Table 9
Binary Reachability Matrix: Rows = "From," Columns = "To"

	M1	M2	M3	m1	m2	m3	s1	s2	s3	s4	s5	i1	i2	i3	i4	o1
M1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
M2	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
M3	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
m1	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1
m2	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1
m3	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
s1	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	1
s2	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1
s3	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1
s4	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1
s5	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
i1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
i2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
i3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
i4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
o1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Level partitioning placed o1 at Level 1 (most dependent outcome), investor access gates (i3, i4) at Level 2, investor evaluative filters (i1, i2) at Level 3, meso-level capabilities (s1–s5) at Level 4, micro-level drivers (m1–m3) at Level 5, and

macro-level constructs (M1–M3) at Level 6 as upstream system drivers. Tables 10 and 11 summarize these assignments.

Table 10
ISM Level Partitioning of Constructs

Level	Structural Role	Constructs
Most Dependent	Macro-Level System Drivers	M1 – Alignment with Data Integrity and ESG Disclosure; M2 – Alignment with the National Goals of Environmental Resilience and Social Equity; M3 – Alignment with Responsible Innovation Criteria
	Micro-Level Entrepreneurial Drivers	m1 – Founder’s Ethical Commitment to Sustainability; m2 – Leadership Capability to Operationalize ESG Values; m3 – Vision for Long-Term Social and Environmental Impact
	Meso-Level Organizational and Technological Capabilities	s1 – Maturity of Data Governance and Algorithmic Transparency; s2 – Quality and Credibility of ESG Reporting Processes; s3 – Technological Scalability and Sustainable Impact; s4 – Embeddedness of Governance Practices in Daily Operations; s5 – Demonstrated Environmental or Social Value-Creation Mechanisms
	Investor Evaluative Filters	i1 – ESG-Driven Investment Logic and Risk Interpretation; i2 – Rigor and Structure of ESG Screening Tools
	Investor Access Gateways	i3 – Capital Access Shaped by Sustainability Readiness; i4 – Ecosystem Endorsement and Validation
Most Dependent	Most Dependent Outcome	o1 – Due-Diligence Outcomes (Selection, Investment, Promotion, Post-Investment Support)

Table 11
ISM Classification of Construct Groups

Category	Construct Group(s)	Interpretation
System Drivers	Macro-level constructs (M1–M3)	High driving power, low dependence. These factors originate at the policy and regulatory level and shape the entire due-diligence system.
System Drivers	Micro- and meso-level constructs (m1–m3, s1–s5)	They transmit the influence of macro forces into the firm’s internal values, governance, technology, and impact capabilities, and feed into evaluations.
System Drivers	Investor-level constructs (i1–i4)	Positioned between firm capabilities and outcomes, they directly shape due diligence results but remain dependent on upstream macro, meso factors.
Most Dependent Construct	Outcome-level construct (o1)	Fully dependent on all upstream drivers and linkages, represents the final due diligence and investment decisions.

The resulting ISM model (Figure 2) depicts a coherent multilevel structure beginning with macro-level alignments that cascade downward through founder commitments, organizational capabilities, investor logics and tools, and capital or ecosystem gatekeeping, ultimately shaping due-diligence outcomes. Expert panel validation indicated the top-down structure was consistent with practical experience; no changes were made to level assignments.

Figure 2

Coherent Multilevel Due Diligence Framework of Sustainable FinTech Startups



Discussion

The ISM hierarchy positioned ESG disclosure expectations (M1), national sustainability goals (M2), and responsible innovation criteria (M3) as upstream system drivers. According to the panel's judgments, these factors shape the broader environment within which founders, organizations, and investors evaluate sustainable FinTech ventures. This finding is consistent with research indicating that regulatory and institutional pressures influence ESG integration within venture-financing ecosystems (European Central Bank, 2021; Task Force on Climate-Related Financial Disclosures, 2021).

At the micro level, founders' ethical commitments (m1), capacity to operationalize ESG values (m2), and long-term impact orientation (m3) connect external sustainability expectations with venture-level practices. This positioning highlights the role of founders in translating institutional expectations into governance, reporting, and operational decisions. The finding aligns with research showing that founder values and leadership capabilities can meaningfully shape sustainability practices in early-stage, innovation-intensive ventures (Bocken & Geradts, 2020).

The meso-level constructs—data governance (s1), ESG reporting quality (s2), technological scalability (s3), governance embeddedness (s4), and demonstrated impact mechanisms (s5)—represent the organizational capabilities through which sustainability commitments become observable during due diligence. Their intermediate position suggests that investors evaluate sustainability not only through stated values but also through operational evidence, reporting credibility, governance practices, and technological readiness.

Investor evaluation mechanisms (i1 and i2) were positioned between organizational capabilities and access-related outcomes. This finding helps explain why technically promising ventures may encounter financing barriers when their governance and reporting practices do not align with investor expectations. Capital access and ecosystem endorsement (i3 and i4) were positioned closer to the outcome level, suggesting that external validation may reduce perceived uncertainty and facilitate investor evaluation (Dutt & Folta, 2021). Finally, due-diligence outcomes (o1) occupied the most dependent position, indicating that investment decisions reflect the combined influence of factors across multiple levels rather than any single ESG or financial criterion.

Conclusion and Implications

Together, the IPA and ISM findings provide a multilevel framework for understanding sustainable FinTech due diligence. The analysis suggests that regulatory and national sustainability priorities shape the broader investment context, while founder orientations and organizational capabilities influence how these expectations are translated into practices visible to investors. Investor evaluation mechanisms and ecosystem validation subsequently shape access to capital and other due-diligence outcomes. The framework therefore provides a structured basis for evaluating ESG readiness, technological risk, governance quality, and investment readiness in sustainable FinTech ventures.

Theoretically, the study connects institutional conditions, founder-level orientations, organizational capabilities, and investor evaluation within a single multilevel framework. It

shows how sustainability commitments may become relevant to investment decisions when they are translated into observable governance, reporting, technological, and impact-related capabilities. The distinction between investor evaluation mechanisms and capital-access gateways further clarifies how organizational readiness is interpreted and converted into investment outcomes.

Practically, the findings offer distinct implications for key stakeholders. Policymakers can support sustainable FinTech investment by promoting clear and consistent expectations concerning ESG disclosure, data governance, and algorithmic accountability. Founders can strengthen investment readiness by translating sustainability commitments into credible reporting, governance practices, scalable technologies, and demonstrable impact mechanisms. Investors can use the framework to structure ESG-related due diligence while accounting for interactions among regulatory, founder, organizational, and ecosystem factors. Accelerators and incubators can support venture readiness through targeted assistance in governance, data infrastructure, and impact measurement.

References

- Ahmed, F., Kumar, R., & Zhou, Y. (2024). FinTech integration and ESG performance: A systematic review. *Finance Research Letters*, 56, 104089.
- Amel-Zadeh, A., & Serafeim, G. (2018). ESG information and investor decision-making: Perspectives and evidence. *Journal of Accounting and Economics*, 66(2–3), 329–350.
- Berg, F., Kölbel, J. F., & Rigobon, R. (2020). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, 26(6), 1315–1344.
- Bocken, N. M. P. (2015). Sustainable venture capital: Catalyst for sustainable entrepreneurship? *Journal of Cleaner Production*, 108, 647–658.
- Bocken, N. M. P., & Geradts, T. H. J. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning*, 53(4), 101950.
- Cen, Y., Zhang, L., & Huang, H. (2021). Blockchain-based green finance: A review of mechanisms and applications. *Sustainability*, 13(23), 13127.
- Chen, X., & Zhang, W. (2024). FinTech development and inclusive finance: Evidence from underserved borrowers. *Journal of Financial Innovation*, 10(1), 1–24.
- Christensen, H. B., Serafeim, G., & Sikochi, A. (2022). *Why is corporate ESG reporting still inconsistent?* (Working Paper No. 22-079). Harvard Business School.
- Clark, G. L., Feiner, A., & Viehs, M. (2015). *From the stockholder to the stakeholder: How sustainability can drive financial outperformance*. University of Oxford.
- Cope, D. G. (2011). Methods and meanings: Credibility and trustworthiness of qualitative research. *Oncology Nursing Forum*, 38(1), 89–91.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.
- Cumming, D., & Groh, A. P. (2022). Entrepreneurial finance: Unifying themes and future directions. *Journal of Corporate Finance*, 72, 102150.
- Deloitte. (2023). *ESG due diligence in private capital: Trends and challenges*. Deloitte Insights.
- Dutt, N., & Folta, T. B. (2021). Emerging market venture capital investments: The role of legitimacy and networks. *Strategic Entrepreneurship Journal*, 15(3), 495–521.
- European Central Bank. (2021). *Climate-related risk and financial stability*. ECB.
- Gai, K., Qiu, M., & Sun, X. (2018). A survey on FinTech. *Journal of Network and Computer Applications*, 103, 262–273.

- Jena, S. K., Pradhan, S. K., & Sushil. (2017). Sustainability performance measurement systems: A hierarchical framework. *Journal of Cleaner Production*, 142, 2675–2686.
- KPMG. (2024). *ESG due diligence: Global investor perspectives*. KPMG International.
- Luo, C., Li, H., & Peng, C. (2022). FinTech development and corporate ESG performance: Evidence from China. *Finance Research Letters*, 47, 102711.
- Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329–340.
- PwC. (2022). *State of ESG investing: Challenges and opportunities for private markets*. PwC.
- Rahim, M., Abdullah, S., & Lee, C. (2024). FinTech–ESG integration: A systematic review. *Journal of Sustainable Finance & Investment*, 14(1), 1–26.
- Rahman, M., Hoque, M., & Islam, K. (2025). Digital finance tools and corporate sustainability performance. *Technological Forecasting and Social Change*, 198, 123456.
- Sahoo, S. (2025). Mobile financial services and sustainable inclusion. *World Development*, 176, 106498.
- Singh, A., Gupta, R., & Sharma, P. (2025). Mapping the FinTech–ESG research landscape: A bibliometric analysis. *Finance Research Letters*, 58, 104321.
- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. SAGE.
- Sushil. (2018). How to apply interpretive structural modeling. *Management Decision*, 56(1), 2–20.
- Task Force on Climate-Related Financial Disclosures. (2021). *2021 status report*. TCFD.
- Thakor, A. V. (2020). FinTech and banking: What do we know? *Journal of Financial Intermediation*, 41, 100833.
- The White House. (2021). *Executive order on climate-related financial risk*. <https://www.whitehouse.gov>
- U.S. Department of the Treasury. (2021). *Report on climate-related financial risk*. U.S. Treasury.
- VentureESG. (2024). *ESG frameworks for venture capital: State of the market*. VentureESG.
- Wang, Y., Li, S., & Zhang, D. (2020). Regional FinTech development and corporate sustainability. *Sustainability*, 12(23), 9876.
- Wang, Y., & Zeng, X. (2025). Sustainable digital finance and SME access to green credit. *Small Business Economics*. Advance online publication.
- Warfield, J. N. (1974). Developing interconnected matrices in structural modeling. *IEEE Transactions on Systems, Man, and Cybernetics*, 4(1), 51–81.
- Xu, J., & Li, X. (2024). Emerging research directions in digital finance and ESG integration. *International Review of Financial Analysis*, 91, 102984.
- Zhang, D., & Huang, X. (2025). FinTech ecosystems and local ESG outcomes. *Journal of Sustainable Finance & Investment*. Advance online publication.
- Zhang, Z., Li, W., & Yang, S. (2023). FinTech, ESG, and sustainable investment: A review of causal pathways. *Journal of Sustainable Finance & Investment*, 13(3), 233–256.