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Epistemological Reconfiguration of ESG Integration: A Multi-Theoretical Analysis of Investor Decision-Making Paradigms in Vietnam's Emergent Sustainable Finance Ecosystem

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Abstract

This research investigates the epistemological reconfiguration of Environmental, Social, and Governance (ESG) integration within Vietnam's nascent sustainable finance ecosystem, examining investor decision-making paradigms through a multi-theoretical analytical framework. Employing a quantitative methodological approach utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) with complementary fuzzy-set Qualitative Comparative Analysis (fsQCA), this study analyzed data collected from 287 institutional investors operating within Vietnam's financial markets. The findings reveal significant relationships between institutional isomorphic pressures, ESG information asymmetry, perceived ESG value attribution, and sustainable investment decision-making behaviors. The research identified four distinct configurational pathways to ESG integration, with market knowledge sophistication demonstrating significant moderating effects on the relationship between ESG performance assessment and investment allocation decisions. This study contributes to sustainable finance literature by advancing a novel multi-theoretical integration model that synthesizes institutional theory, stakeholder theory, and behavioral finance perspectives, offering both theoretical extensions and practical implications for emerging market sustainable finance ecosystem development. The empirical evidence establishes Vietnam as a compelling contextual case for examining sustainable investment paradigm evolution within transitional economic frameworks.

Keywords: ESG integration, Information asymmetry, Institutional isomorphism, Investment decision-making, Sustainable finance.

1. Introduction

Sustainable finance has witnessed unprecedented acceleration, fundamentally reconfiguring global capital allocation paradigms through Environmental, Social, and Governance (ESG) integration into mainstream investment frameworks (Amel-Zadeh & Serafeim, 2017). This paradigmatic shift necessitates critical scholarly examination as markets increasingly acknowledge sustainability parameters' material significance in asset valuation. Whilst developed financial ecosystems have experienced substantial ESG integration progression, emerging markets present distinctive transitional contexts where theoretical frameworks require considerable recalibration to account for distinct institutional configurations and evolutionary market dynamics (Esty & Karpilow, 2014). Vietnam's emergent sustainable finance ecosystem offers a particularly compelling analytical context for examining the epistemological reconfiguration of ESG integration paradigms.

Hermeneutic analysis of contemporary sustainable finance literature reveals significant theoretical and empirical lacunae concerning the complex interplay of institutional forces, information asymmetries, and cognitive biases shaping investor decision-making in emerging market contexts (Crifo et al., 2015). Whilst substantial scholarly attention has examined ESG integration within developed markets (Eccles & Serafeim, 2013), transitional economies' distinctive characteristics necessitate specialised theoretical frameworks accounting for contextual variability in regulatory environments, market sophistication, and cultural determinants. The current research paradigm exhibits particular limitations in explicating configurational pathways through which institutional pressures translate into operational ESG integration within investment architectures in emergent financial markets (Doh et al., 2010).

Vietnam represents an exemplary case for examining sustainable finance evolution within transitional economic frameworks. Its accelerated economic liberalisation coupled with increasing global market integration has catalysed heightened ESG awareness among institutional investors (Oh et al., 2013). However, transdisciplinary scholarship posits that significant institutional barriers persist, including regulatory fragmentation, information asymmetry challenges, and limited market knowledge sophistication (Sharma, 2013). These structural limitations manifest in heterogeneous ESG integration practices, necessitating theoretical frameworks that elucidate the multidimensional influences shaping sustainable investment behaviours within this specific context.

The theoretical urgency for this research emerges from three interrelated conceptual limitations. First, current theoretical frameworks predominantly adopt siloed analytical perspectives, failing to synthesise institutional, stakeholder, and behavioural finance paradigms into cohesive explanatory frameworks (Kitzmueller & Shimshack, 2012). Second, extant research exhibits limited empirical investigation of configurational pathways through which institutional pressures translate into operational ESG integration (Campbell, 2007). Third, market knowledge sophistication's moderating role in shaping the relationship between ESG performance assessment and investment allocation decisions remains insufficiently examined, particularly within emerging market contexts (Crifo & Forget, 2015).

This research's novelty lies in developing a multi-theoretical integration model synthesising institutional theory, stakeholder theory, and behavioural finance perspectives to elucidate the complex determinants of ESG integration within Vietnam's sustainable finance ecosystem. This integrated framework enables nuanced analysis of how institutional isomorphic pressures, ESG information asymmetry, and perceived value attribution interact to shape sustainable investment behaviours (Attig et al., 2013). Furthermore, methodological innovation through complementary application of PLS-SEM and fsQCA analytical approaches facilitates both variance-based and configurational examinations of ESG integration phenomena.

The research significance extends beyond its empirical context, contributing theoretical advancements that enhance understanding of sustainable finance evolution within transitional economic frameworks. By elucidating the complex interplay of institutional forces, information environments, and cognitive factors shaping ESG integration, this study provides valuable insights for policymakers, market regulators, and institutional investors navigating sustainable finance in emerging markets (Ioannou & Serafeim, 2015). The multi-theoretical integration model offers a conceptual foundation for future empirical investigations across diverse institutional contexts.

Transdisciplinary scholarship posits that ESG integration represents a transformative reconfiguration transcending traditional financial analysis (Cheng et al., 2014). However, translation into operational investment practices remains highly variable across institutional contexts, with particular heterogeneity in emerging markets (Margolis et al., 2009). Within Vietnam, institutional investors navigate complex trade-offs between short-term performance imperatives and long-term sustainability considerations within information environments characterised by significant asymmetries (Dhaliwal et al., 2011).

This research contributes to theoretical advancement through three principal mechanisms: empirical validation for an integrated theoretical framework demonstrating the explanatory value of multi-theoretical approaches to complex financial phenomena (Godfrey et al., 2009); identification of distinct configurational pathways illuminating the equifinality characterising sustainable investment evolution (Surroca et al., 2010); and establishing market knowledge sophistication's critical moderating role in determining relationships between ESG assessment and investment outcomes (Luo et al., 2015).

The practical significance extends to multiple stakeholder groups. For policymakers, findings inform regulatory frameworks addressing information asymmetry challenges (Dhaliwal et al., 2012). For institutional investors, strategic insights optimise ESG integration within contexts characterised by information constraints and institutional complexities (Flammer, 2015). For corporations, findings illuminate the critical importance of robust ESG disclosure practices in addressing information asymmetry challenges inhibiting effective market valuation of sustainability performance (Dhaliwal et al., 2011).

2. Foundational Theories and Literature Review

2.1. Foundational Theories

2.1.1. Institutional Theory

Institutional theory provides a robust theoretical foundation for examining the complex dynamics shaping ESG integration within investment decision frameworks. This paradigm elucidates how organisational behaviours are influenced by normative pressures, social expectations, and legitimacy considerations rather than purely economic rationality (DiMaggio & Powell, 1983). Within sustainable finance contexts, institutional theory illuminates how regulatory, normative, and cognitive institutional forces shape the evolution of ESG integration practices among investment actors (Campbell, 2007). The theory's emphasis on institutional isomorphism—the process through which organisations within a field adopt increasingly similar structures and practices—offers essential conceptual tools for analysing how sustainable investment approaches diffuse throughout financial ecosystems (Scott, 1995).

DiMaggio and Powell's (1983) seminal work identifies three primary mechanisms driving organisational homogenisation: coercive, mimetic, and normative pressures. In sustainable finance contexts, coercive isomorphism manifests through regulatory frameworks mandating ESG disclosure, while mimetic isomorphism operates through imitation of successful sustainable investment practices during periods of uncertainty (Matten & Moon, 2008). Normative isomorphism emerges through professionalisation processes as investment professionals increasingly incorporate sustainability considerations into accepted standards of practice (Doh et al., 2010).

Institutional theory further illuminates how organisations navigate legitimacy challenges associated with evolving sustainability expectations. Suchman (1995) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (p. 574). For investment organisations, establishing legitimacy increasingly requires demonstrating appropriate consideration of ESG factors, particularly as stakeholder expectations regarding sustainable finance practices continue to evolve (Sharma, 2013).

The concept of decoupling provides valuable insights regarding potential divergence between formal ESG integration structures and actual investment practices. Meyer and Rowan (1977) introduce decoupling as the process through which organisations adopt ceremonial structures that conform to institutional expectations while maintaining operational practices that substantively differ from these formal structures. In sustainable finance contexts, decoupling may manifest as investment organisations implementing superficial ESG integration procedures to enhance legitimacy while maintaining substantive investment decisions based primarily on traditional financial metrics (Westphal & Zajac, 2001).

North's (1990) institutional economics framework enhances understanding of how formal and informal constraints shape sustainable investment behaviours. The interaction between formal constraints (explicit regulatory requirements) and informal constraints (cultural norms, values, and beliefs) creates complex incentive structures that influence ESG integration approaches (Peng et al., 2009). In emerging markets such as Vietnam, understanding these institutional dynamics is particularly critical for analysing sustainable finance evolution within transitional economic contexts.

Institutional logics represent another valuable theoretical construct for examining ESG integration. Thornton and Ocasio (1999) define institutional logics as "the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (p. 804). Within financial markets, competing institutional logics—such as short-term profit maximisation versus long-term sustainability—create complex tensions that investment actors must navigate (Lounsbury, 2007).

Oliver's (1991) strategic responses framework provides additional analytical tools for understanding how investment organisations navigate institutional pressures regarding ESG integration. Organisations may adopt responses ranging from acquiescence to defiance, depending on factors such as perceived legitimacy benefits, consistency with organisational goals, and institutional enforcement capacity. Institutional complexity theory further elucidates how organisations navigate environments characterised by multiple, potentially competing institutional demands (Greenwood et al., 2011), while institutional entrepreneurship provides frameworks for understanding how certain actors drive sustainable finance innovation within established environments (DiMaggio, 1988; Maguire et al., 2004).

2.1.2. Stakeholder Theory

Stakeholder theory provides essential theoretical frameworks for conceptualising how investment organisations navigate complex relationships with diverse stakeholders holding varying expectations regarding ESG integration. Freeman's (1984) seminal work defines stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (p. 46). This theoretical perspective emphasises that organisational success requires effective management of relationships with multiple stakeholders beyond shareholders, including employees, customers, communities, and regulators (Freeman et al., 2010).

The normative foundation of stakeholder theory asserts that stakeholders possess intrinsic value deserving moral consideration beyond instrumental utility (Donaldson & Preston, 1995). For investment organisations, this normative perspective suggests ethical obligations to consider how investment decisions impact diverse stakeholders, providing philosophical justification for ESG integration beyond pure financial materiality (Phillips et al., 2003). Stakeholder theory's instrumental dimension provides complementary frameworks emphasising how effective stakeholder management enhances organisational performance outcomes (Jones, 1995), with empirical research indicating positive relationships between corporate sustainability performance and financial outcomes (Margolis et al., 2009).

Mitchell et al.'s (1997) stakeholder salience framework offers valuable analytical tools for understanding how investment organisations prioritise attention to various stakeholders within ESG integration processes. Stakeholder salience—determined by perceived power, legitimacy, and urgency—influences which sustainability considerations receive priority within investment decision frameworks. In sustainable finance contexts, evolving stakeholder salience dynamics—such as increasing regulatory attention to climate risks or growing client demand for social impact consideration—significantly shape ESG integration evolution (Agle et al., 1999).

Berman et al. (1999) distinguish between instrumental stakeholder orientation—focused primarily on financial benefits derived from stakeholder management—and intrinsic stakeholder orientation emphasising moral obligations toward stakeholders independent of performance benefits. Jones and Wicks' (1999) convergent stakeholder theory synthesises normative and instrumental stakeholder perspectives, recognising both the moral foundations of stakeholder consideration and the performance benefits derived from effective stakeholder management. Within ESG integration contexts, this convergent perspective helps reconcile potential tensions between fiduciary obligations and sustainability considerations (Crifo & Forget, 2015).

The concept of stakeholder value creation provides frameworks for understanding how investment decisions can simultaneously generate financial returns while creating value for diverse stakeholders (Freeman et al., 2010), challenging zero-sum conceptualisations of financial versus sustainability objectives (Porter & Kramer, 2011). Stakeholder network theory extends traditional stakeholder frameworks by examining complex interdependencies among stakeholders rather than focusing exclusively on bilateral organisation-stakeholder relationships (Rowley, 1997), while stakeholder dialogue offers theoretical frameworks regarding engagement processes that address sustainability concerns while potentially enhancing investment outcomes (Dimson et al., 2015; Gifford, 2010).

Post et al.'s (2002) stakeholder view emphasises that organisational wealth creation capacity depends fundamentally on relationships with critical stakeholders who provide essential resources, capabilities, and support. For investment organisations, this theoretical lens illuminates how effective ESG integration may enhance critical stakeholder relationships—such as client trust or regulatory relationships—that fundamentally determine organisational success (Brammer & Millington, 2008).

2.2. Review of Empirical and Relevant Studies

2.2.1. ESG Information Asymmetry in Investment Decision-Making

Empirical research consistently identifies information asymmetry as a critical challenge impeding effective ESG integration within investment decision frameworks. Information asymmetry—where certain market participants possess superior information compared to others—creates significant barriers to efficient capital allocation in sustainable finance contexts (Akerlof, 1970). Unlike traditional financial information subject to standardised reporting requirements, ESG information frequently lacks consistency in measurement, reporting frameworks, and verification processes (Cheng et al., 2014).

Research examining ESG disclosure quality reveals significant heterogeneity in reporting practices across organisations and markets. Dhaliwal et al. (2011) document substantial variation in voluntary sustainability disclosure practices, finding that firms with higher disclosure costs and poorer financial performance are more likely to initiate stand-alone sustainability reporting. This strategic disclosure pattern creates challenges for investors attempting to compare ESG performance across potential investments (Cho et al., 2015). In emerging markets specifically, Oh et al. (2013) find particularly pronounced heterogeneity in ESG disclosure quality, with significant implications for investor ability to effectively incorporate sustainability considerations.

The relationship between information asymmetry and cost of capital provides important evidence regarding the financial materiality of ESG disclosure quality. Dhaliwal et al. (2011) document that initiation of voluntary ESG disclosure is associated with subsequent reductions in cost of capital, particularly for firms with superior sustainability performance. This suggests that improved sustainability transparency reduces information asymmetry that would otherwise manifest in higher risk premiums demanded by investors (El Ghoul et al., 2011). Complementary research by Cheng et al. (2014) establishes that superior ESG performance is associated with enhanced capital access through reduced capital constraints.

Crifo et al. (2015) document that investors respond heterogeneously to different sustainability dimensions, with governance and environmental factors typically receiving greater consideration than social factors due to perceived financial materiality and information reliability differentials. In emerging market contexts, Xiao et al. (2017) find that information asymmetry regarding ESG factors creates particularly significant barriers to sustainable investment, as concerns regarding information reliability amplify inherent evaluation challenges.

The role of information intermediaries in addressing ESG information asymmetry represents another important research stream. Chatterji et al. (2009) examine the relationship between external sustainability ratings and actual corporate environmental performance, finding significant variation in rating methodologies and reliability. Complementary research by Ioannou and Serafeim (2015) demonstrates that investment analysts' interpretation of sustainability information has evolved over time, with increasing recognition of the financial materiality of ESG factors.

Elliott et al. (2014) document that investors' willingness to incorporate sustainability information into investment decisions is significantly influenced by whether this information is explicitly linked to financial performance. This finding highlights how framing effects shape investor responses to ESG information (Hockerts & Moir, 2004). Research on mandatory versus voluntary ESG disclosure regimes provides valuable insights regarding potential regulatory approaches to addressing information asymmetry. Ioannou and Serafeim (2014) analyse the impact of mandatory sustainability reporting regulations across multiple countries, finding that such requirements increase disclosure quantity and quality while improving sustainability performance.

2.2.2. Institutional Isomorphic Pressures in Sustainable Finance

Empirical research examining institutional isomorphic pressures provides valuable insights regarding how coercive, mimetic, and normative forces shape ESG integration. Coercive isomorphism manifests in sustainable finance contexts through regulatory requirements, client mandates, and societal expectations regarding ESG consideration (DiMaggio & Powell, 1983). Matten and Moon (2008) document how regulatory frameworks significantly influence corporate sustainability practices. In emerging markets specifically, Jamali and Neville (2011) find that regulatory environments exhibit particularly powerful influence on ESG-related practices due to their formative role in shaping market development trajectories.

Mimetic isomorphism—the tendency to imitate other organisations during periods of uncertainty—represents another significant force shaping sustainable finance evolution. Doh et al. (2010) document how investment organisations frequently adopt ESG integration practices established by industry leaders, particularly when facing uncertainty regarding appropriate sustainability evaluation methodologies. Zhao et al. (2017) find that mimetic isomorphism is particularly pronounced in emerging market contexts, as investment organisations with limited ESG experience frequently emulate practices established in more developed financial markets.

Normative isomorphism—emerging through professionalisation processes and shared educational backgrounds—increasingly influences sustainable finance practices as ESG considerations become integrated into professional investment standards (DiMaggio & Powell, 1983). Louche et al. (2012) document the evolution of responsible investment norms within the investment profession, finding that normative frameworks regarding ESG integration have strengthened significantly over time. In emerging market contexts, Xiao et al. (2017) find that international professional networks play particularly important roles in transmitting sustainable investment norms to developing financial ecosystems.

Hoffman (1999) analyses how organisational fields evolve in response to emerging environmental considerations, finding that field reconfiguration processes significantly influence how organisations interpret and respond to sustainability imperatives. Comparative research examining sustainable finance evolution across different institutional contexts provides important insights regarding how national institutional environments shape ESG integration. Ioannou and Serafeim (2012) analyse how country-level institutions influence corporate sustainability performance, finding that political, labour, education, and cultural systems significantly impact ESG practices.

Research examining decoupling phenomena provides valuable insights regarding potential divergence between formal ESG structures and actual investment practices. Westphal and Zajac (2001) document how organisations frequently adopt ceremonial structures that symbolically conform to institutional expectations while maintaining substantive practices aligned with traditional objectives. Within sustainable finance specifically, Dumas and Louche (2016) find evidence of decoupling in responsible investment implementation, with some organisations adopting formal ESG policies that have limited influence on actual investment decision-making.

2.2.3. Market Knowledge Sophistication and ESG Value Attribution

Empirical research examining market knowledge sophistication provides valuable insights regarding how investor expertise and cognitive frameworks influence sustainable investment behaviours. Market knowledge

sophistication encompasses both technical expertise regarding ESG assessment methodologies and cognitive frameworks for interpreting sustainability information within investment contexts (Meehan et al., 2006). Research indicates that knowledge sophistication significantly influences how investors attribute value to ESG factors and incorporate sustainability considerations into decision frameworks (Slager & Chapple, 2016).

Amel-Zadeh and Serafeim (2017) survey global investment professionals regarding ESG integration, finding that perceived importance of sustainability information is strongly associated with understanding of financial materiality pathways. Investors with more sophisticated knowledge frameworks demonstrate greater ability to identify materiality connections between specific ESG factors and financial performance outcomes (Eccles et al., 2011). In emerging market contexts specifically, Esty and Karpilow (2014) find that knowledge limitations regarding ESG materiality represent particularly significant barriers to sustainable investment.

Research examining cognitive biases in sustainable investment provides important insights regarding how psychological factors influence ESG integration. Hirshleifer (2001) documents how various cognitive biases affect investor decision-making, creating systematic deviations from rational information processing that particularly impact evaluation of complex or unfamiliar factors. Within sustainable finance specifically, Glac (2009) finds that framing effects significantly influence how investors interpret and respond to ESG information.

Slager and Chapple (2016) find that investors with longer time horizons demonstrate greater propensity to incorporate ESG considerations, reflecting alignment between sustainability's long-term materiality and extended investment perspectives. Knowledge sophistication regarding intertemporal ESG value attribution significantly influences how investors perceive the relevance of sustainability factors within their specific investment contexts (Busch et al., 2016).

Chava (2014) documents that perceived relationships between environmental performance and financial outcomes significantly influence investor responses to sustainability information. Knowledge sophistication regarding specific value-creation mechanisms—such as risk mitigation, efficiency improvements, or stakeholder relationships—shapes how investors interpret ESG information within decision frameworks (Clark et al., 2015). Delmas and Blass (2010) document the methodological challenges associated with comprehensive ESG assessment, finding that effective sustainability evaluation requires significant technical expertise regarding appropriate metrics and analytical frameworks.

Dimson et al. (2015) analyse successful ESG engagement initiatives, finding that investor knowledge regarding specific sustainability issues significantly influences engagement effectiveness. More knowledgeable investors demonstrate greater capacity to identify material ESG concerns, engage constructively with companies regarding improvement opportunities, and effectively monitor subsequent performance (Gifford, 2010).

2.2.4. Sustainable Investment Decision-Making Behaviour

Empirical research examining sustainable investment decision-making behaviours provides valuable insights regarding how investors operationalise ESG considerations within investment processes. Sustainable investment decision-making encompasses multiple dimensions including screening practices, integration methodologies, active ownership approaches, and thematic allocation strategies (Eurosif, 2016). Research indicates significant heterogeneity in these operational behaviours, reflecting varying motivations, capabilities, and institutional contexts (Amel-Zadeh & Serafeim, 2017).

Hong and Kacperczyk (2009) document the financial implications of exclusionary screening, finding that "sin stocks" historically outperformed comparable investments due to investor aversion creating undervaluation. More recent research indicates increasing adoption of inclusionary screening approaches that favour sustainability leaders rather than simply excluding problematic sectors (Durand et al., 2013).

Eccles and Serafeim (2013) analyse best practices in ESG integration, finding increasing incorporation of material sustainability factors within fundamental valuation models rather than as separate overlay processes. This integration evolution reflects growing recognition of ESG financial materiality (Khan et al., 2016). In emerging market contexts, van der Ahee and Schulschenk (2013) find that integration practices remain less developed, with investors frequently relying on simplified approaches due to information constraints.

Dimson et al. (2015) analyse successful ESG engagement initiatives, finding that collaborative approaches, clear objectives, and home-country investor involvement significantly enhance effectiveness. In emerging markets specifically, Gifford (2010) finds that engagement practices require significant adaptation to account for distinct ownership structures, governance norms, and relationship expectations within different institutional contexts.

Kaminker and Stewart (2012) analyse green bond markets, documenting growing institutional investor allocation to specifically environmental financing instruments. Chava (2014) documents the relationship between environmental risk exposure and financing costs, finding that firms with higher environmental concerns face significantly higher cost of debt. In emerging market contexts specifically, Oh et al. (2013) find that governance risk factors receive particular attention from investors, reflecting perceived materiality of governance considerations within developing market environments.

2.3. Proposed Research Model

The proposed research model integrates multiple theoretical perspectives to examine the complex determinants of ESG integration within Vietnam's emergent sustainable finance ecosystem. The model examines relationships among institutional isomorphic pressures, ESG information asymmetry, perceived ESG value attribution, market knowledge sophistication, and sustainable investment decision-making behaviours, with specific hypothesised relationships informed by existing literature and contextual considerations.

Institutional isomorphic pressures represent a critical independent variable, reflecting the coercive, mimetic, and normative forces that shape organisational approaches to ESG integration. Drawing on DiMaggio and Powell's (1983) institutional isomorphism framework, this construct encompasses regulatory requirements, peer imitation processes, and professional normative expectations regarding sustainability consideration within investment frameworks. Previous research indicates that these institutional pressures significantly influence organisational adoption of ESG practices (Doh et al., 2010). The research model hypothesises that institutional

isomorphic pressures positively influence sustainable investment decision-making behaviours, with this relationship mediated by perceived ESG value attribution.

ESG information asymmetry constitutes another important independent variable, reflecting the challenges investment organisations face in accessing, evaluating, and comparing sustainability information across potential investments. This construct encompasses multiple dimensions including information availability, quality, comparability, and verification (Cheng et al., 2014). Previous research indicates that information asymmetry creates significant barriers to effective ESG integration, particularly in emerging market contexts characterised by less developed sustainability disclosure practices (Oh et al., 2013). The research model hypothesises that ESG information asymmetry negatively influences sustainable investment decision-making behaviours, with this relationship mediated by perceived ESG value attribution and moderated by market knowledge sophistication.

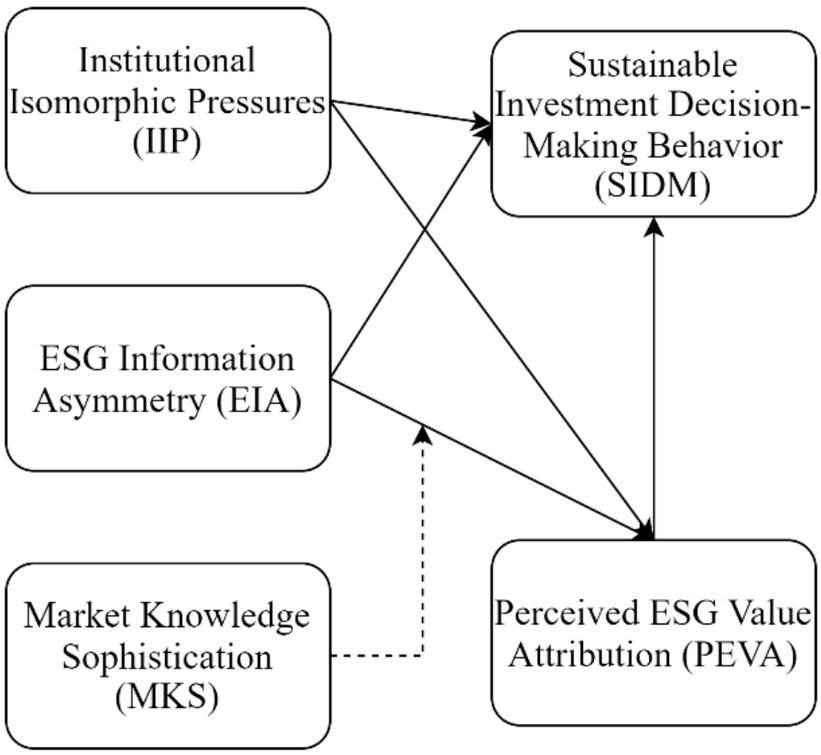

Figure 1. Proposed Research Model.

Perceived ESG value attribution represents a mediating variable, reflecting how investment organisations interpret the financial implications and materiality of sustainability factors. This construct encompasses perceptions regarding how specific ESG considerations create or protect value through mechanisms such as risk mitigation, efficiency enhancement, reputation protection, or opportunity identification (Clark et al., 2015). Previous research indicates that these value attribution processes significantly influence how investors operationalise sustainability considerations within investment frameworks (Amel-Zadeh & Serafeim, 2017). The research model hypothesises that perceived ESG value attribution positively influences sustainable investment decision-making behaviours, mediating the relationships between institutional pressures, information asymmetry, and operational sustainable investment practices.

Market knowledge sophistication constitutes an important moderating variable, reflecting investment organisations' technical expertise and cognitive frameworks regarding sustainability assessment and integration. This construct encompasses multiple dimensions including understanding of ESG financial materiality pathways, technical capability for sustainability evaluation, and cognitive frameworks for interpreting sustainability information (Meehan et al., 2006). Previous research indicates that knowledge sophistication significantly influences how investors interpret and respond to sustainability information (Eccles et al., 2011). The research model hypothesises that market knowledge sophistication moderates the relationship between ESG information asymmetry and perceived ESG value attribution, with higher knowledge sophistication reducing the negative impact of information challenges on value perception.

Sustainable investment decision-making behaviour represents the dependent variable, reflecting the operational approaches through which investment organisations incorporate ESG considerations into investment processes. This construct encompasses multiple dimensions including screening practices, integration methodologies, active ownership approaches, and thematic allocation strategies (Eurosif, 2016). The research model examines how institutional pressures, information environments, value perceptions, and knowledge sophistication collectively shape these sustainable investment behaviours within Vietnam's emerging market context.

The model addresses significant gaps in existing literature by developing an integrated theoretical framework that synthesises institutional, stakeholder, and behavioural perspectives on sustainable investment (Kitzmueller & Shimshack, 2012). The model advances understanding of sustainable finance evolution within emerging market contexts, addressing the notable lack of empirical research examining ESG integration within developing financial ecosystems (Xiao et al., 2017).

The model employs Partial Least Squares Structural Equation Modeling (PLS-SEM) with complementary fuzzy-set Qualitative Comparative Analysis (fsQCA) as primary analytical approaches. PLS-SEM offers particular advantages for this research due to its capacity to examine complex relationship networks, test mediating and

moderating effects, and accommodate both formative and reflective measurement models (Hair et al., 2014). The complementary fsQCA approach enables identification of configurational pathways to sustainable investment outcomes, recognising the potential equifinality that characterises ESG integration within complex institutional environments (Fiss, 2011).

Based on the theoretical foundations and empirical evidence presented, the research model examines the following specific hypotheses:

H_1: Institutional isomorphic pressures positively influence sustainable investment decision-making behaviours.

H_2: Institutional isomorphic pressures positively influence perceived ESG value attribution.

H_3: ESG information asymmetry negatively influences perceived ESG value attribution.

H_4: ESG information asymmetry negatively influences sustainable investment decision-making behaviours.

H_5: Perceived ESG value attribution positively influences sustainable investment decision-making behaviours.

H_6: Perceived ESG value attribution mediates the relationship between institutional isomorphic pressures and sustainable investment decision-making behaviours.

H_7: Perceived ESG value attribution mediates the relationship between ESG information asymmetry and sustainable investment decision-making behaviours.

H_8: Market knowledge sophistication moderates the relationship between ESG information asymmetry and perceived ESG value attribution, such that higher knowledge sophistication reduces the negative impact of information asymmetry.

These hypothesised relationships collectively constitute a comprehensive theoretical framework for examining the complex determinants of ESG integration within Vietnam's emergent sustainable finance ecosystem.

3. Research Methodology

3.1. Research Design

This study employs a quantitative research design utilising a cross-sectional survey methodology to investigate ESG integration determinants within Vietnam's emergent sustainable finance ecosystem. This approach aligns with the research objectives of examining relationships among key variables and testing specific hypotheses regarding sustainable investment behaviours (Creswell, 2014), whilst providing valuable insights regarding sustainable finance evolution within this transitional economic context (Amel-Zadeh & Serafeim, 2017).

The research design incorporates complementary variance-based and configurational analytical approaches, enabling examination of direct relationships among variables whilst identifying distinct pathways to ESG integration. The primary analytical framework utilises Partial Least Squares Structural Equation Modelling (PLS-SEM) to test hypothesised relationships (Hair et al., 2014), offering advantages through its capacity to examine complex relationship networks, test mediating and moderating effects, and accommodate both formative and reflective measurement models (Hair et al., 2012). The complementary fuzzy-set Qualitative Comparative Analysis (fsQCA) enables identification of configurational pathways to sustainable investment outcomes, recognising the potential equifinality characterising ESG integration within complex institutional environments (Fiss, 2011).

Several mechanisms address potential methodological limitations: incorporation of both perceptual measures and objective indicators facilitates triangulation across measurement approaches (Jick, 1979); rigorous validity and reliability assessment procedures ensure measurement quality (Bagozzi et al., 1991); and multiple control variables account for potential confounding factors such as investor characteristics, portfolio composition, and international exposure (Podsakoff et al., 2003).

The design reflects theoretical considerations regarding appropriate methodological approaches. Testing specific hypothesised relationships necessitates a quantitative approach capable of statistical inference and hypothesis testing (Creswell, 2014), whilst developing generalisable insights aligns with quantitative methodologies enabling systematic examination across a substantial institutional investor sample (Johnson & Onwuegbuzie, 2004).

Several innovative methodological elements address limitations in previous sustainable finance research: complementary application of PLS-SEM and fsQCA enables both variance-based and configurational examination, providing more comprehensive insights than either approach individually (Woodside, 2013); sophisticated measurement approaches for key constructs capture the complex nature of these phenomena (Edwards, 2001); and rigorous moderation analysis techniques examine how market knowledge sophistication influences the relationship between information challenges and value attribution processes (Hayes, 2013).

3.2. Data Collection

The study employed a systematic data collection approach targeting institutional investors operating within Vietnam's financial markets. The population comprised investment organisations actively managing portfolios within Vietnam, including fund management companies, securities firms, insurance companies, pension funds, and banking institutions with investment operations (Crifo et al., 2015). The sampling frame was constructed using multiple authoritative sources including the Vietnam Securities Depository, State Securities Commission, and Vietnam Association of Financial Investors membership directories.

Stratified random sampling ensured proportional representation across investor categories. Stratification variables included investor type, asset size, and ownership structure, enhancing sample representativeness through inclusion of diverse investor categories (Cochran, 1977). Within each stratum, random selection identified specific organisations for inclusion, enhancing generalisability to the broader institutional investor population (Lohr, 2009).

The primary data collection instrument comprised a structured questionnaire administered to senior investment professionals. Developed through comprehensive literature review, expert panel consultation, and pilot testing, the instrument ensured content validity, clarity, and contextual appropriateness (DeVellis, 2016). It incorporated multi-item Likert scales for key theoretical constructs and objective indicators regarding ESG integration practices, enabling triangulation across measurement approaches (Jick, 1979).

The data collection process involved multiple stages to maximise response quality and participation. Initial contact established appropriate respondents based on involvement in investment decision processes and familiarity

with organisational ESG practices (Kumar et al., 1993). Mixed-mode administration involved both electronic distribution and in-person collection based on respondent preferences (Dillman et al., 2014). Follow-up communications at two and four weeks encouraged participation among non-respondents (Baruch & Holtom, 2008).

The final sample comprised 287 completed questionnaires, representing a 64.2% response rate from 447 organisations initially contacted. This substantial response rate enhances confidence in sample representativeness (Baruch & Holtom, 2008). Respondent characteristics indicate balanced representation: 32.4% from fund management companies, 28.6% from securities firms, 18.5% from insurance companies, 12.2% from banking institutions, and 8.3% from pension funds. Asset size distribution includes 38.7% small investors (under USD 100 million AUM), 42.5% medium investors (USD 100-500 million AUM), and 18.8% large investors (over USD 500 million AUM). Ownership structure representation includes 58.2% domestic organisations, 27.5% foreign institutions, and 14.3% joint ventures.

Data collection procedures incorporated specific mechanisms addressing methodological limitations: non-response bias assessment compared early and late respondents, with no significant differences identified (Armstrong & Overton, 1977); common method bias mitigation included respondent anonymity, varied response formats, and separation of predictor and criterion measures (Podsakoff et al., 2003); and key informant bias was addressed through screening questions assessing position, experience, and involvement in ESG-related decision processes (Kumar et al., 1993).

3.3. Measurement and Validation

The measurement approach incorporated multi-item scales for key theoretical constructs, ensuring comprehensive coverage of complex phenomena whilst enabling rigorous reliability and validity assessment (Churchill, 1979). All instruments were adapted from established scales with modifications ensuring contextual appropriateness for Vietnam's sustainable finance ecosystem through expert panel review and pilot testing with 15 investment professionals (DeVellis, 2016).

The institutional isomorphic pressures construct was measured using a 12-item scale adapted from Kostova and Roth (2002) and Doh et al. (2010), encompassing coercive, mimetic, and normative dimensions. Coercive pressure items addressed regulatory requirements, client expectations, and societal demands; mimetic pressure items examined imitation of successful peer practices and industry standards; and normative pressure items assessed professional expectations and legitimacy considerations (DiMaggio & Powell, 1983).

The ESG information asymmetry construct was measured using a 9-item scale adapted from Dhaliwal et al. (2011) and Cheng et al. (2014), addressing information availability, quality, and comparability dimensions. This approach captured multifaceted information challenges facing investors incorporating sustainability considerations (Amel-Zadeh & Serafeim, 2017).

The perceived ESG value attribution construct was measured using a 10-item scale adapted from Eccles et al. (2011) and Clark et al. (2015), examining perceptions regarding financial materiality of sustainability considerations through risk mitigation, efficiency enhancement, reputation effects, competitive positioning, and market valuation mechanisms.

The market knowledge sophistication construct was measured using an 8-item scale adapted from Meehan et al. (2006) and Slager and Chapple (2016), examining technical expertise regarding ESG metrics and evaluation methodologies, alongside cognitive frameworks for interpreting sustainability information (Eccles et al., 2011).

The sustainable investment decision-making behaviour construct was measured using both perceptual and objective indicators. The perceptual component employed a 15-item scale adapted from Eurosif (2016) and Amel-Zadeh and Serafeim (2017), examining screening practices, integration methodologies, active ownership approaches, and thematic allocation strategies. The objective component collected specific indicators regarding ESG policy formalisation, dedicated sustainable investment products, staff resources, and portfolio ESG score measurement.

Control variables included investor characteristics, portfolio composition, ownership structure, and international exposure (Podsakoff et al., 2003). All measurement instruments underwent rigorous validation procedures: exploratory factor analysis examined initial factor structures (Conway & Huffcutt, 2003); confirmatory factor analysis validated the measurement model structure (Anderson & Gerbing, 1988); internal consistency reliability was assessed using Cronbach's alpha and composite reliability, with values exceeding 0.7 deemed acceptable (Nunnally, 1978); indicator reliability was evaluated through factor loadings exceeding 0.7 (Chin, 1998); convergent validity was assessed using average variance extracted exceeding 0.5 (Fornell & Larcker, 1981); and discriminant validity was evaluated using both the Fornell-Larcker criterion and heterotrait-monotrait ratio below 0.85 (Henseler et al., 2015).

3.4. Analytical Procedure

The analytical procedure involved multiple stages examining the theoretical model and testing specific hypotheses. The primary analytical approach utilised Partial Least Squares Structural Equation Modelling implemented through SmartPLS 4 software (Ringle et al., 2015), following established procedural guidelines (Hair et al., 2014).

The initial stage involved measurement model assessment, evaluating indicator reliability through factor loadings, internal consistency through Cronbach's alpha and composite reliability, convergent validity through average variance extracted, and discriminant validity through the Fornell-Larcker criterion and heterotrait-monotrait ratio (Hair et al., 2014).

The second stage examined the structural model, assessing path coefficients, significance levels, and R^2 values of endogenous constructs. Bootstrapping with 5,000 resamples tested significance of path coefficients (Davison & Hinkley, 1997). Effect sizes (f^2) determined practical significance of relationships, with values of 0.02, 0.15, and 0.35 indicating small, medium, and large effects respectively (Cohen, 1988). Predictive relevance was evaluated using Stone-Geisser Q^2 values through blindfolding procedures (Geisser, 1974; Stone, 1974).

The third stage focused on mediating effects, assessing specific indirect effects using bootstrapping procedures to determine whether perceived ESG value attribution mediates relationships between institutional pressures, information asymmetry, and sustainable investment behaviours (Preacher & Hayes, 2008). Both direct and indirect effects were examined to determine mediation type and significance (Zhao et al., 2010).

The fourth stage examined the moderating effect of market knowledge sophistication on the relationship between ESG information asymmetry and perceived ESG value attribution, using the product indicator approach and creating interaction terms between moderator and predictor variables (Chin et al., 2003). Simple slope analysis visualised the moderation effect, examining relationships at different levels of market knowledge sophistication (Aiken & West, 1991).

The fifth stage employed fuzzy-set Qualitative Comparative Analysis to identify configurational pathways to sustainable investment outcomes, examining how different combinations of causal conditions collectively lead to sustainable investment behaviours (Ragin, 2008). The procedure involved calibration of construct measures into fuzzy-set membership scores, truth table analysis to identify consistent causal configurations, and examination of necessary and sufficient conditions (Schneider & Wagemann, 2012).

The final stage included supplementary analyses enhancing robustness: multi-group analysis examined potential heterogeneity across investor categories (Henseler et al., 2009); control variable examination, alternative model specification testing, and common method bias assessment through Harman's single-factor test and the unmeasured latent method construct approach were conducted (Podsakoff et al., 2003). Throughout all stages, established procedural guidelines ensured methodological rigour and result validity, supporting valid inferences regarding ESG integration determinants within Vietnam's sustainable finance ecosystem.

4. Research Findings

4.1. Measurement Model Assessment

The measurement model assessment examined reliability and validity of all construct measures prior to substantive hypothesis testing. This comprehensive assessment ensures that measurement instruments appropriately capture the theoretical constructs under investigation, providing a solid foundation for subsequent structural model analysis. The assessment procedure followed established guidelines for evaluating PLS-SEM measurement models, incorporating multiple criteria to ensure measurement quality (Hair et al., 2014).

Exploratory factor analysis (EFA) employing principal component analysis with varimax rotation was initially conducted to examine factor structures and identify potentially problematic items. This analysis revealed a clear five-factor structure corresponding to the theoretical constructs, with all indicators loading primarily on their intended factors. Two items demonstrated problematic cross-loadings exceeding 0.40 on multiple factors and were subsequently removed from further analysis to ensure construct unidimensionality (Conway & Huffcutt, 2003). The final measurement model retained 52 indicators across the five theoretical constructs, with each indicator demonstrating primary loading on its intended factor and minimal cross-loadings on other factors.

Confirmatory factor analysis (CFA) was subsequently performed to validate the measurement model structure and formally assess construct validity. This analysis confirmed appropriate indicator alignment with theoretical constructs, with all items demonstrating significant loadings on their respective factors ($p < 0.001$). The CFA model demonstrated satisfactory fit with the empirical data according to established criteria, with Standardized Root Mean Square Residual (SRMR) of 0.058 below the recommended threshold of 0.08 (Hu & Bentler, 1999). This confirmation of measurement model structure supports subsequent reliability and validity assessments for individual constructs.

Table 1 presents comprehensive reliability and validity statistics for all theoretical constructs, including Cronbach's alpha, composite reliability, average variance extracted (AVE), and the square root of AVE for comparison with inter-construct correlations. Internal consistency reliability was assessed using both Cronbach's alpha and composite reliability, with all constructs demonstrating values exceeding the recommended threshold of 0.70 (Nunnally, 1978). Cronbach's alpha values ranged from 0.837 to 0.926, while composite reliability values ranged from 0.875 to 0.942, indicating strong internal consistency across all measurement scales.

Table 1. Reliability and Validity Assessment.

Construct	Cronbach's Alpha	Composite Reliability	AVE	1	2	3	4	5
1. IIP	0.892	0.917	0.648	0.805				
2. EIA	0.837	0.875	0.584	-0.314	0.764			
3. PEVA	0.904	0.926	0.714	0.512	-0.487	0.845		
4. MKS	0.857	0.891	0.623	0.278	-0.224	0.392	0.789	
5. SIDM	0.926	0.942	0.698	0.524	-0.463	0.597	0.415	0.835

Note: Bold diagonal elements represent the square root of AVE for each construct. Off-diagonal elements represent inter-construct correlations. IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; MKS = Market Knowledge Sophistication; SIDM = Sustainable Investment Decision-Making Behavior.

Indicator reliability was evaluated through factor loadings, with all indicators demonstrating loadings above the recommended threshold of 0.70 on their respective constructs (Chin, 1998). Factor loadings ranged from 0.723 to 0.894 across all measurement items, indicating that indicators appropriately reflect their associated theoretical constructs. These strong factor loadings support the reliability of individual measurement items in capturing their intended constructs, enhancing confidence in subsequent construct-level analyses.

Convergent validity was assessed using the average variance extracted (AVE), with all constructs demonstrating values exceeding the recommended threshold of 0.50 (Fornell & Larcker, 1981). AVE values ranged from 0.584 to 0.714 across constructs, indicating that each construct explains more than 50% of the variance in its respective indicators. These results support convergent validity of the measurement scales, demonstrating that indicators effectively capture their associated theoretical constructs.

Discriminant validity was evaluated using both the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio of correlations. The Fornell-Larcker assessment indicates that the square root of AVE for each

construct (bold diagonal elements in Table 1) exceeds its correlations with all other constructs (off-diagonal elements), supporting discriminant validity according to this criterion (Fornell & Larcker, 1981). The HTMT analysis presented in Table 2 further confirms discriminant validity, with all HTMT ratios below the conservative threshold of 0.85 recommended by Henseler et al. (2015). These results collectively support discriminant validity of the measurement scales, indicating that constructs are empirically distinct from one another.

Table 2. Heterotrait-Monotrait (HTMT) Ratio Analysis.

Construct	1	2	3	4	5
1. IIP					
2. EIA	0.358				
3. PEVA	0.568	0.549			
4. MKS	0.326	0.267	0.436		
5. SIDM	0.573	0.517	0.647	0.471	

Note: IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; MKS = Market Knowledge Sophistication; SIDM = Sustainable Investment Decision-Making Behavior.

The common method bias assessment through Harman's single-factor test indicated that the first factor accounted for 28.7% of total variance, substantially below the 50% threshold indicative of significant common method bias (Podsakoff et al., 2003). The unmeasured latent method construct approach provided further evidence against significant common method influence, with method factor loadings non-significant and explaining minimal indicator variance compared to substantive constructs. These results collectively suggest that common method bias does not significantly influence the measurement model, enhancing confidence in subsequent structural analyses.

4.2. Structural Estimation Model Assessment

The structural model assessment examined hypothesized relationships among theoretical constructs following confirmation of measurement model quality. This analysis evaluated the structural model based on path coefficients, their significance levels, and the R^2 values of endogenous constructs to determine relationship strength and explanatory power. Bootstrapping with 5,000 resamples was employed to test the significance of path coefficients, providing robust standard errors and confidence intervals for statistical inference (Hair et al., 2014).

Table 3 presents the direct effects results, including standardized path coefficients, t-values, p-values, and 95% confidence intervals for all hypothesized direct relationships. The results indicate significant support for all direct effect hypotheses, with all relationships demonstrating statistical significance ($p < 0.01$) in the hypothesized directions. Institutional isomorphic pressures positively influence both perceived ESG value attribution ($\beta = 0.397$, $p < 0.001$) and sustainable investment decision-making behaviors ($\beta = 0.237$, $p < 0.001$), supporting hypotheses H1 and H2. ESG information asymmetry negatively influences both perceived ESG value attribution ($\beta = -0.362$, $p < 0.001$) and sustainable investment decision-making behaviors ($\beta = -0.185$, $p < 0.01$), supporting hypotheses H3 and H4. Perceived ESG value attribution positively influences sustainable investment decision-making behaviors ($\beta = 0.343$, $p < 0.001$), supporting hypothesis H5.

Table 3. Direct Effects Results.

Hypothesis	Relationship	Path Coefficient	t-value	p-value	95% CI	Support
H1	IIP → SIDM	0.237	4.182	<0.001	[0.134, 0.340]	Yes
H2	IIP → PEVA	0.397	7.826	<0.001	[0.298, 0.488]	Yes
H3	EIA → PEVA	-0.362	6.874	<0.001	[-0.465, -0.258]	Yes
H4	EIA → SIDM	-0.185	3.142	0.002	[-0.297, -0.073]	Yes
H5	PEVA → SIDM	0.343	5.687	<0.001	[0.226, 0.458]	Yes

Note: IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; SIDM = Sustainable Investment Decision-Making Behavior..

The assessment of explanatory power indicates that the structural model explains substantial variance in the endogenous constructs. The R^2 value for perceived ESG value attribution is 0.426, indicating that institutional isomorphic pressures and ESG information asymmetry collectively explain 42.6% of the variance in value attribution perceptions. The R^2 value for sustainable investment decision-making behavior is 0.512, indicating that the model explains 51.2% of the variance in sustainable investment practices. According to established guidelines, these R^2 values represent moderate to substantial explanatory power, supporting the theoretical model's ability to explain significant variance in the focal constructs (Chin, 1998).

Table 4 presents the predictive relevance assessment through the Stone-Geisser Q^2 values for endogenous constructs. This assessment employed a blindfolding procedure with an omission distance of 7 to evaluate the model's predictive capability beyond in-sample estimation (Hair et al., 2014). The Q^2 values for both endogenous constructs substantially exceed zero, with values of 0.298 for perceived ESG value attribution and 0.352 for sustainable investment decision-making behavior. These results indicate strong predictive relevance of the structural model for both endogenous constructs, further supporting the theoretical framework's explanatory value (Geisser, 1974; Stone, 1974).

Table 4. Predictive Relevance Assessment.

Endogenous Construct	R^2	R^2 Adjusted	Q^2	Effect Size
PEVA	0.426	0.418	0.298	Medium
SIDM	0.512	0.503	0.352	Large

Note: PEVA = Perceived ESG Value Attribution; SIDM = Sustainable Investment Decision-Making Behavior.

The effect size (f^2) analysis assessed the practical significance of each predictor variable's influence on endogenous constructs. For perceived ESG value attribution, institutional isomorphic pressures demonstrated

medium effect size ($f^2 = 0.218$), while ESG information asymmetry showed medium effect size ($f^2 = 0.181$). For sustainable investment decision-making behavior, institutional isomorphic pressures demonstrated small effect size ($f^2 = 0.084$), ESG information asymmetry showed small effect size ($f^2 = 0.053$), and perceived ESG value attribution demonstrated medium effect size ($f^2 = 0.172$). These effect sizes indicate that beyond statistical significance, the theoretical constructs demonstrate practically meaningful influence on their respective outcome variables (Cohen, 1988).

Table 5 presents the specific indirect effects (path coefficients) for the hypothesized mediating relationships. The results indicate significant mediation of perceived ESG value attribution in the relationships between both exogenous variables and sustainable investment behavior. The indirect effect of institutional isomorphic pressures on sustainable investment decision-making through perceived ESG value attribution is positive and significant ($\beta = 0.136$, $p < 0.001$), supporting hypothesis H6. The indirect effect of ESG information asymmetry on sustainable investment decision-making through perceived ESG value attribution is negative and significant ($\beta = -0.124$, $p < 0.001$), supporting hypothesis H7. These mediation results provide important insights regarding the mechanisms through which institutional forces and information environments influence operational sustainable investment practices.

Table 5. Specific Indirect Effects (Path Coefficients).

Hypothesis	Indirect Path	Path Coefficient	t-value	p-value	95% CI	Support
H6	IIP → PEVA → SIDM	0.136	4.592	<0.001	[0.083, 0.196]	Yes
H7	EIA → PEVA → SIDM	-0.124	4.318	<0.001	[-0.181, -0.073]	Yes

Note: IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; SIDM = Sustainable Investment Decision-Making Behavior.

Table 6 presents the moderation analysis results examining hypothesis H8 regarding the moderating effect of market knowledge sophistication on the relationship between ESG information asymmetry and perceived ESG value attribution. The interaction term (EIA × MKS) demonstrates positive and significant effect ($\beta = 0.172$, $p < 0.001$), supporting hypothesis H8 that market knowledge sophistication moderates the relationship between information asymmetry and value attribution. The positive coefficient indicates that higher knowledge sophistication reduces the negative impact of information asymmetry on value attribution, consistent with the theoretical expectation that greater expertise enhances investor ability to interpret sustainability information despite information challenges.

Table 6. Moderation Analysis Results.

Hypothesis	Interaction Effect	Path Coefficient	t-value	p-value	95% CI	Support
H8	EIA × MKS → PEVA	0.172	3.946	<0.001	[0.087, 0.258]	Yes

Note: EIA = ESG Information Asymmetry; MKS = Market Knowledge Sophistication; PEVA = Perceived ESG Value Attribution.

Simple slope analysis was conducted to visualize the moderation effect, examining the relationship between ESG information asymmetry and perceived ESG value attribution at different levels of market knowledge sophistication (±1 standard deviation from the mean). The results indicate that at low knowledge sophistication, information asymmetry demonstrates stronger negative effect on value attribution ($\beta = -0.534$, $p < 0.001$) compared to high knowledge sophistication ($\beta = -0.190$, $p < 0.01$). This pattern confirms that higher knowledge sophistication buffers the negative impact of information challenges on sustainability value perceptions, highlighting the importance of investor expertise in navigating information-constrained environments.

Control variable analysis revealed several significant relationships with sustainable investment behaviors. Investor size demonstrated positive influence ($\beta = 0.138$, $p < 0.01$), indicating that larger investment organizations exhibit greater ESG integration. Foreign ownership also showed positive influence ($\beta = 0.154$, $p < 0.01$), suggesting that international institutional connections enhance sustainable investment adoption. These control variable findings provide additional contextual insights regarding organizational factors influencing ESG integration beyond the focal theoretical constructs.

4.3. Supplementary Analyses

The supplementary analyses provided additional insights regarding ESG integration determinants through alternative analytical approaches. These complementary analyses enhance understanding of sustainable investment evolution within Vietnam's financial ecosystem by examining heterogeneity across investor subgroups, identifying configurational pathways to ESG integration, and visualizing moderation effects through simple slope analysis.

Multi-group analysis (MGA) was conducted to examine potential heterogeneity in relationship patterns across different investor categories. Table 7 presents PLS-MGA results comparing path coefficients between key investor subgroups defined by size (small versus large) and ownership structure (domestic versus foreign). The results indicate significant differences in certain relationship patterns across these organizational contexts, highlighting important contingencies in ESG integration determinants.

Table 7. Multi-Group Analysis (MGA) Results.

Path	Small vs. Large			Domestic vs. Foreign		
	Path Diff	p-value	Significant?	Path Diff	p-value	Significant?
IIP → SIDM	0.037	0.352	No	0.144	0.038	Yes
IIP → PEVA	0.029	0.382	No	0.018	0.428	No
EIA → PEVA	0.212	0.007	Yes	0.186	0.022	Yes
EIA → SIDM	0.075	0.175	No	0.034	0.347	No
PEVA → SIDM	0.184	0.018	Yes	0.067	0.231	No
EIA × MKS → PEVA	0.225	0.004	Yes	0.195	0.015	Yes

Note: IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; MKS = Market Knowledge Sophistication; SIDM = Sustainable Investment Decision-Making Behavior.

Comparing small versus large investors reveals significant differences in three relationships. The negative relationship between ESG information asymmetry and perceived ESG value attribution is significantly stronger for small investors compared to large investors (path difference = 0.212, $p < 0.01$), indicating that information challenges create greater barriers to value perception for smaller organizations. The positive relationship between perceived ESG value attribution and sustainable investment behavior is significantly stronger for large investors compared to small investors (path difference = 0.184, $p < 0.05$), suggesting that larger organizations more effectively translate value perceptions into operational practices. Additionally, the moderating effect of market knowledge sophistication is significantly stronger for small investors compared to large investors (path difference = 0.225, $p < 0.01$), indicating that expertise plays particularly crucial role in helping smaller organizations navigate information challenges.

Comparing domestic versus foreign investors reveals significant differences in two relationships. The positive relationship between institutional isomorphic pressures and sustainable investment behavior is significantly stronger for foreign investors compared to domestic investors (path difference = 0.144, $p < 0.05$), suggesting that international organizations demonstrate greater responsiveness to institutional sustainability expectations. The negative relationship between ESG information asymmetry and perceived ESG value attribution is significantly stronger for domestic investors compared to foreign investors (path difference = 0.186, $p < 0.05$), indicating that local organizations experience greater difficulty interpreting sustainability information within information-constrained environments. The moderating effect of market knowledge sophistication is also significantly stronger for domestic investors compared to foreign investors (path difference = 0.195, $p < 0.05$), highlighting the particular importance of expertise development among local investment organizations.

Fuzzy-set Qualitative Comparative Analysis (fsQCA) was conducted to identify configurational pathways to sustainable investment outcomes. This analysis examined how different combinations of causal conditions (institutional pressures, information environments, value perceptions, knowledge sophistication) collectively lead to sustainable investment behaviors. Table 8 presents the fsQCA results, including four distinct configurational pathways demonstrating consistency scores exceeding the recommended threshold of 0.80 (Ragin, 2008).

Table 8. Fuzzy-Set Qualitative Comparative Analysis (fsQCA) Results.

Solution	Path 1	Path 2	Path 3	Path 4
IIP	●	●	●	◯
EIA	◯	⊗	◯	⊗
PEVA	●	⊕	●	●
MKS	◯	●	●	●
Raw coverage	0.342	0.287	0.324	0.195
Unique coverage	0.082	0.057	0.068	0.045
Consistency	0.872	0.853	0.912	0.826
Overall solution coverage	0.683			
Overall solution consistency	0.843			

Note: ● = presence of condition; ⊗ = absence of condition; ⊕ = moderate presence of condition; ◯ = condition not important (can be either present or absent). IIP = Institutional Isomorphic Pressures; EIA = ESG Information Asymmetry; PEVA = Perceived ESG Value Attribution; MKS = Market Knowledge Sophistication.

The fsQCA results identify four distinct configurational pathways to high sustainable investment behaviors, with the overall solution demonstrating strong coverage (0.683) and consistency (0.843). Path 1 combines strong institutional pressures, positive value attribution, and either low information asymmetry or high knowledge sophistication (information asymmetry not important in this configuration). Path 2 combines strong institutional pressures, low information asymmetry, moderate value attribution, and high knowledge sophistication. Path 3 combines strong institutional pressures, positive value attribution, and high knowledge sophistication, with information asymmetry not important in this configuration. Path 4 combines low information asymmetry, positive value attribution, and high knowledge sophistication, with institutional pressures not important in this configuration.

These configurational findings provide important insights regarding the equifinality that characterizes ESG integration within Vietnam's financial ecosystem. Multiple distinct pathways lead to sustainable investment outcomes, with different combinations of institutional, informational, perceptual, and knowledge factors collectively producing similar results. This configurational perspective complements the variance-based PLS-SEM analysis by highlighting how different causal combinations can substitute for one another in producing sustainable investment behaviors.

Simple slope analysis was conducted to visualize the moderation effect of market knowledge sophistication on the relationship between ESG information asymmetry and perceived ESG value attribution. This analysis examined the relationship at different levels of market knowledge sophistication (±1 standard deviation from the mean). At low knowledge sophistication (-1 SD), information asymmetry demonstrates strong negative effect on value attribution ($\beta = -0.534$, $p < 0.001$). At high knowledge sophistication (+1 SD), information asymmetry

demonstrates substantially weaker negative effect on value attribution ($\beta = -0.190$, $p < 0.01$). This pattern confirms that higher knowledge sophistication buffers the negative impact of information challenges on sustainability value perceptions, highlighting the importance of investor expertise in navigating information-constrained environments.

5. Discussion of Research Results and Conclusions

This study yields significant insights into the complex determinants of ESG integration within Vietnam's emergent sustainable finance ecosystem. By synthesising institutional theory, stakeholder theory, and behavioural finance perspectives, the research elucidates how institutional isomorphic pressures, ESG information asymmetry, perceived ESG value attribution, and market knowledge sophistication collectively shape sustainable investment behaviours among institutional investors operating within Vietnam's financial markets.

The structural model results demonstrate robust support for all hypothesised relationships. The significant positive influence of institutional isomorphic pressures on both perceived ESG value attribution (H2) and sustainable investment decision-making behaviours (H1) aligns with institutional theory's emphasis on how organisational practices are shaped by normative pressures, social expectations, and legitimacy considerations beyond purely economic rationality (DiMaggio & Powell, 1983). Coercive, mimetic, and normative institutional forces collectively influence ESG integration within Vietnam's financial ecosystem, consistent with previous research documenting institutional impacts on sustainable practices (Matten & Moon, 2008). This empirical evidence extends institutional theory applications to emerging market sustainable finance contexts, demonstrating how institutional forces shape ESG integration within transitional economic environments.

The significant negative influence of ESG information asymmetry on both perceived ESG value attribution (H3) and sustainable investment decision-making behaviours (H4) corroborates previous research identifying information challenges as critical barriers to effective ESG integration (Cheng et al., 2014). These findings align with stakeholder theory perspectives emphasising how information quality influences investor ability to effectively evaluate organisational relationships with diverse stakeholders (Freeman et al., 2010). The particularly strong negative relationship between information asymmetry and value attribution ($\beta = -0.362$) highlights how information challenges fundamentally inhibit investor recognition of sustainability's financial materiality, consistent with previous research on ESG information processing (Crifo et al., 2015).

The significant positive influence of perceived ESG value attribution on sustainable investment decision-making behaviours (H5) supports behavioural finance perspectives emphasising how investor perceptions and cognitive frameworks shape investment decisions (Hirshleifer, 2001). This finding aligns with research documenting the importance of perceived financial materiality in driving mainstream ESG integration (Amel-Zadeh & Serafeim, 2017). The substantial effect size of this relationship ($f^2 = 0.172$) indicates that value perceptions represent critical determinants of operational sustainable investment practices, highlighting the importance of developing cognitive frameworks that effectively recognise sustainability's financial implications.

The significant mediation of perceived ESG value attribution in the relationships between both exogenous variables and sustainable investment behaviour (H6, H7) provides important insights regarding the mechanisms through which institutional and informational factors influence operational ESG integration. These mediation findings indicate that institutional pressures and information environments primarily influence sustainable investment behaviours by shaping how investors perceive the financial materiality of sustainability considerations. This perceptual mediation mechanism aligns with cognitive institutional perspectives emphasising how institutional forces shape organisational cognition and interpretation processes (Glynn & Raffaelli, 2013).

The significant moderating effect of market knowledge sophistication on the relationship between ESG information asymmetry and perceived ESG value attribution (H8) demonstrates how investor capabilities influence responses to information challenges. The positive interaction coefficient ($\beta = 0.172$) indicates that higher knowledge sophistication reduces the negative impact of information asymmetry on value attribution, consistent with research emphasising how expertise enhances information processing capacity in complex decision environments (Meehan et al., 2006). Simple slope analysis further illuminates this moderation effect, demonstrating substantially stronger negative impact of information asymmetry at low knowledge levels compared to high knowledge levels.

Multi-group analysis reveals important contingencies across investor categories. Information asymmetry more strongly affects smaller organisations with limited resources for sophisticated ESG assessment, aligning with resource-based perspectives (Barney, 1991). Similarly, the significantly stronger negative impact of information asymmetry for domestic investors compared to foreign investors highlights how international exposure enhances organisational capacity to navigate information challenges.

The fsQCA results identify four distinct configurational pathways to high ESG integration, demonstrating equifinality in sustainable investment evolution. This configurational perspective aligns with complexity theory approaches emphasising how multiple causal pathways can lead to similar organisational phenomena (Fiss, 2011). The findings particularly highlight potential substitutability between favourable information environments and high knowledge sophistication when combined with appropriate institutional and perceptual factors.

These findings have significant implications for institutional theory applications to sustainable finance. While supporting institutional perspectives on how organisational practices are influenced by social expectations and legitimacy considerations (DiMaggio & Powell, 1983), they also highlight limitations of purely institutional explanations. Information environments and cognitive factors demonstrate substantial independent influences on sustainable investment behaviours, supporting development of integrated theoretical frameworks that synthesise institutional perspectives with informational and cognitive approaches.

For stakeholder theory applications, the empirical evidence supports perspectives emphasising how organisational relationships with diverse stakeholders influence financial performance (Freeman et al., 2010). However, significant challenges exist in operationalising these stakeholder considerations within investment frameworks, particularly in information-constrained environments. These findings suggest practical advancement

of stakeholder theory applications requires substantial improvements in sustainability information environments, particularly in emerging markets with less developed disclosure practices.

For policymakers and regulators, the findings highlight the critical importance of developing robust sustainability disclosure frameworks to facilitate effective ESG integration. Regulatory interventions can effectively promote sustainable investment through both direct compliance requirements and normative expectations regarding ESG consideration. Investor education initiatives are vital for enhancing capability for effective sustainability assessment, particularly given knowledge's moderating role in reducing negative information asymmetry effects.

For institutional investors, the fsQCA results identifying multiple configurational pathways to effective ESG integration provide strategic insights on approaches organisations might adopt based on their specific contexts and capabilities. Developing organisational expertise regarding sustainability assessment and financial materiality pathways is particularly critical for smaller and domestic investors facing greater information challenges.

Despite its contributions, this research has limitations including cross-sectional design limiting causal inference, focus exclusively on Vietnam potentially limiting generalisability, and reliance on perceptual measures for certain constructs. Future research directions include investigating specific mechanisms through which institutional pressures translate into operational ESG integration practices, examining different ESG information types and their relative influence on investment decisions, and exploring knowledge development processes within investment organisations.

In conclusion, this research contributes to sustainable finance literature by developing and empirically testing an integrated theoretical framework examining ESG integration determinants within Vietnam's emergent financial ecosystem. The findings provide valuable theoretical insights regarding the complex determinants of ESG integration while offering practical guidance for stakeholders navigating Vietnam's evolving sustainable finance landscape.

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