# From AI-Enabled Innovation to Financial Sustainability: ESG as a Value-Creation Mechanism Under Islamic Ethical Governance

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## Abstract

Artificial intelligence (AI) is increasingly used in corporate innovation, risk management, sustainability monitoring, and decision-making. Recent studies suggest that AI can improve environmental, social, and governance (ESG) practices by supporting green innovation, supply-chain efficiency, disclosure quality, access to finance, and monitoring. However, the literature remains less conclusive about how these improvements translate into long-term financial sustainability. Ethical considerations are also often discussed separately from the organizational processes through which AI creates value. This paper develops a conceptual framework that links AI-enabled innovation, ESG capability, financial sustainability, and Islamic ethical governance. Based on an integrative synthesis of literature on AI, ESG, sustainable finance, and Islamic ethics, the framework views AI-enabled innovation as a strategic organizational capability and ESG capability as the mechanism through which technological gains may be converted into more sustainable financial outcomes. Financial sustainability is understood beyond short-term profitability, encompassing resilience, access to capital, responsible resource allocation, risk management, and long-term value creation. The framework further places Islamic ethical governance within the value-creation process itself. Principles of amāna (trusteeship), 'adl (justice), maṣlaḥa (public welfare), transparency, and human accountability provide a normative basis for assessing whether AI-driven efficiency and financial gains remain consistent with broader stakeholder and societal responsibilities. The paper therefore proposes that the contribution of AI to financial sustainability depends not only on technological capability and ESG integration, but also on the ethical conditions under which these capabilities are governed.

**Keywords:** artificial intelligence, esg, financial sustainability, islamic ethical governance, sustainable finance

## Introduction

Artificial intelligence (AI) is becoming increasingly difficult to separate from the way firms innovate and make decisions. Its use has moved beyond automation and routine data processing into forecasting, product development, risk assessment, supply-chain management, investment analysis, and strategic planning. Evidence from innovation-active firms suggests that AI is already being used across different stages of the innovation process rather than only for isolated technical tasks. Roberts and Candi (2024), drawing on a survey of 560 innovation managers and follow-up interviews, show that AI is widely used in innovation projects and is positively associated with innovation process, innovation, and market performance. Their findings point to an important distinction: the relevant question is no longer simply whether a firm adopts AI, but whether the technology becomes embedded in the organizational processes

through which firms create and develop value. This capability-oriented reading is consistent with research that conceptualizes AI capability as a bundle of organizational resources and with work showing that managerial value emerges from the interplay between automation and human augmentation (Mikalef & Gupta, 2021; Raisch & Krakowski, 2021).

This distinction is especially important when AI is considered in relation to sustainability. Firms do not obtain sustainability benefits merely by purchasing new technologies. They need the organizational capacity to use them effectively. Schwaeke et al. (2025), based on evidence from 24 companies, identify operational enablement and technical capacity as central conditions for the effective use of AI in corporate sustainability. Leadership, stakeholder management, data management, system integration, infrastructure, and impact measurement all matter. Robertson et al. (2025) reinforce this point by showing that AI implementation requires coordinated changes across people, tasks, structures, and technology. Traditional adoption models are therefore insufficient for explaining the organizational changes needed for sustained AI integration. These findings support a shift from viewing AI as a technology that firms simply adopt toward understanding AI-enabled innovation as an organizational capability.

The sustainability implications of this capability are attracting growing attention. Lim (2024) shows that research at the intersection of AI, ESG, and finance already covers areas such as ESG disclosure and governance, firm governance, risk management, forecasting and valuation, data, and responsible AI. At the same time, responsible AI remains comparatively less developed than several of the more established research domains, suggesting that ethical questions have not advanced at the same pace as technological applications. The field is therefore expanding, but not evenly. Much of the research still concentrates on what AI can do technically, while questions about how these capabilities are converted into sustainable organizational and financial value remain more fragmented. Broader studies likewise caution that AI can both support and inhibit sustainability objectives, depending on how technologies are embedded in business models, institutions, and governance arrangements (Di Vaio et al., 2020; Vinuesa et al., 2020).

Recent firm-level studies provide stronger evidence on the first part of this relationship. Liu et al. (2025), using 22,953 firm-year observations from Chinese listed companies between 2011 and 2023, find that AI adoption is positively associated with overall ESG performance and with improvements across the environmental, social, and governance dimensions. Their mechanism analysis is particularly relevant: green innovation and supply-chain efficiency transmit part of the effect, while digital transformation strengthens the relationship. These findings suggest that AI contributes to sustainability not only because it automates tasks, but because it can improve how firms innovate, coordinate resources, and manage operational processes.

Yang and Yang (2025) reach a related conclusion through different mechanisms. Their study of Chinese A-share firms shows that AI adoption can enhance ESG performance by alleviating financing constraints, increasing analyst attention, and improving information disclosure. This broadens the argument beyond operational efficiency. AI can also affect sustainability through financing access, external monitoring, and information quality. Taken together, these studies suggest that the relationship between AI and ESG is better understood as a set of organizational mechanisms rather than as a simple technological effect.

Yet a positive relationship between AI and ESG does not answer a more difficult question: what happens after ESG performance improves? Technological capability does not automatically translate into durable financial value. Liu, Sun, and He (2025) provide useful evidence on this issue by examining ESG as a mediator between technological innovation and firm performance. Their findings show that innovation enhances ESG engagement, which in turn improves return on assets, but the indirect effect is not similarly positive for Tobin's Q. They therefore describe ESG as a strategic channel through which firms convert innovation into value, while also showing that this process depends on organizational and institutional conditions.

Evidence from ESG-oriented innovation points in a similar direction. Cabaleiro-Cerviño and Mendi (2024) find that firms whose innovation strategies incorporate ESG objectives achieve stronger subsequent innovation performance and are not disadvantaged in productivity, exports, or survival. Jorzik et al. (2024) add a business-model perspective, showing that AI can reshape how firms create, deliver, and capture value in sustainability-oriented contexts. These studies support the idea that ESG should not be treated simply as a reported outcome. It may instead form part of the process through which technological potential is converted into more durable organizational value.

The financial consequences of ESG also extend beyond immediate profitability. Alves and Meneses (2024) show that ESG scores contain information about borrower risk that is not fully captured by conventional financial measures and are associated with lower debt costs, particularly among more indebted firms and those with higher agency costs. Michalski and Low (2024) similarly find that environmental and social variables contribute meaningfully to corporate credit ratings, including measures of environmental innovation, resource use, emissions, corporate social responsibility, and workforce conditions. Importantly, they show that ESG variables may provide additional information about creditworthiness beyond traditional financial indicators. This broader interpretation is also consistent with corporate finance research linking ESG and CSR to firm risk, value, and financing outcomes (Gillan et al., 2021), as well as evidence that stronger ESG performance can mitigate financial risk during periods of market stress (Broadstock et al., 2021).

Zhong et al. (2024) provide further evidence from a risk perspective. Their findings indicate that green finance can alleviate financing constraints, reduce corporate carbon risk, and improve firm value. These results suggest that sustainability-related value often appears through financing conditions, risk reduction, and resilience rather than through a uniform increase in short-term profit. Related evidence suggests that responsible corporate practices can reduce systematic risk and support firm value, reinforcing the relevance of risk-based channels in sustainable value creation (Albuquerque et al., 2019).

For this reason, the present paper uses financial sustainability rather than short-term financial performance as its main economic outcome. Financial sustainability is understood as the firm's capacity to remain financially viable and resilient over time, maintain access to capital, manage financial and non-financial risks, allocate resources responsibly, and continue creating value. This broader interpretation is consistent with Salem and Suki's (2026) review, which finds stronger support for AI-enabled ESG effects through information quality, governance monitoring, financing conditions, reporting credibility, innovation, and market valuation than for a universal direct effect on profitability. The temporal emphasis also has a longer tradition in sustainability research: Bansal and DesJardine (2014) argue that sustainability requires intertemporal trade-offs, while Eccles et al. (2014) show that high-sustainability firms tend to develop more long-term-oriented organizational processes.

The temporal dimension also matters. Mena and Parker (2024) emphasize that corporate sustainability is inherently concerned with present and future needs and that firms with longer time horizons are generally better able to address complex environmental problems. This makes short-term profitability an incomplete endpoint for a framework concerned with sustainable value creation. Some investments in AI or ESG capability may involve current costs while strengthening future resilience, legitimacy, or financing capacity.

There is, however, another issue that cannot be resolved by extending the time horizon alone. A process may be financially sustainable and still raise serious ethical concerns. AI systems can reduce costs while weakening employee autonomy, improve credit decisions while reproducing historical bias, or increase data-processing efficiency while compromising privacy. Dong et al. (2024) show why AI management needs to remain human-centered, with attention to fairness, autonomy, explainability, and accountability. Rana et al. (2024) similarly show that fairness, accountability, transparency, accuracy, and autonomy influence organizational use of

generative AI. Ethics, then, is not an issue that appears only after implementation. It shapes whether and how AI is used.

Islamic ethics provides a particularly relevant normative foundation for extending this discussion. Elmahjub (2023) argues that maṣlaḥa offers a basis for evaluating AI in terms of public welfare, while also requiring attention to fairness, dignity, transparency, privacy, and avoidance of harm. This means that technological efficiency or financial gain cannot automatically be treated as ethically desirable.

Ali et al. (2025) deepen this perspective through trusteeship ethics and the concept of amāna. Their framework places human beings at the center of moral responsibility and links AI governance with justice, stewardship, spiritual accountability, and responsibility toward knowledge and creation. They also stress that responsibility for AI outcomes should not be shifted to digital systems themselves.

Seen together, the literature has advanced considerably, but along partly separate lines. One stream examines AI as an organizational and innovation capability. A second explains how AI and technological innovation affect ESG. A third connects ESG with financing, risk, and firm outcomes. A fourth focuses on the ethical governance of AI. What remains less developed is a framework explaining how AI-enabled innovation is translated into long-term financial sustainability through ESG capability, and how Islamic ethical governance shapes the legitimacy and responsibility of that value-creation process.

Accordingly, this paper addresses the following research question:

*How can AI-enabled innovation contribute to financial sustainability through ESG capability, and how can Islamic ethical governance shape the legitimacy and responsibility of this value-creation process?*

The paper makes four closely related contributions. First, it reframes AI from simple technology adoption to AI-enabled innovation as an organizational capability. Second, it conceptualizes ESG capability as a value-conversion mechanism through which technological potential can be translated into more durable organizational and financial outcomes. Third, it extends the financial endpoint from short-term performance to financial sustainability, emphasizing resilience, access to capital, risk management, and long-term value creation. Fourth, it integrates Islamic ethical governance as an overarching normative governance condition rather than treating Islamic ethics as a contextual discussion added after the economic analysis. This shifts the focus from whether AI can improve financial performance to a broader and more demanding question: under what organizational and ethical conditions can AI support financially sustainable value creation?

## Methods

### Research Design

This paper adopts a theory-building conceptual design based on an integrative literature synthesis. Its purpose is not to conduct another systematic literature review, bibliometric analysis, or meta-analysis of artificial intelligence, ESG, and finance. The field has already been mapped in considerable detail. Lim (2024), for example, identifies several established research domains at the intersection of AI, ESG, and finance, while Salem and Suki (2026) provide a recent scoping review of AI-enabled ESG practices and financial-performance channels in Asian firms. Salem and Suki screened 1,046 records and retained 31 studies for thematic synthesis, explicitly positioning their work as a mapping exercise rather than causal verification.

The present study therefore uses the literature for a different purpose. Rather than asking how many studies exist or estimating the average effect of a predefined relationship, it asks how several partially separate research streams can be connected to explain a broader process of sustainable value creation. The focus is on conceptual integration, mechanism identification, and proposition development.

**Literature Base and Study Selection**

The literature base was organized around 20 core studies. Eight papers served as anchor studies because they deal directly with the central relationships of the framework: AI and ESG, innovation and ESG, ESG and financial outcomes, AI-enabled ESG and finance, or Islamic ethics and AI. These include Lim (2024), Liu et al. (2025), Yang and Yang (2025), Liu, Sun, and He (2025), Salem and Suki (2026), Cabaleiro-Cerviño and Mendi (2024), Elmahjub (2023), and Ali et al. (2025).

A further set of studies was used to strengthen areas that were less fully developed in those anchor papers. Roberts and Candi (2024), Schwaeke et al. (2025), Robertson et al. (2025), Jorzik et al. (2024), and Nahar (2024) were used to refine the idea of AI-enabled innovation as an organizational capability rather than simple technology adoption. Rana et al. (2024) and Dong et al. (2024) were used to connect organizational AI use with fairness, accountability, transparency, human oversight, and other ethical concerns. Alves and Meneses (2024), Michalski and Low (2024), Zhong et al. (2024), and Mena and Parker (2024) helped broaden the financial endpoint from short-term performance toward financing conditions, creditworthiness, risk, resilience, and long-term sustainability. López-Cabarcos et al. (2025) was used to reinforce the strategic and ethical dimensions of ESG.

These studies were not selected to produce an exhaustive inventory of the literature. Their role is analytical. Each paper was included because it helps answer at least one of four questions that are central to the framework:

**Analytical Procedure**

The first stage involved clarifying the focal constructs. The literature uses a range of terms, including AI adoption, AI applications, digital transformation, AI-supported innovation, and AI-enabled business-model innovation. Rather than treating these terms as interchangeable, the studies were compared to distinguish the presence of AI from the organizational capability created through its integration.

This distinction is supported by research showing that AI implementation requires organizational adjustment rather than technology adoption alone. Robertson et al. (2025), for example, show that AI integration affects people, tasks, structures, and technology and that traditional adoption models often fail to capture these organizational dynamics. Their evidence supports the use of AI-enabled innovation as the focal construct because it captures what firms become able to do once AI is embedded in organizational processes.

A similar clarification was needed for ESG. Much of the empirical literature measures ESG using ratings or scores, yet mechanism-based studies point to underlying organizational routines such as green innovation, supply-chain management, disclosure quality, monitoring, stakeholder responsiveness, and governance. The framework therefore uses ESG capability rather than ESG performance alone. This distinction also responds to evidence that ESG ratings can diverge substantially because providers differ in scope, measurement, and weighting, which cautions against equating a single external rating with underlying organizational capability (Berg et al., 2022).

The second stage focused on identifying mechanisms rather than collecting positive or negative associations.

The reviewed studies point to several recurring pathways through which AI or innovation may influence ESG, including green innovation, supply-chain efficiency, financing constraints, information disclosure, analyst attention, monitoring, internal control, and stakeholder responsiveness. The synthesis therefore asked not simply whether AI is associated with ESG, but what changes within or around the firm that could explain the relationship.

The same logic was applied to the ESG–finance relationship. Liu, Sun, and He (2025) are particularly important in this respect because they explicitly model ESG as a mediator between technological innovation and firm performance and describe ESG as a strategic channel through which innovation is converted into value. Their results also show that the mediated effect differs across ROA and Tobin's Q, suggesting that the financial consequences of ESG are not uniform.

This evidence led to the conceptualization of ESG as a value-conversion mechanism rather than as a terminal outcome or an independent financial-performance predictor.

The third stage reconsidered the dependent construct.

The reviewed literature uses several financial outcomes, including ROA, Tobin's Q, borrowing costs, credit ratings, financing constraints, market value, carbon risk, and firm survival. Treating these measures as interchangeable indicators of financial performance would obscure important differences.

For example, Alves and Meneses (2024) show that ESG information can capture borrower risks that conventional credit measures do not fully explain and that stronger ESG performance is associated with lower debt costs. Michalski and Low (2024) similarly show that ESG variables contain additional information about corporate creditworthiness beyond traditional financial indicators. Zhong et al. (2024) further connect sustainability-oriented finance with lower financing constraints, reduced carbon risk, and higher firm value.

These findings suggested that a broader construct was required. The framework therefore uses financial sustainability, understood as the firm's capacity to preserve financial viability, resilience, access to capital, risk-management capacity, and long-term value creation.

The fourth stage examined the role of ethics.

Mainstream AI research already shows that ethical considerations are part of organizational AI use rather than an issue external to it. Dong et al. (2024), for instance, emphasize human-centered AI management and the need to understand how fairness, autonomy, accountability, and human responses shape AI use in organizations.

The Islamic ethics literature was then used to determine how this normative dimension should enter the model. The comparison suggested that Islamic ethics should not be reduced to a contextual variable or a conventional statistical moderator. Elmahjub (2023) uses maṣlaḥa to evaluate technological benefit alongside fairness, dignity, privacy, and avoidance of harm. Ali et al. (2025) place amāna at the center of trusteeship ethics and emphasize human responsibility, justice, sustainability, and stewardship in AI governance.

On this basis, Islamic ethical governance is conceptualized as an overarching normative governance condition that shapes the legitimacy and responsibility of the entire value-creation process.

**Theory Construction**

The final stage involved connecting the four analytical steps into a coherent conceptual model.

The synthesis was iterative rather than aggregative. Conflicting or heterogeneous findings were not removed simply to produce a cleaner model. Instead, they were used to refine the constructs. For example, the mixed evidence across ROA, Tobin's Q, borrowing costs, credit ratings, and market value contributed directly to the decision to use financial sustainability rather than short-term financial performance.

The resulting framework contains four propositions concerning:

the relationship between AI-enabled innovation and ESG capability;

the relationship between ESG capability and financial sustainability;

the mediating role of ESG capability as a value-conversion mechanism; and

the role of Islamic ethical governance in shaping the responsibility and legitimacy of this process.

The framework is therefore conceptual and propositional rather than empirically verified. Its purpose is to provide a theoretically coherent explanation that can later be tested, refined, or challenged through longitudinal, archival, survey, experimental, or mixed-method research.

This methodological positioning is important. The paper does not claim exhaustive coverage of the AI–ESG literature, nor does it treat the reviewed studies as evidence of a universal causal relationship. Instead, it uses selected high-quality studies to build a more integrated explanation of how technological capability may be converted into financially sustainable value and under what ethical conditions that conversion should occur.

## Results

For this conceptual study, the Results section reports the theoretical outcomes of the integrative synthesis: construct clarification, proposition development, and the resulting conceptual framework.

### Conceptual Foundations

#### AI-Enabled Innovation as an Organizational Capability

The starting point of this paper is a distinction between adopting AI and developing an organizational capability around it. Firms may purchase AI tools, automate selected tasks, or introduce machine-learning applications without fundamentally changing the way they innovate. The strategic significance of AI becomes clearer when it is embedded in routines for identifying opportunities, interpreting information, developing products and services, coordinating work, and making decisions.

Research on innovation management supports this distinction. Roberts and Candi (2024) show that AI is already being used across different stages of the innovation process, with particularly visible use during development activities. Their findings suggest that AI can influence not only operational efficiency but also the broader process through which firms generate and commercialize new ideas. This supports viewing AI as an innovation-enabling resource rather than a stand-alone technology.

A similar conclusion emerges from sustainability-oriented AI research. Schwaeke et al. (2025) show that the contribution of AI to corporate sustainability depends on more than technical availability. Leadership, stakeholder management, data quality, impact measurement, infrastructure, and system integration all shape whether AI produces meaningful organizational outcomes. In other words, the value of AI depends on the organizational conditions surrounding its use.

Robertson et al. (2025) reinforce this argument from a socio-technical perspective. Their study of AI implementation shows that successful integration requires changes in people, tasks, structures, and technology rather than isolated technological adoption. Traditional adoption models may therefore underestimate the organizational changes needed for AI to become embedded in the value chain. The study also notes that many organizations fail to obtain expected returns from AI because of integration problems, data-quality concerns, skill shortages, and the difficulty of aligning AI with existing processes.

This makes the distinction between AI adoption and AI-enabled innovation more than semantic. Adoption tells us whether a technology is present. AI-enabled innovation refers to what the organization becomes capable of doing because AI has been integrated into its processes.

Jorzik et al. (2024) illustrate this distinction particularly well. Their study of green technology start-ups shows that AI can alter how firms create, deliver, and capture value through business-model innovation. AI is used not simply to automate existing routines, but to redesign value propositions, improve value-creation processes, and support environmental sustainability. Their framework therefore provides a useful bridge between technological capability and value creation.

At the same time, the sustainability implications of AI should not be assumed to be uniformly positive. Nahar (2024) finds that the effects of AI-based innovation on sustainable development vary across countries and across different sustainability goals. AI may generate benefits, but it may also produce adverse effects depending on the institutional, social, and economic setting in which it is deployed. The study's use of the Technology Enactment Framework is useful here because it distinguishes technological potential from the way technology is actually enacted within organizations and institutions.

This contextual view is compatible with the Resource-Based View and dynamic capabilities perspective. AI may represent a valuable resource, but its contribution depends on the firm's ability to combine it with human expertise, organizational routines, digital infrastructure, and complementary knowledge. Liu et al. (2025) reach a similar conclusion in

their analysis of AI and ESG: digital maturity strengthens the extent to which AI adoption translates into improved ESG outcomes.

For the purposes of this study, AI-enabled innovation is therefore defined as:

*the organizational capability to use artificial intelligence in products, processes, decision-making, risk management, and business-model activities in ways that generate new or improved operational, economic, and sustainability-related outcomes.*

The emphasis is deliberately placed on organizational capability rather than technology ownership.

**ESG Capability as a Value-Conversion Mechanism**

The second construct requires a similar distinction. ESG is frequently represented through ratings, scores, or disclosure measures. These indicators are useful for empirical analysis, but they do not fully capture the organizational routines through which environmental, social, and governance outcomes are produced.

Liu et al. (2025), for example, show that AI contributes to ESG through green innovation and supply-chain efficiency. AI can support environmentally oriented problem solving, reduce the time and cost involved in innovation, improve forecasting, lower waste, and strengthen oversight across the supply chain. These are organizational processes, not merely changes in an external ESG score.

Yang and Yang (2025) identify additional pathways through financing constraints, analyst attention, and information disclosure. Their findings imply that the ESG effect of AI can also operate through access to resources, external scrutiny, and improvements in information quality.

Seen in this way, ESG is more usefully understood as a capability rather than an outcome alone.

This paper defines ESG capability as:

*a firm's capacity to integrate environmental stewardship, social responsibility, and governance principles into strategy, operations, monitoring, disclosure, stakeholder relationships, and risk management.*

The environmental dimension includes resource efficiency, emissions management, cleaner production, and green innovation. The social dimension concerns employees, suppliers, customers, communities, and broader stakeholder welfare. Governance capability relates to transparency, internal control, accountability, oversight, information quality, and compliance.

The idea that ESG works through a configuration of practices is supported by López-Cabarcos et al. (2025). Their analysis shows that combinations of ESG-related practices are more important for sustainable development than isolated measures. Ethical governance, environmental concerns, and labor practices are particularly prominent in those configurations. This suggests that ESG should be understood as an integrated strategic orientation rather than a collection of independent indicators.

Cabaleiro-Cerviño and Mendi (2024) reach a related conclusion from an innovation perspective. Firms that align innovation strategies with ESG objectives show stronger subsequent innovation performance and are not disadvantaged in productivity, exports, or survival. The result does not mean that ESG automatically creates financial value. It does suggest, however, that ESG can shape how innovation is absorbed and converted into more durable organizational outcomes.

This is the role ESG plays in the present framework. It is not treated simply as an outcome of AI or as another predictor of financial performance. It is positioned as the organizational mechanism through which technological potential is aligned with stakeholder expectations, sustainability demands, and governance requirements.

**Financial Sustainability as a Longer-Term Outcome**

The financial consequences of ESG are difficult to capture with a single indicator. Profitability, market valuation, borrowing costs, credit quality, financial risk, and resilience all measure different aspects of a firm's financial condition.

This becomes clear in Liu, Sun, and He (2025). They find that ESG mediates the relationship between technological innovation and ROA, but the same pathway is not uniformly positive when Tobin's Q is used. Their results suggest that the financial effects of sustainability-oriented innovation may depend on how performance is measured and over what period value is expected to emerge.

Alves and Meneses (2024) provide a different financial mechanism. Their study shows that ESG scores contain information about borrower risk that is not fully captured by conventional financial indicators. Better ESG performance is associated with lower debt costs, particularly among highly indebted firms and firms with greater agency problems. This means that one financial benefit of ESG may appear through financing conditions rather than immediate profitability.

Michalski and Low (2024) extend this argument to corporate creditworthiness. Using a large set of conventional and ESG variables, they find that environmental and social factors—including environmental innovation, resource use, emissions, CSR strategy, and workforce variables—help explain corporate credit ratings. Importantly, the authors do not claim that ESG replaces traditional financial indicators. Instead, some ESG variables provide additional information about creditworthiness that conventional measures do not fully capture.

This evidence matters for the present framework because credit quality affects financing access, borrowing conditions, and the firm's ability to remain viable during periods of uncertainty.

Zhong et al. (2024) add a related risk channel. Their findings show that green finance can alleviate financing constraints, reduce corporate carbon risk, and improve firm value. Their economic-consequence analysis further indicates that carbon risk is negatively related to both market value and Tobin's Q. Sustainability-related financial mechanisms therefore operate not only through returns, but also through the firm's ability to manage exposure to environmental and transition risks.

The temporal dimension is equally important. Mena and Parker (2024) argue that sustainability requires firms to connect present decisions with future consequences. This makes short-term profitability an incomplete measure of whether a firm is creating value sustainably. Some sustainability investments may increase costs in the short run while strengthening resilience, adaptability, or legitimacy over a longer horizon.

For these reasons, the framework uses financial sustainability, defined as:

*the firm's capacity to maintain financial viability and resilience, preserve access to capital, manage financial and non-financial risks, allocate resources responsibly, and sustain value creation over time.*

Financial sustainability therefore includes—but is not limited to—profitability. It also reflects creditworthiness, risk capacity, capital access, financial resilience, and the ability to maintain value creation under changing economic, regulatory, and environmental conditions.

Salem and Suki's (2026) review supports this broader view. Their synthesis finds more consistent evidence for AI-enabled ESG effects through information quality, governance, financing conditions, innovation, stakeholder trust, and market valuation than through a universal direct effect on financial performance.

**Islamic Ethical Governance as a Normative Foundation**

The framework developed so far explains how AI may create capability, how ESG may organize that capability, and how these processes may contribute to longer-term financial outcomes. Yet the explanation remains incomplete if value creation is assessed only through effectiveness and financial viability.

AI can generate economically attractive outcomes while creating ethical problems.

Automated systems may increase productivity while reducing employee autonomy. Algorithmic credit decisions may improve efficiency while reproducing historical bias. Data-intensive AI can improve prediction while weakening privacy. A technically sophisticated ESG system may also become difficult for outsiders to understand or challenge.

Dong et al. (2024) provide an important bridge between these organizational concerns and the ethical discussion. Their work on human-centered AI management shows why AI should not be evaluated only in terms of efficiency or performance. Questions of fairness, autonomy, worker experience, explainability, and accountability remain important when algorithms take on managerial functions. They also show that positive reactions to AI management are more likely when systems are designed around human-centered principles such as fairness and human oversight, while concerns about explainability and accountability remain unresolved.

Rana et al. (2024) make a complementary point: ethical considerations such as fairness, accountability, transparency, accuracy, and autonomy influence organizational adoption and use of generative AI. Ethics therefore belongs inside the organizational process rather than being treated as a separate issue considered only after implementation.

Islamic ethics extends this discussion from organizational acceptability to normative responsibility.

Elmahjub (2023) places maṣlaḥa at the center of Islamic ethical reasoning about AI. The concept allows technological choices to be evaluated in terms of public benefit, but it does not reduce ethical legitimacy to aggregate utility. Fairness, dignity, transparency, privacy, and human agency may still justify limits on technologically efficient solutions.

The concept of amāna provides an additional basis for responsibility. Ali et al. (2025) argue that technological capability should be governed through trusteeship, with human beings retaining responsibility for knowledge, decision-making, and consequences. This perspective is particularly relevant to AI because responsibility cannot simply be transferred to an algorithm when outcomes become difficult to explain.

Within this framework, Islamic ethical governance is therefore defined as:

*a normative governance framework that guides the design, use, oversight, and consequences of AI-enabled organizational decisions according to principles of trusteeship, justice, public welfare, transparency, human accountability, and responsible stewardship.*

Its role is broader than that of a conventional statistical moderator.

- Amāna emphasizes responsibility and trusteeship.
- 'Adl requires fairness and equitable treatment.
- Maṣlaḥa directs attention toward wider welfare and the prevention of harm.
- Transparency requires that important decisions and data practices remain sufficiently traceable.
- Human accountability keeps moral responsibility with human decision makers.
- Stewardship extends organizational responsibility beyond immediate financial beneficiaries.

This normative layer may support value creation, but it may also constrain it. A financially profitable AI application may still be rejected or redesigned if it violates fairness, dignity, privacy, or broader stakeholder welfare.

## Proposition Development

### AI-Enabled Innovation and ESG Capability

The first relationship in the framework concerns what happens when AI becomes part of the firm's innovation and decision-making processes.

AI can strengthen ESG capability in several ways. It can process large and fragmented datasets, identify sustainability-related risks earlier, improve forecasting, support environmentally oriented innovation, and strengthen monitoring. These functions matter because ESG management increasingly depends on information drawn from operations, suppliers, employees, customers, regulatory systems, and environmental data.

Empirical evidence already identifies some of these mechanisms. Liu et al. (2025) show that green innovation and supply-chain efficiency partly transmit the effect of AI adoption to ESG performance. Yang and Yang (2025) add financing constraints, analyst attention, and information disclosure to the list of relevant pathways.

Jorzik et al. (2024) broaden this logic beyond specific processes. Their study shows that AI can alter value propositions and the way firms create and deliver value within environmentally oriented business models. This supports the view that AI's sustainability contribution may arise through organizational redesign rather than isolated efficiency gains.

The relationship should nevertheless be treated as conditional rather than automatic. Robertson et al. (2025) show that AI integration requires alignment among technology, people, tasks, and organizational structures. Nahar (2024) similarly finds that AI-based innovation produces different sustainability effects across institutional settings. These findings caution against assuming that all firms will obtain the same ESG benefits from similar AI investments.

The first proposition therefore concerns AI-enabled innovation as an organizational capability, not simple technology adoption:

> **P1.** AI-enabled innovation is positively associated with ESG capability because it can improve sustainability-oriented innovation, information processing, operational efficiency, monitoring, disclosure, and stakeholder responsiveness.

**ESG Capability and Financial Sustainability**

The second relationship concerns how ESG capability becomes financially relevant.

The argument here is not that better ESG automatically produces higher profits. Rather, ESG capability can influence several conditions that contribute to longer-term financial viability.

Stronger environmental practices may reduce exposure to regulatory penalties, resource inefficiency, carbon risk, and operational disruption. Social capability can strengthen workforce stability, supplier relationships, and stakeholder trust. Governance capability can improve the credibility of information, internal controls, and the firm's relationship with lenders and investors.

Alves and Meneses (2024) show one of these mechanisms through the cost of debt. Better ESG performance is associated with lower borrowing costs because it provides creditors with additional information about borrower risk.

Michalski and Low (2024) provide complementary evidence. Their results show that ESG variables contain information relevant to corporate credit ratings beyond traditional financial measures. This strengthens the argument that ESG capability can contribute to financial sustainability through creditworthiness and financing resilience.

Zhong et al. (2024) add a risk-management perspective. Green finance reduces carbon risk partly by easing financing constraints, while lower carbon risk is associated with higher market value and Tobin's Q. This shows how sustainability practices, financing conditions, environmental risk, and firm value can be connected rather than operating as separate outcomes.

These mechanisms are likely to unfold over time rather than appear immediately in current-period profit. That is why financial sustainability is the more appropriate endpoint.

> **P2.** Stronger ESG capability is positively associated with financial sustainability through improved risk management, stakeholder trust, access to finance, creditworthiness, operational resilience, information credibility, and long-term value creation.

**ESG Capability as the Value-Conversion Mechanism**

The first two propositions suggest an indirect relationship between AI-enabled innovation and financial sustainability.

AI creates technological possibilities. It can improve prediction, automate analysis, enhance monitoring, and support new forms of innovation. Yet none of these capabilities necessarily produce durable financial value on their own.

They become financially relevant when they are translated into organizational practices that improve environmental efficiency, stakeholder relations, governance, risk management, and information quality.

This is the theoretical role assigned to ESG capability.

Liu, Sun, and He (2025) provide the closest empirical precedent by showing that ESG can mediate the relationship between technological innovation and firm performance. They describe ESG as a strategic pathway through which firms transform innovation into value.

The present paper extends that logic in two ways. First, it focuses specifically on AI-enabled innovation rather than technological innovation in general. Second, it replaces a narrow performance endpoint with financial sustainability.

The idea is therefore not that ESG is merely "between" AI and finance statistically. ESG performs a value-conversion function: it is the organizational process through which technological potential is aligned with sustainability expectations and transformed into financially relevant capabilities.

Salem and Suki (2026) lend support to this interpretation. Their synthesis suggests that AI's financial contribution is most plausible when it improves ESG information quality, internal control, innovation, financing conditions, reporting credibility, or stakeholder trust, rather than through a universal direct effect on profitability.

Accordingly:

**P3.** ESG capability mediates the relationship between AI-enabled innovation and financial sustainability, such that AI-enabled innovation is more likely to generate sustainable financial value when technological capabilities are translated into credible environmental, social, and governance practices.

**Islamic Ethical Governance and Responsible Value Creation**

The first three propositions explain a pathway through which value may be created. The fourth asks whether the process itself is ethically legitimate.

This distinction is important because technologically efficient decisions can produce uneven social consequences. A system may improve productivity but undermine autonomy. It may improve risk prediction while embedding discriminatory patterns. It may reduce costs while transferring environmental or social burdens to other stakeholders.

Dong et al. (2024) show why this human dimension cannot be separated from AI management. Their research emphasizes that people's responses to AI depend partly on perceptions of fairness, autonomy, and human oversight, while concerns around explainability and accountability remain central.

Islamic ethics gives these concerns a wider normative foundation.

Through maṣlaḥa, technological decisions can be evaluated according to whether they promote wider welfare while avoiding harm. Yet, as Elmahjub (2023) explains, public benefit does not permit fairness, dignity, privacy, or human agency to be ignored.

Through amāna, human actors remain accountable for the technologies they design and use. Responsibility cannot disappear because a decision was generated or recommended by an algorithm.

Islamic ethical governance therefore operates across the entire process.

At the stage of AI-enabled innovation, it concerns the fairness of data use, the transparency of algorithms, human oversight, and the distribution of technological risks.

At the stage of ESG capability, it concerns whether sustainability practices are substantive, verifiable, and aligned with stakeholder welfare rather than merely improving disclosure appearance.

At the stage of financial sustainability, it concerns whether long-term financial value has been generated without imposing unacceptable costs on employees, consumers, communities, future generations, or the environment.

For this reason, Islamic ethical governance is not treated as a variable that simply "strengthens" economic relationships. It can support value creation, but it can also place limits on financially attractive actions that conflict with justice, public welfare, or human responsibility.

The fourth proposition is therefore:

**P4.** Islamic ethical governance shapes the responsible conversion of AI-enabled innovation into financial sustainability through ESG capability by requiring that technological and financial value creation remain consistent with amāna, 'adl, maṣlaḥa, transparency, human accountability, and responsible stewardship.

**Integration of the Propositions**

The four propositions address different parts of the same process.

P1 explains how AI becomes relevant to sustainability at the organizational level.

P2 explains why ESG capability may matter for longer-term financial viability.

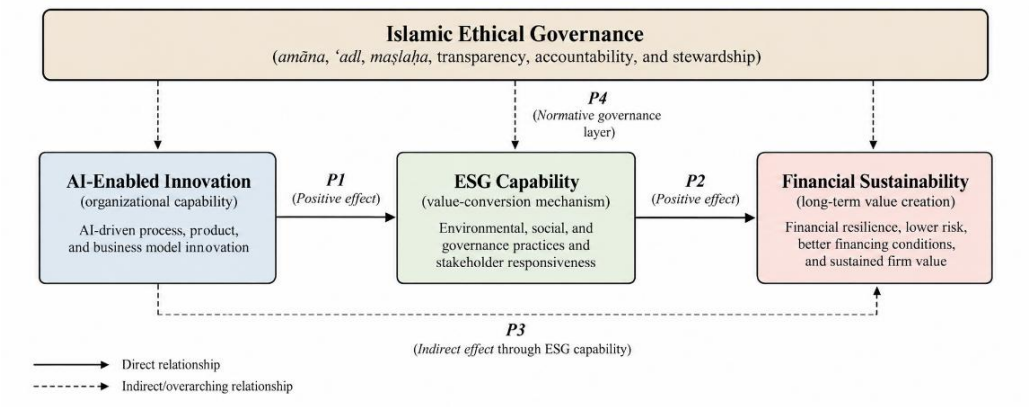
P3 connects the two by positioning ESG capability as the mechanism through which technological potential is converted into financially sustainable value.

P4 adds a different kind of condition. It asks whether the process of creating that value remains legitimate and responsible.

The logic of the framework can therefore be expressed simply:

*AI-enabled innovation creates organizational potential; ESG capability converts that potential into sustainability-related value; financial sustainability captures the longer-term economic outcome; and Islamic ethical governance defines the normative conditions under which the process should take place.*

Figure 1. Conceptual Framework of AI-Enabled Innovation, ESG Capability, and Financial Sustainability Under Islamic Ethical Governance




## Discussion

The proposed framework offers more than a combination of AI, ESG, finance, and ethics. Its main contribution lies in showing how these elements can be interpreted as parts of a single value-creation process, while preserving the different role played by each construct. Existing studies have already established important links between AI and ESG, between innovation and ESG, and between ESG and financial outcomes. Yet these relationships are often examined separately, which leaves the underlying process only partially explained. The framework developed here addresses this gap by distinguishing technological capability, sustainability capability, financial durability, and normative legitimacy.

**Beyond AI Adoption: Why Organizational Capability Matters**

A first implication of the model is that AI adoption is too narrow a starting point for understanding sustainable value creation. Adoption indicates that a firm has introduced AI, but it does not tell us whether the technology has been embedded deeply enough to alter organizational routines, decision processes, or innovation practices.

This distinction is important because AI does not create value in isolation. Robertson et al. (2025) show that AI integration requires changes across people, tasks, structures, and technology, and that many organizations fail to obtain expected returns because of difficulties in integration, data quality, skills, and alignment with existing processes. Their findings support the view that the organizational effects of AI depend on how the technology is incorporated into a broader socio-technical system rather than on adoption alone.

Jorzik et al. (2024) provide a similar insight from a business-model perspective. Their analysis shows that AI can reshape how firms create, deliver, and capture value in

sustainability-oriented settings. This moves the discussion beyond the presence of technology toward the firm's ability to use AI in ways that transform processes and organizational choices.

The framework therefore uses AI-enabled innovation because the construct better captures the organizational capacity to translate AI into new products, processes, business models, and decision routines. It also avoids technological determinism. Nahar (2024) demonstrates that AI-based innovation can generate both positive and negative sustainability effects and that these outcomes differ across institutional contexts. AI should therefore be understood as creating a set of possibilities whose outcomes depend on organizational and institutional conditions.

This leads to a more precise interpretation of the role of AI in the model: AI creates potential, but capability determines whether that potential becomes strategically meaningful.

**ESG as a Value-Conversion Capability**

The second contribution of the framework concerns the position of ESG. Much of the literature treats ESG either as an outcome of innovation or as an explanatory variable for financial performance. The framework developed here gives ESG a different role.

ESG is positioned as the value-conversion capability through which technological potential becomes organizationally and financially relevant.

This interpretation is supported by Liu, Sun, and He (2025), who show that ESG can mediate the relationship between technological innovation and firm performance. More importantly, they describe ESG as a strategic channel through which firms convert innovation into value. Their results are not uniform across financial measures, which is itself informative. The positive indirect effect through ESG appears for ROA but not in the same way for Tobin's Q. This suggests that ESG should not be understood as a mechanical link between innovation and every financial outcome.

The idea of conversion is therefore central. AI can improve data processing, monitoring, prediction, supply-chain management, and disclosure. Yet these technological gains do not become sustainable organizational value automatically. They need to be translated into better environmental practices, stronger social relationships, credible governance, risk management, and stakeholder responsiveness.

Salem and Suki (2026) reinforce this interpretation. Their synthesis shows that evidence is stronger for pathways involving ESG information quality, governance monitoring, innovation, financing conditions, stakeholder trust, and market valuation than for a uniform direct effect of AI on financial performance. They also caution that AI-enabled ESG systems remain dependent on credible routines, internal controls, auditability, and human review.

The framework therefore does not interpret ESG capability as a better ESG score alone. Its role is more substantive. ESG capability represents the organizational processes that determine whether technological capability is actually translated into sustainable practices and credible stakeholder value.

**Financial Sustainability Is Not the Same as Short-Term Financial Performance**

The third issue addressed by the model is the choice of financial outcome.

A substantial part of the ESG literature examines profitability, stock returns, or market valuation. These indicators are important, but they capture only part of the financial consequences associated with sustainability.

The evidence reviewed here shows why a broader concept is needed. Alves and Meneses (2024) demonstrate that ESG provides information about borrower risk that is not fully captured by traditional financial indicators and that stronger ESG performance is associated with lower borrowing costs. Michalski and Low (2024) similarly find that environmental and social variables contain relevant information for corporate credit ratings and therefore for assessments of creditworthiness.

Zhong et al. (2024) add a risk dimension. Their results show that green finance can alleviate financing constraints, reduce carbon risk, and improve firm value. These effects matter financially even when they are not immediately visible in accounting profit.

For this reason, financial sustainability provides a more appropriate endpoint than short-term performance. It captures whether the firm can maintain viability, access capital, manage risk, preserve resilience, and continue creating value over time.

The temporal perspective developed by Mena and Parker (2024) supports this shift. Their work emphasizes that sustainability necessarily involves present and future needs and that longer organizational time horizons shape how firms deal with sustainability challenges.

This distinction matters for the conceptual model. The question is not simply whether AI improves current profitability. The more relevant question is whether AI-enabled innovation, when translated through ESG capability, helps the firm remain financially viable and resilient over time.

That is a different theoretical problem.

**Islamic Ethical Governance as a Normative Governance Condition**

The fourth contribution concerns the role of Islamic ethical governance.

If AI-enabled innovation improves ESG capability and this, in turn, supports financial sustainability, the process might appear successful from a conventional performance perspective. The framework developed here argues that this conclusion is incomplete.

A value-creation process may be financially successful and still be ethically problematic.

AI-supported decisions may improve efficiency while reducing employee autonomy, increasing surveillance, reproducing bias, or weakening privacy. The mainstream human-centered AI literature already recognizes these concerns. Dong et al. (2024) show that fairness, autonomy, human oversight, explainability, and accountability are important to the way people experience AI-based management.

Islamic ethics adds a different layer to this discussion because it asks not only whether AI is accepted or effective, but whether the process is normatively legitimate.

Elmahjub (2023) uses maṣlaḥa to evaluate the broader social consequences of AI while insisting that public benefit cannot be reduced to utility alone. Fairness, dignity, privacy, and human agency remain relevant constraints.

Ali et al. (2025) further strengthen this perspective through the concept of amāna. Their trusteeship framework keeps human beings at the center of moral responsibility and connects AI governance with justice, stewardship, and accountability. They also emphasize that responsibility for the consequences of AI should not be transferred to digital systems.

This is why Islamic ethical governance is not treated in the model as a simple ethical lens.

A lens mainly changes how an issue is interpreted. A normative governance condition goes further: it sets expectations and boundaries for what kinds of technological and financial value creation are acceptable.

The distinction is important. Islamic ethical governance may sometimes support financial value by strengthening trust, accountability, and legitimacy. In other situations, however, it may restrict practices that are profitable but conflict with 'adl, maṣlaḥa, dignity, or responsible stewardship.

Its role is therefore not merely to amplify the relationship among the other constructs. It helps determine whether the process itself should be regarded as legitimate.

**What the Model Explains That Prior Literature Has Not Fully Explained**

The novelty of the framework does not lie in claiming that AI affects ESG, that ESG influences finance, or that Islamic ethics is relevant to AI. Each of these relationships already exists in the literature.

What remains less developed is an explanation of how these elements operate together as a structured process.

The model separates four distinct functions:

AI-enabled innovation provides technological and organizational capability.

ESG capability converts that potential into sustainable organizational practices.

Financial sustainability captures the durability of the economic outcome.

Islamic ethical governance defines the normative conditions under which the process remains responsible.

This distinction matters because it prevents the framework from collapsing into a simple chain of positive relationships.

The model does not assume that AI always improves ESG. It does not assume that ESG always improves financial outcomes. It does not assume that an economically successful use of AI is automatically ethical.

Instead, it proposes a conditional value-creation process in which technological capability, organizational practices, financial durability, and ethical legitimacy remain analytically separate but interdependent.

**A Conditional Rather Than Deterministic Model**

The framework should therefore be interpreted as conditional, not deterministic.

Salem and Suki (2026) show that AI-enabled ESG outcomes vary with data quality, infrastructure, skills, governance systems, technology readiness, and regulatory support. Liu, Sun, and He (2025) likewise show that ESG-mediated value creation is shaped by institutional quality and ownership characteristics.

These findings caution against reading the model as:

*AI → ESG → Financial Sustainability = always positive.*

A more accurate interpretation is:

*AI-enabled innovation creates the possibility of sustainable value creation; ESG capability determines how much of that potential is converted into organizational and financial value; institutional and organizational conditions influence the process; and Islamic ethical governance determines whether the resulting value creation remains normatively acceptable.*

That interpretation is both more realistic and theoretically more useful.

**The Central Theoretical Insight**

The framework ultimately connects two questions that are often kept separate.

The first is a management and finance question:

*How is technological capability converted into financially sustainable value?*

The second is a normative question:

*Under what ethical conditions should that value be created?*

The model argues that both questions need to be answered together.

AI-enabled innovation without ESG capability may remain technologically impressive but organizationally disconnected from sustainability.

ESG capability without financial sustainability may be difficult to maintain over the long term.

Financial sustainability without ethical governance may preserve economic value while imposing unacceptable costs on stakeholders or society.

The theoretical contribution therefore lies in bringing capability, conversion, durability, and legitimacy into a single framework.

That is the main argument that distinguishes the model from a simple integration of existing literatures.

**Theoretical Contributions**

The framework makes four specific theoretical contributions. First, it reframes AI adoption as AI-enabled innovation capability, emphasizing the firm's ability to embed AI in decision-making, innovation routines, risk management, and business-model activities rather than technology ownership alone (Robertson et al., 2025; Jorzik et al., 2024). Second, it repositions ESG as a value-conversion mechanism that translates technological potential into environmental, social, governance, and stakeholder-related practices. This extends the mediating logic identified by Liu, Sun, and He (2025) to the AI context.

Third, the framework extends the financial endpoint from short-term performance to financial sustainability. This broader outcome is supported by evidence that ESG-related value

can emerge through borrowing costs, creditworthiness, risk reduction, financing access, and resilience before it appears in current profitability (Alves & Meneses, 2024; Michalski & Low, 2024; Zhong et al., 2024). Fourth, Islamic ethical governance is integrated into the value-creation mechanism itself. Rather than acting as a decorative lens or an automatically positive moderator, it defines the normative conditions under which technological and financial value creation remains legitimate through amana, 'adl, maslaha, transparency, human accountability, and stewardship (Elmahjub, 2023; Ali et al., 2025).

Taken together, these contributions connect capability, conversion, durability, and legitimacy within one coherent explanation of AI-enabled sustainable value creation.

**Practical and Policy Implications**

For corporate managers, the framework suggests that AI investments should be evaluated by whether they strengthen ESG routines and decision quality, not by technological sophistication alone. Useful applications include sustainability monitoring, ESG data validation, internal control, disclosure consistency, green innovation, and supply-chain risk assessment. Finance managers should evaluate these projects using financing access, risk exposure, creditworthiness, data credibility, and resilience in addition to projected earnings. Boards should retain explicit human responsibility for data quality, explainability, privacy, bias, cybersecurity, and high-impact AI decisions.

For regulators, the objective should be credible and auditable AI-enabled ESG rather than digitalization for its own sake. Common data definitions, comparable reporting structures, assurance standards, cybersecurity safeguards, and clear responsibility for high-impact decisions are especially important in emerging markets. Salem and Suki (2026) similarly emphasize auditability, human review, and organizational readiness. For Islamic finance and Sharia-oriented institutions, AI-supported financial decisions should be assessed not only for technical accuracy or economic benefit but also for fairness, transparency, dignity, privacy, public welfare, and stewardship. In this sense, Islamic ethical governance functions as a decision criterion for responsible AI use rather than merely an interpretive perspective.

**Limitations and Future Research**

The framework remains conceptual and has not been empirically validated. Its propositions should therefore be read as theoretically grounded expectations rather than established causal effects, and the underlying evidence remains heterogeneous across countries, sectors, measurements, and institutional settings. Future research can operationalize AI-enabled innovation through an AI disclosure index that distinguishes simple AI mentions from evidence of integration into innovation, decision-making, or risk management. ESG capability can be measured by combining external ESG ratings with indicators of environmental innovation, disclosure quality, governance, and stakeholder practices.

Financial sustainability also requires multidimensional measurement, potentially combining profitability persistence, cash-flow stability, leverage resilience, financing costs, creditworthiness, and market-based measures. A further priority is the development and validation of an Islamic ethical governance scale based on amana, 'adl, maslaha, transparency, human accountability, and stewardship. Emerging markets, particularly Indonesia, provide a useful testing context because they combine rapid digitalization, developing ESG institutions, and a significant Islamic finance ecosystem. Comparative studies of Sharia-compliant and non-Sharia-compliant firms could also reveal whether ethical governance influences the conversion process beyond formal Sharia screening.

Future empirical work should allow Islamic ethical governance to have enabling as well as constraining effects. Longitudinal panel studies, structural equation modeling, experiments, and mixed-method designs can test the proposed relationships and identify the organizational and institutional conditions under which they strengthen, weaken, or become ethically unacceptable.

## Conclusion

This paper develops a conceptual framework to explain how AI-enabled innovation may contribute to financial sustainability through ESG capability, while placing Islamic ethical governance within the value-creation process itself. The central argument is that AI should not be viewed simply as a technology that firms adopt. Its relevance depends on whether firms can embed AI into organizational routines in ways that improve innovation, decision-making, monitoring, risk management, and sustainability practices.

The framework positions ESG capability as the mechanism through which technological potential can be translated into more durable organizational and financial value. This shifts attention away from short-term financial performance toward financial sustainability, understood in terms of resilience, financing access, risk management, responsible resource allocation, and long-term value creation. It also recognizes that the financial consequences of AI-enabled ESG practices are likely to emerge through multiple channels rather than through a single direct effect.

A further contribution is the integration of Islamic ethical governance as a normative condition shaping the legitimacy of the value-creation process. Principles such as amāna, 'adl, maṣlaḥa, transparency, human accountability, and stewardship provide a basis for assessing whether technological efficiency and financial gains remain consistent with wider responsibilities to stakeholders, society, and the environment. In this sense, successful value creation is not defined solely by economic outcomes, but also by the way those outcomes are produced.

The framework remains conceptual and requires empirical validation. Future research can test the proposed relationships in emerging-market settings, particularly Indonesia, and examine whether the model operates differently across Sharia-compliant and non-Sharia-compliant firms. Such work would help determine when AI-enabled innovation supports not only stronger ESG capability and financial sustainability, but also more responsible and ethically grounded corporate decision-making.

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## Conflict of interests

The author declares that there is no conflict of interest.

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