Hybrid Corporate Governance in the Age of Digital Trust

Reconfiguring Accountability, Agency, and Board Oversight

Abstract

This paper examines how Distributed Ledger Technology (DLT) reshapes corporate governance by reconfiguring the architecture of trust, accountability, and control. While blockchain and smart contracts are often portrayed as substitutes for traditional governance institutions, this study argues that governance is not eliminated but transformed into hybrid forms combining algorithmic, organisational, and institutional layers. Drawing on agency theory, transaction cost economics, and platform governance literature, the paper introduces a Hybrid Corporate Governance Framework and demonstrates how DLT reduces certain agency costs while simultaneously introducing second-order agency risks related to system design and oversight. The analysis offers theoretical contributions to corporate governance scholarship and practical implications for boards, regulators, and senior executives operating in digitally mediated environments.

1. Introduction

Corporate governance has historically evolved as an institutional response to a fundamental economic and organizational problem: the separation of ownership and control. In modern corporations, shareholders as residual claimants delegate decision-making authority to directors and managers, who possess superior information and control over corporate resources. This delegation creates persistent risks of opportunism, moral hazard, and misalignment of interests, commonly conceptualized within the agency framework (Berle and Means, 1932; Jensen and Meckling, 1976; Eisenhardt, 1989). Boards of directors, disclosure regimes, auditing standards, and regulatory oversight have therefore emerged as mechanisms designed to mitigate agency costs and preserve investor confidence.

Over time, corporate governance systems have become increasingly formalized and compliance-oriented. Regulatory responses to corporate scandals and financial crises have layered additional controls, reporting requirements, and monitoring obligations onto firms, often with the intention of restoring trust after

failures of oversight. While these mechanisms have strengthened accountability in certain respects, they have also increased the cost, complexity, and latency of governance. Verification remains largely ex post, information asymmetries persist, and governance processes are frequently reactive rather than anticipatory. *According to Protiviti's 2022 compliance study, average Sarbanes-Oxley compliance costs reached more than $2 million annually, demonstrating the escalating burden of traditional governance mechanisms. (Source: Protiviti, 2022)*

Recent advances in digital technologies challenge these long-standing assumptions. Distributed Ledger Technology (DLT), including blockchain and smart contracts, introduces a radically different architecture for recording, verifying, and enforcing transactions. By enabling immutable, shared records and the automated execution of predefined rules, DLT appears to offer a technological substitute for some of the institutional mechanisms traditionally relied upon to establish trust. Werbach (2018) characterises blockchain as an infrastructure for "trust without intermediaries", in which confidence in outcomes is derived from system design rather than institutional authority.

The implications of this shift extend well beyond operational efficiency. If verification, compliance, and enforcement can be partially automated and continuously executed, the role of boards, auditors, and regulators is necessarily altered. Governance moves from episodic oversight to ongoing system supervision; from monitoring managerial behaviour after the fact to designing, validating, and updating the rules embedded within digital infrastructures. At the same time, the COVID-19 pandemic accelerated the adoption of digitally mediated organisational processes, compressing years of gradual governance evolution into a short period. Remote decision-making, digital approvals, and real-time information flows have become normalised, further highlighting the limitations of governance models predicated on physical presence and periodic reporting. Table 1 amplifies Comparative Corporate Governance Instruments and Implications for DLT-Enabled Governance. *OECD reveals that 94% of corporate boards now conduct hybrid or virtual meetings, a dramatic increase from just 8% pre-pandemic. (Source: OECD, 2025)*

Table 1 provides a comparative analysis of corporate governance instruments across major jurisdictions and their implications for DLT-enabled governance.

Table 1: Comparative Corporate Governance Instruments and Implications for DLT-Enabled Governance

Jurisdiction	Corporate Governance Instrument	Regime Type	Implications for DLT-Enabled Governance
Global (G20/OECD)	G20/OECD Principles of Corporate Governance (2023)	Principles-based	DLT can operationalize transparency, ownership verification, and immutable disclosure records aligned to global governance objectives.
United Kingdom	UK Corporate Governance Code (2024)	Comply or explain	Supports continuous internal-control evidence, tamper-evident audit trails, and board assurance over controls effectiveness.
Australia	ASX Corporate Governance Principles and	Comply or explain	Encourages disclosure credibility and

	Recommendations (4th ed., 2019)		traceable governance actions via immutable data lineage.
Singapore	MAS Code of Corporate Governance (2018)	Comply or explain	Reinforces board accountability and verifiable stakeholder communications through digital assurance layers.
Japan	Japan Corporate Governance Code (revised 2021)	Comply or explain	Facilitates verifiable shareholder engagement and transparent decision provenance using DLT records.
India	SEBI (LODR) Regulations, 2015 (as amended)	Rules-based	Requires audit-grade compliance evidence; DLT enables immutable filings, approvals, and time-stamped disclosures.
Saudi Arabia	CMA Corporate Governance Regulations	Rules-based	Supports immutable governance

			artefacts, board approvals, and defensible audit trails.
Qatar	QFMA Governance Code for Listed Companies	Code-based	Enables integrity of shareholder registers and verifiable voting and reporting workflows.
United Arab Emirates	SCA Joint Stock Companies Governance Guide (2020)	Rules / guide	Strengthens trust in board decisions and governance records through tamper-evident digital logs.
Bahrain	CBB Rulebook - High-Level Controls (Corporate Governance)	Rules-based	Facilitates supervisory assurance via immutable compliance evidence and continuous controls monitoring.

Despite the growing enthusiasm surrounding DLT, claims that such technologies can eliminate agency problems or render traditional governance structures obsolete remain contested. Early advocates of blockchain frequently suggested the possibility of "companies without managers" or "governance by code". Yet emerging evidence indicates that while certain agency costs may be reduced, new

forms of agency and governance risk are simultaneously introduced. Protocol designers, system administrators, technology vendors, and data-feed providers become influential actors in determining organisational outcomes. Agency does not disappear; rather, it is relocated and reconfigured.

The central argument of this paper is that Distributed Ledger Technology does not replace corporate governance but transforms it. Governance is reconstituted into hybrid forms in which algorithmic controls coexist with human judgement, fiduciary responsibility, and institutional legitimacy. Understanding this transformation requires moving beyond technological determinism and re-examining the foundational theories of corporate governance in light of digitally mediated trust.

Accordingly, this paper addresses the following research question:

How does corporate governance evolve when trust, verification, and enforcement are partially delegated to digital infrastructures, and what are the implications for boards, managers, shareholders, and other stakeholders?

By synthesising agency theory, transaction cost economics, and emerging platform governance literature, this paper contributes a conceptual framework for understanding hybrid corporate governance in the age of digital trust. Sections 2 and 3 establish the theoretical and technological foundations for this analysis.

"This paper makes three contributions to corporate governance literature. First, it extends agency theory by introducing the concept of second-order agency risk arising from digitally mediated governance systems. Second, it reconceptualises corporate governance as a hybrid architecture comprising algorithmic, organisational, and institutional layers. Third, it provides board- and regulator-relevant insights into governance design in environments characterised by digitally produced trust."

2. Corporate Governance and the Architecture of Trust

Corporate governance can be understood as an institutional system for producing trust in environments characterised by uncertainty, information asymmetry, and conflicting interests. Classical governance arrangements assume that trust cannot be taken for granted and must therefore be engineered through organisational structures, legal rules, and monitoring mechanisms. Shareholders entrust capital to managers not because managers are inherently trustworthy, but because governance mechanisms constrain opportunism and provide recourse when trust is violated.

Agency theory formalises this logic by modelling governance as a contractual relationship between principals and agents. Because agents are assumed to be self-interested and to possess superior information, principals incur agency costs to monitor behaviour, align incentives, and enforce contracts (Jensen and Meckling, 1976). Boards of directors function as internal monitoring mechanisms, while audits, disclosure requirements, and regulatory supervision operate as external safeguards. Together, these mechanisms constitute what may be described as the traditional *architecture of trust* in corporate governance.

This architecture exhibits three defining characteristics. First, trust is institutionally mediated. Shareholders rely on boards, auditors, regulators, and courts to verify information and enforce accountability. Second, governance operates largely on an ex post basis. Verification typically occurs after transactions have been executed, through periodic financial reporting and audits. Third, governance is hierarchical and centralised. Authority flows downward through organisational hierarchies, while accountability flows upward through reporting channels.

While this architecture has proven resilient, it is not without limitations. Monitoring and compliance are costly, slow, and imperfect. Information asymmetries remain pervasive, particularly in complex, global organisations. Moreover, governance failures often become visible only after significant value destruction has occurred. These shortcomings have prompted repeated regulatory

interventions, yet such interventions frequently exacerbate compliance burdens without fundamentally altering the underlying trust architecture.

Transaction cost economics offers a complementary perspective by focusing on the costs of coordinating economic activity under conditions of uncertainty (Coase, 1937; Williamson, 1975). Firms exist, in part, because hierarchical governance can be more efficient than market contracting when transaction costs are high. However, as coordination technologies improve, the relative efficiency of hierarchical versus market-based arrangements changes. Governance structures that were once optimal may become inefficient or maladaptive when the cost of information processing, verification, and enforcement declines.

From this perspective, governance arrangements are contingent rather than universal. They reflect the prevailing technological and institutional context. Digital technologies that dramatically reduce the cost of information sharing and verification therefore have the potential to destabilise existing governance architectures. Yet such destabilisation does not imply the disappearance of governance; rather, it necessitates its redesign.

Recent scholarship on platform governance extends this argument by observing that digital platforms reorganise value creation across ecosystems rather than within bounded firms (Fenwick, McCahery and Vermeulen, 2019). In platform environments, governance must coordinate multiple stakeholders whose interactions are mediated by technological infrastructures rather than hierarchical command. Trust is embedded in system rules, access protocols, and algorithmic controls, blurring the boundaries between organisational governance and technical design.

These insights suggest that corporate governance should be analysed not merely as a set of legal or organisational arrangements, but as a layered trust architecture comprising institutional, organisational, and technological components. Distributed Ledger Technology directly intervenes in this architecture by introducing a new technological layer capable of performing functions traditionally assigned to institutions and hierarchies. Understanding its implications requires examining how this technological layer interacts with existing governance mechanisms rather than assuming wholesale replacement.

3. Distributed Ledger Technology as a New Trust Infrastructure

Distributed Ledger Technology represents a distinctive class of digital infrastructure characterised by shared, append-only records maintained across a network of participants. Unlike centralised databases, distributed ledgers rely on consensus mechanisms to validate transactions, ensuring that no single actor can unilaterally alter records. Smart contracts further extend this functionality by enabling the automatic execution of predefined rules once specified conditions are met.

From a governance perspective, the significance of DLT lies not in its computational novelty but in its capacity to alter how trust is produced. Immutable records reduce the need for ex post verification by making transaction histories tamper-resistant and universally auditable. Automated execution reduces discretion by enforcing agreed-upon rules without human intervention. Consensus mechanisms distribute verification across multiple actors, reducing reliance on central intermediaries. *Walmart's IBM Food Trust blockchain tracks 25+ food products across its supply chain, reducing food contamination tracing from 7 days to 2.2 seconds, with over 10,000 suppliers onboarded. (Source: Walmart, 2024)*

These characteristics suggest that DLT can lower transaction and verification costs, addressing some of the inefficiencies inherent in traditional governance systems. For example, real-time access to verifiable financial data could reduce the informational gap between managers and shareholders, while smart contracts could automate compliance with certain regulatory or contractual obligations. In principle, such capabilities support a shift from episodic to continuous governance, in which accountability is embedded into operational processes rather than imposed retrospectively.

However, the governance implications of DLT are more ambiguous than early narratives suggested. While blockchain systems can produce trust in transaction records, they do not eliminate the need for trust in system design, data inputs, and governance processes. Smart contracts are only as reliable as the code that defines them and the data that trigger their execution. Errors in design, malicious coding,

or flawed data feeds can propagate rapidly, with limited scope for discretionary intervention.

Moreover, DLT introduces new loci of power and influence. Protocol developers, network administrators, and platform operators acquire significant authority over system rules, upgrades, and access. In permissioned systems, governance rights may be concentrated among a small group of participants, raising familiar concerns about control and accountability. Even in ostensibly decentralised systems, voting power and influence are often unevenly distributed.

These dynamics complicate the claim that DLT resolves agency problems. Instead, agency relationships are transformed. Traditional agency risks associated with managerial discretion may be reduced, but new agency risks emerge at the level of system governance. Stakeholders must now trust not only managers and directors, but also the designers and maintainers of the digital infrastructure through which governance is enacted.

The COVID-19 pandemic further contextualises this transformation. As organisations were forced to operate remotely, reliance on digital systems for coordination, verification, and decision-making intensified. This experience demonstrated both the feasibility and the fragility of digitally mediated governance. While digital tools enabled continuity, they also exposed vulnerabilities related to cybersecurity, data integrity, and system dependence. DLT can be viewed as part of this broader shift toward digital trust infrastructures, offering both opportunities and risks.

In light of these considerations, DLT should be understood not as a substitute for corporate governance, but as a new trust infrastructure that reshapes governance relationships. Its adoption necessitates a reconsideration of accountability, agency, and oversight across organisational and institutional levels. The following sections build on this foundation by examining how agency theory must be revisited in digitally mediated environments and how boards and stakeholders adapt to hybrid governance arrangements.

4. Agency Theory Revisited in Digitally Mediated Governance Environments

Agency theory has long provided the dominant analytical lens for understanding corporate governance. Its central premise is that delegation of decision-making authority under conditions of information asymmetry generates agency costs, which governance mechanisms seek to mitigate through monitoring, incentives, and control (Jensen and Meckling, 1976; Eisenhardt, 1989). Boards of directors, disclosure regimes, audits, and regulatory supervision are all institutional responses to this problem. However, the emergence of Distributed Ledger Technology challenges several foundational assumptions embedded in classical agency theory.

In traditional governance arrangements, agency risk arises primarily from managerial discretion combined with opaque information flows. Managers control information, timing, and execution, while principals rely on ex post reporting and verification to assess performance. DLT appears, at first glance, to disrupt this logic by constraining discretion and reducing information asymmetry. Immutable ledgers provide verifiable records of transactions, while smart contracts automatically enforce predefined rules. In theory, these features reduce opportunities for opportunistic behaviour by limiting the scope for hidden action and hidden information.

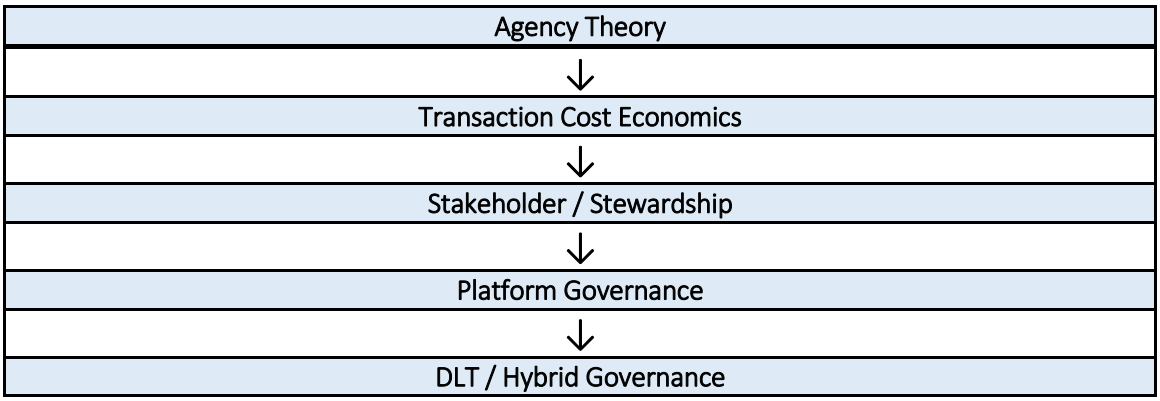
This apparent reduction in agency costs has led some commentators to suggest that DLT "solves" the agency problem. Such claims, however, rest on an overly narrow conception of agency. While DLT may reduce certain first-order agency risks associated with managerial opportunism, it simultaneously introduces new agency relationships at the level of system design and governance. Agency does not disappear; rather, it is relocated.

The introduction of DLT shifts power toward actors who design, implement, and maintain the digital infrastructure through which governance is enacted. Protocol developers determine the logic embedded in smart contracts, system administrators control access rights in permissioned networks, and oracle providers supply external data upon which automated execution depends. These

actors exercise significant influence over outcomes, yet they often operate outside traditional corporate governance frameworks. This phenomenon can be described as **second-order agency risk**, in which principals must trust not only managers, but also the architects of the governance system itself.

Figure 1, illustrating the evolution of corporate governance theories, situates this shift conceptually. As governance moves from agency-based monitoring toward platform and DLT-enabled arrangements, the locus of control becomes increasingly distributed and technologically mediated. Agency relationships proliferate across layers rather than remaining confined to the board–management dyad. This challenges the sufficiency of governance mechanisms designed for hierarchical organisations and necessitates a broader analytical framework.

Figure 1: Evolution of Corporate Governance Theories



Moreover, agency theory traditionally assumes that contracts are incomplete and require discretionary interpretation. Smart contracts appear to offer a partial remedy by encoding rules explicitly and executing them automatically. Yet this rigidity introduces new problems. Organisational environments are dynamic, and rules that are optimal at one point in time may become misaligned as circumstances change. When smart contracts require modification, governance disputes re-emerge, often without clear procedures for resolution. In this sense, DLT compresses agency problems temporally rather than eliminating them, shifting conflict from execution to design and update stages.

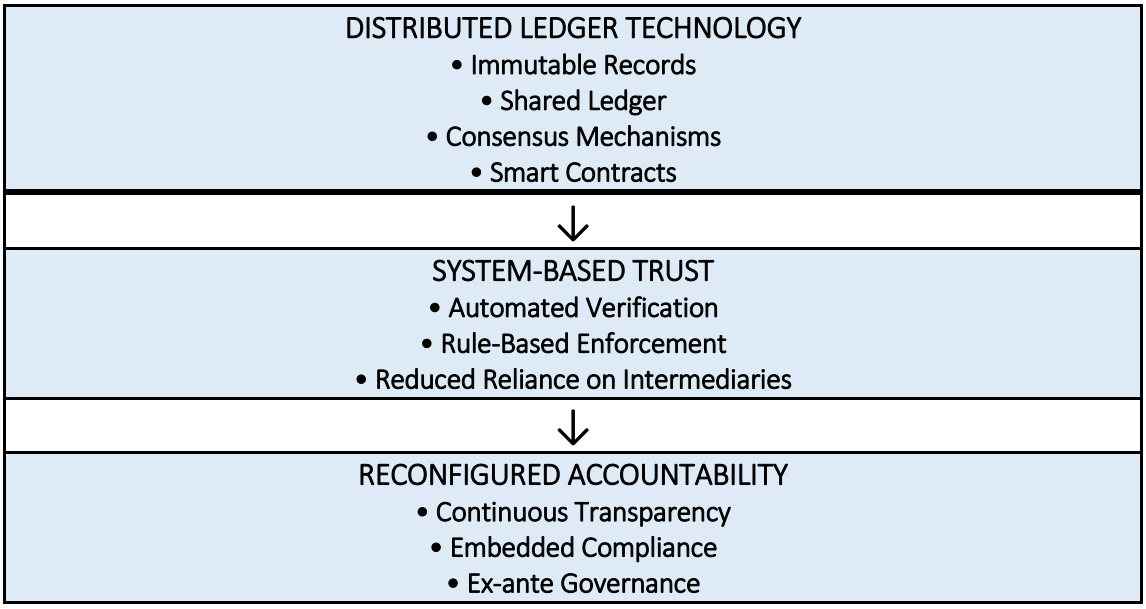
Consequently, the contribution of DLT to corporate governance should be understood as conditional rather than absolute. It can reduce agency costs where activities are well-specified and stable, but it increases governance complexity where judgement, adaptation, and ethical considerations are required. Agency theory must therefore be extended to account for technologically mediated delegation, in which authority is exercised through code as well as through human decision-makers.

5. Board Governance in Hybrid Trust Architectures

The reconfiguration of agency relationships has profound implications for boards of directors. Traditionally, boards have performed two core governance functions: monitoring management to ensure compliance and alignment with shareholder interests, and providing strategic oversight to guide organisational direction. Both functions presuppose a governance environment in which information is imperfect, verification is costly, and managerial discretion is substantial.

DLT alters this environment by embedding verification and enforcement into operational systems. As illustrated in Figure 2, which conceptualizes DLT as a trust architecture, immutable records and automated controls reduce reliance on manual verification and retrospective audits. For boards, this potentially diminishes the time and effort devoted to validating financial information and compliance reports. Governance becomes less about checking whether rules were followed and more about ensuring that the right rules are embedded within the system.

Figure 2: Distributed Ledger Technology as a Trust Architecture



This shift transforms the nature of board oversight. Rather than focusing primarily on ex post monitoring, boards must increasingly engage in **ex ante governance**, concerned with system design, parameter setting, and risk anticipation. Questions such as "Who governs the code?", "How are exceptions handled?", and "What happens when automated rules fail?" become central to board deliberations. Fiduciary responsibility cannot be delegated to algorithms; directors remain accountable for outcomes, even when those outcomes are produced by automated systems.

Figure 3, contrasting hierarchical governance with DLT-enabled governance, highlights this reorientation. In traditional structures, authority flows downward through management hierarchies, while accountability flows upward through reporting channels. In DLT-enabled environments, governance is distributed across technological layers, requiring boards to oversee not only organisational actors but also digital infrastructures. This demands new forms of literacy and judgement rather than technical expertise per se.

Figure 3: Traditional Hierarchical Governance vs DLT-Enabled Governance

TRADITIONAL GOVERNANCE	DLT-ENABLED GOVERNANCE
Shareholders ↓ Board of Directors ↓ Management ↓ Periodic Reporting ↓ Ex-post Audit	Stakeholders ↓ Shared Digital Ledger ↓ Smart Contracts / Rules ↓ Continuous Verification ↓ Real-time Transparency

Importantly, DLT does not eliminate the need for board discretion. While smart contracts can enforce rules consistently, they cannot resolve ambiguities, ethical dilemmas, or competing stakeholder claims. Boards must therefore retain the capacity to intervene, override, or redesign automated processes when necessary. This reinforces the argument that governance becomes hybrid, combining algorithmic consistency with human judgement.

The pandemic experience underscores this point. As boards were forced to operate remotely and rely on digital information flows, the limitations of purely procedural governance became apparent. Boards that adapted successfully did so not by abandoning oversight, but by enhancing the quality of information, frequency of engagement, and clarity of decision rights. DLT may support such adaptation by providing more reliable data, but it cannot substitute for the interpretive and normative functions of boards.

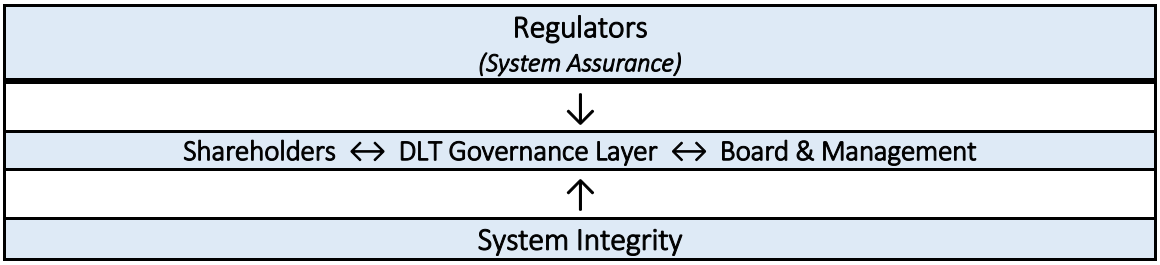
From a governance perspective, the risk is not that boards become obsolete, but that they fail to evolve. Boards that treat DLT as a technical implementation rather than a governance transformation risk abdicating responsibility for system-level outcomes. Effective board governance in hybrid trust environments requires an explicit recognition that digital infrastructures are themselves objects of governance.

6. Stakeholder Consequences of Hybrid Corporate Governance

While much corporate governance scholarship remains shareholder-centric, the introduction of DLT has implications for a broader set of stakeholders. By altering information flows, verification mechanisms, and participation structures, DLT reshapes how different stakeholder groups engage with the firm and with each other.

For shareholders, DLT promises enhanced transparency and potentially greater participation. Permissioned ledgers can provide near real-time access to verifiable financial and governance information, reducing dependence on periodic disclosures and intermediaries. Smart contracts may facilitate continuous or event-driven voting on specific issues, challenging the primacy of annual general meetings. Figure 4, depicting the stakeholder ecosystem under DLT-enabled governance, illustrates how shareholders may interact more directly with governance processes through shared digital platforms.

Figure 4: Stakeholder Ecosystem in DLT-Enabled Governance



However, increased transparency does not automatically translate into improved outcomes. Information overload, unequal access to digital tools, and concentration of voting power can undermine the democratic potential of such systems. Moreover, continuous participation may privilege short-term engagement over long-term stewardship, exacerbating tensions between different classes of investors.

Management experiences a different set of consequences. On one hand, automated controls constrain discretion and reduce opportunities for opportunistic behaviour. On the other hand, management becomes increasingly dependent on technological systems for execution and coordination. Responsibility shifts toward

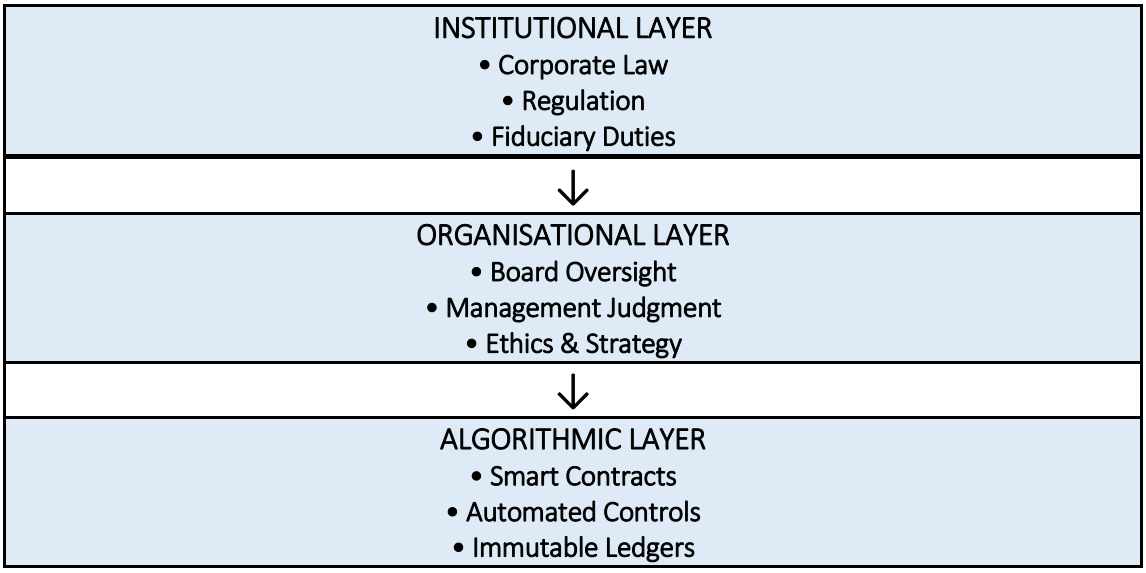
ensuring system integrity, cybersecurity, and data quality. Failures in digital infrastructure can have immediate and widespread consequences, exposing managers to new forms of operational and reputational risk.

Regulators also face a transformed governance landscape. Traditional regulatory approaches rely on periodic reporting, audits, and enforcement actions. DLT-enabled systems offer the possibility of continuous supervision through access to verifiable data. Yet this requires regulators to develop capabilities in system assurance rather than rule enforcement. The regulatory challenge shifts from detecting misconduct to evaluating the robustness and fairness of governance systems themselves.

Broader stakeholders, including employees, customers, and communities, may benefit from enhanced traceability and ESG verification enabled by DLT. Supply chain transparency, for example, can strengthen accountability for labour and environmental standards. At the same time, immutable records raise concerns about privacy, surveillance, and exclusion. Stakeholders without digital access or technical literacy may find themselves marginalised in governance processes increasingly mediated by technology.

Figure 5, illustrating the hybrid governance model, integrates these stakeholder consequences conceptually. Governance outcomes emerge from the interaction of algorithmic controls, organisational oversight, and institutional regulation. Each layer shapes stakeholder experience differently, and failures at any layer can undermine trust across the system.

Figure 5: Hybrid Corporate Governance Framework



These dynamics reinforce the central argument of this paper: the adoption of DLT does not simplify governance but redistributes complexity. Stakeholder consequences depend not on the presence of technology per se, but on how governance responsibilities are allocated and coordinated across hybrid arrangements. Effective governance in the age of digital trust therefore requires an explicit recognition of stakeholder diversity and the design of mechanisms that balance transparency, accountability, and inclusiveness.

7. A Hybrid Corporate Governance Framework

The preceding analysis demonstrates that Distributed Ledger Technology neither eliminates the need for corporate governance nor renders traditional governance institutions obsolete. Instead, it gives rise to a **hybrid governance architecture** in which algorithmic controls coexist with organisational oversight and institutional regulation. To conceptualise this transformation, this paper proposes a **Hybrid Corporate Governance Framework**, integrating technological, organisational, and institutional layers of accountability.

At the **algorithmic layer**, governance is embedded in code. Smart contracts define and enforce rules relating to transactions, compliance thresholds, voting mechanisms, and data access rights. This layer is characterised by precision,

consistency, and speed. Once deployed, algorithmic rules operate continuously and impartially, reducing the scope for discretionary deviation. From an agency perspective, this layer addresses certain first-order agency risks by constraining opportunism and reducing information asymmetry.

At the **organisational layer**, governance remains centred on boards and management. Directors retain fiduciary responsibility for strategic direction, ethical judgement, and stakeholder balancing. Management remains accountable for operational execution, system integrity, and organisational performance. Importantly, this layer governs the algorithmic layer itself: decisions regarding system design, parameter setting, exception handling, and protocol updates reside here. This preserves the normative and interpretive dimensions of governance that cannot be codified without loss of flexibility or legitimacy.

At the **institutional layer**, governance is anchored in law, regulation, and societal norms. Corporate statutes, securities regulation, fiduciary duties, and judicial enforcement provide the ultimate source of legitimacy and recourse. Even where DLT automates compliance, institutional frameworks define what constitutes compliance and determine liability when automated systems fail. This layer ensures that governance outcomes align with broader social objectives rather than purely technical efficiency.

Figure 5 illustrates this hybrid model as an interconnected system rather than a hierarchy. Accountability flows across layers rather than strictly upward or downward. Failures in governance often arise not from deficiencies within a single layer, but from misalignment between layers. For example, technically robust smart contracts may generate outcomes that are legally or ethically problematic, while institutional rules may lag behind technological capabilities, creating regulatory uncertainty.

The strength of the hybrid framework lies in its recognition that governance is not reducible to either human discretion or algorithmic enforcement alone. Effective corporate governance in digitally mediated environments requires deliberate coordination across layers, with clear allocation of responsibilities and escalation mechanisms. Boards play a central role in orchestrating this coordination,

ensuring that technological efficiency does not undermine accountability or legitimacy.

Enterprise digital governance platforms such as SAP Digital Boardroom represent an important intermediary stage in the evolution toward digitally enabled corporate governance. Unlike fully decentralised governance systems based on distributed ledger technologies, SAP Digital Boardroom operates within existing organisational and institutional frameworks while significantly enhancing transparency, traceability, and real-time assurance. By integrating data directly from enterprise systems such as SAP S/4HANA, the Digital Boardroom provides a single, authoritative source of truth for financial, operational, and risk information, thereby reducing information asymmetry between boards and management.

The contribution of SAP Digital Boardroom to digital trust lies in its ability to embed governance into data flows rather than relying solely on episodic reporting and ex post verification. Real-time dashboards, drill-down capabilities, and integrated controls allow boards to interrogate assumptions, validate performance metrics, and monitor risk exposures continuously. In this sense, Digital Boardroom functionality partially addresses classical agency problems by narrowing informational gaps and strengthening monitoring without displacing human judgement or fiduciary responsibility.

Importantly, SAP Digital Boardroom can be viewed as complementary to DLT-enabled governance. While distributed ledgers offer immutable records and automated enforcement, enterprise governance platforms provide interpretive, contextual, and strategic layers necessary for effective oversight. Together, these technologies support a hybrid governance architecture in which algorithmic assurance, organisational judgement, and institutional accountability coexist.

8. Implications for Corporate Governance Theory

The emergence of hybrid governance arrangements carries significant implications for corporate governance theory. Most notably, it challenges the sufficiency of agency theory when applied in isolation. While agency theory remains foundational for understanding conflicts of interest and incentive alignment, it presupposes human agents operating within organisational hierarchies. Digitally mediated governance introduces non-human actors—algorithms, protocols, and platforms—that exercise control without possessing intent or accountability.

This necessitates an extension of agency theory to incorporate **technologically mediated delegation**. Agency relationships no longer exist solely between principals and managers, but also between organisations and the designers of governance systems. These relationships are often indirect and opaque, complicating traditional monitoring and incentive mechanisms. The concept of second-order agency risk introduced earlier provides a useful lens for analysing these dynamics.

Transaction cost economics is similarly enriched by the hybrid framework. By reducing the cost of verification and enforcement, DLT alters the boundary conditions under which firms choose hierarchical coordination over market mechanisms. However, the persistence of governance complexity suggests that lower transaction costs do not eliminate the need for organisational authority; rather, they reconfigure its scope and focus. Governance shifts from coordinating transactions to governing systems.

The framework also contributes to the growing literature on platform governance by highlighting the convergence between corporate governance and digital infrastructure governance. As firms increasingly operate as platforms, governance responsibilities extend beyond internal stakeholders to encompass ecosystems of users, partners, and regulators. Hybrid governance provides a conceptual bridge between firm-level governance and ecosystem-level coordination.

More broadly, this analysis reinforces the view that corporate governance is dynamic and context-dependent. Theories developed in an era of industrial organisation and paper-based reporting must evolve to remain relevant in digitally

mediated environments. Hybrid governance offers a theoretical synthesis that accommodates technological change without abandoning the institutional foundations of corporate accountability.

9. Implications for Practice and Policy

The practical implications of hybrid corporate governance are substantial. For boards of directors, the primary challenge is not acquiring technical expertise in blockchain or smart contracts, but developing **digital governance literacy**. Boards must be capable of asking the right questions about system design, data integrity, cybersecurity, and escalation procedures. Governance competence increasingly depends on understanding how decisions are embedded in systems rather than solely in organisational processes.

For management, hybrid governance requires a reorientation of accountability. Operational performance becomes inseparable from system performance, and failures in digital infrastructure can have immediate governance consequences. Investment in governance-capable technology, rather than technology alone, becomes a strategic priority.

Regulators face a parallel transformation. Traditional rule-based supervision is ill-suited to environments in which compliance is automated and continuous. Regulators must shift toward **system assurance**, evaluating whether governance infrastructures are designed and operated in ways that protect stakeholders and preserve market integrity. Regulatory sandboxes and adaptive frameworks may provide a pathway for experimentation without premature standardisation.

From a policy perspective, hybrid governance underscores the importance of avoiding both technological determinism and regulatory inertia. Overly prescriptive regulation risks stifling innovation, while regulatory passivity allows governance gaps to widen. Policymakers must focus on principles of accountability, transparency, and fairness, leaving room for technological variation in implementation.

Finally, for broader stakeholders, hybrid governance offers both promise and peril. Enhanced transparency and traceability can strengthen trust and ESG accountability, but only if governance systems are designed inclusively and responsibly. Without deliberate attention to access, privacy, and participation, digitally mediated governance may exacerbate existing inequalities.

10. Conclusion

This paper has argued that Distributed Ledger Technology does not signal the end of corporate governance, but rather its transformation. By introducing a new trust infrastructure based on immutable records and automated enforcement, DLT reshapes the mechanisms through which accountability, verification, and control are achieved. Yet governance remains fundamentally a social and institutional endeavour, requiring human judgement, ethical reasoning, and legal legitimacy.

The central contribution of this paper is the articulation of **hybrid corporate governance** as an integrative framework for understanding governance in the age of digital trust. By recognising the complementary roles of algorithmic, organisational, and institutional layers, the framework avoids both technological utopianism and institutional conservatism. It provides a basis for analysing how governance responsibilities are redistributed rather than eliminated.

As corporations, regulators, and stakeholders navigate an increasingly digital landscape, the critical question is not whether governance will be automated, but how automation will be governed. Firms and jurisdictions that succeed in aligning technological capability with robust governance design are likely to capture the benefits of digital transformation while preserving trust and legitimacy.

Future research should empirically examine hybrid governance arrangements across sectors and jurisdictions, exploring how different configurations affect performance, accountability, and stakeholder outcomes. For practitioners and policymakers alike, the challenge is to engage proactively with governance innovation, recognising that in a world of digital trust, governance itself becomes a strategic asset.

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