PROCEEDINGS OF THE INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE
Science and Education in Central Asia: Digital Transformation and Sustainable Development
18 December 2026 · online, Zoom · CASJ-2026
SECTION 3. ECONOMICS, MANAGEMENT AND ENTREPRENEURSHIP

DOI: https://doi.org/10.5281/zenodo.24536187

UDC 005.35:004:502.131.1

DIGITAL GOVERNANCE AND SUSTAINABLE CORPORATE DEVELOPMENT AT BYD

Bian Xueyuan, Larisa Melnik
Al-Farabi Kazakh National University, Almaty, Kazakhstan

Bian Xueyuan — DBA doctoral student, Al-Farabi Kazakh National University, Almaty, Kazakhstan.

Larisa Melnik — PhD, Al-Farabi Kazakh National University, Almaty, Kazakhstan.

Scientific supervisor: Alma Karshalova — Associate Professor, Al-Farabi Kazakh National University, Almaty, Kazakhstan.

© Bian Xueyuan, Larisa Melnik, 2026

Abstract: This conceptual case study examines how digital governance can connect corporate decision rights, sustainability information and operational accountability in a new energy vehicle enterprise. BYD provides the industrial context for a proposed governance framework. The analysis distinguishes publicly documented business activities from proposed controls and does not claim measured causal effects. The framework identifies data stewardship, escalation, assurance and stakeholder accountability as complementary mechanisms. Practical recommendations include an auditable indicator register, cross-functional review and staged evaluation.

Keywords: digital governance, sustainability, BYD, accountability, data stewardship, electric vehicles.

1. Introduction

The transition to electrified transport creates a management challenge that extends beyond the introduction of digital technology. Firms must coordinate decisions about products, production, environmental impacts and investment. Digital tools can make these decisions more visible, but visibility does not automatically create accountability. A dashboard can report a trend without specifying who is responsible for investigating it or deciding whether corrective action is justified. This paper therefore treats digital governance as an organizational capability rather than a collection of software applications.

BYD is an appropriate setting for examining this problem because its publicly reported activities span vehicles, batteries and related technologies. Such an industrial scope raises questions about comparable indicators, responsibility across organizational boundaries and the reconciliation of operational priorities with sustainability objectives. The paper asks how a governance architecture could make digital information useful for sustainable corporate development. It does not assume that BYD has implemented the proposed architecture.

2. Theoretical foundations

Digital transformation involves changes in organizational processes and value creation associated with digital technologies (Vial, 2019). Governance concerns the allocation of decision rights and accountability (Weill & Ross, 2004). Combining these perspectives suggests that the strategic value of information depends on the organizational arrangements through which it is interpreted and acted upon. A sustainability metric is consequently not merely a technical output but an input to a decision process.

Dynamic capabilities provide a second perspective. Teece (2007) distinguishes sensing, seizing and reconfiguring capabilities. Digital information may assist sensing; governance determines whether the organization can authorize responses and subsequently revise routines. Sustainability governance adds the need to consider impacts and dependencies beyond short-term financial outcomes. The proposed framework therefore links information quality with responsibility, review and organizational learning.

3. Method and scope

The study uses a conceptual, single-company case framing. BYD annual reporting provides background about the industrial context, while academic literature supplies the analytical concepts. No internal interviews, proprietary operational records or original statistical observations were collected. The paper develops propositions for subsequent testing rather than reporting a verified causal relationship. The unit of analysis is the corporate governance process linking sustainability information to managerial decisions.

The analytical procedure separates three categories: documented context, theoretical interpretation and proposed management practices. This distinction reduces the risk of treating a plausible digital application as an observed company practice. The approach is suitable for generating a framework but cannot establish its effectiveness. Future research should obtain dated observations, verify data provenance and compare implementation outcomes across organizational units.

4. A proposed governance architecture

The first component is data stewardship. Each sustainability indicator should have a defined boundary, a calculation rule and an accountable owner. The register should clarify whether energy is measured at the facility, production line or corporate level. Changes to definitions require documentation because an apparent improvement could otherwise result from a change in reporting scope. Data owners should preserve source records and identify missing observations.

The second component is decision authority. A cross-functional review group should distinguish operational exceptions from strategic issues. Local managers can investigate ordinary deviations within established limits, whereas changes involving capital expenditure or major environmental risks require escalation. A decision log should record the evidence considered, the responsible person and the intended follow-up. This arrangement creates a traceable connection between information and action.

The third component is assurance. Automated validation can identify inconsistent units, incomplete records or unexpected values, but it cannot independently establish the truth of every measurement. Periodic reconciliation with underlying records and independent review remain important. Access controls should protect confidential and personal data while allowing authorized reviewers to examine evidence. Assurance should be proportionate to the significance of the decision.

5. Application to the BYD industrial context

A diversified electric vehicle and battery producer must consider sustainability across several stages of industrial activity. Governance can establish common definitions while allowing facilities to retain indicators suited to their technologies. For example, a proposed energy intensity indicator could divide metered energy consumption by a defined unit of output. Interpretation would require attention to product mix, utilization and production boundaries. The indicator is illustrative, not a reported BYD measurement.

Battery-related operations illustrate a different governance challenge. Traceability information may be distributed across procurement, manufacturing and quality functions. A proposed process would assign ownership for material identifiers and specify how discrepancies are escalated. The purpose would be to support responsible sourcing and lifecycle decisions without assuming that data completeness guarantees responsible conduct. Supplier evidence would still require proportionate verification.

A further application concerns external reporting. Corporate sustainability statements may combine information from multiple business units. A governance register could connect each

published indicator to its underlying source, responsible function and review date. Where reporting boundaries change, the organization should explain the implications for comparability. This approach responds to the general importance of transparent sustainability disclosures reflected in IFRS S1 and S2.

6. Implementation and evaluation

Implementation should begin with a limited pilot rather than a company-wide software acquisition. Managers could select a small set of indicators with clear strategic relevance and map existing data flows. The next stage would establish ownership and escalation rules, followed by a review of actual decisions made using the indicators. This sequence makes organizational responsibilities explicit before investing in more sophisticated automation.

Evaluation should distinguish process outcomes from environmental outcomes. Process measures may include the proportion of indicators with verified source records, time required to resolve exceptions and completeness of decision logs. Environmental measures could include energy intensity or material waste under stable reporting boundaries. These are proposed measures, not empirical results. A credible evaluation would account for changes in capacity, technology, demand and product mix.

Three propositions guide future testing. First, clearer data ownership is expected to improve the reliability of sustainability information. Second, explicit decision rights may strengthen the relationship between information availability and corrective action. Third, assurance and feedback routines may improve the persistence of governance improvements. These propositions require empirical examination; alternative explanations include managerial experience, regulatory changes and resource availability.

7. Conclusion

Digital governance offers a useful lens for examining sustainable development in the new energy vehicle industry. The proposed framework connects stewardship, decision authority, assurance and learning. BYD provides a relevant industrial context, but the study does not establish that the proposed mechanisms are currently implemented or that they have produced measured results. Its contribution is a structured set of management practices and research propositions that can be evaluated in subsequent doctoral research.

Disclosure: AI-assisted drafting was used in preparing this conceptual manuscript. Author review, source verification, affiliation confirmation and co-author consent are required before final submission.

References:

1. BYD Company Limited. (2025). Annual Report 2024.

2. IFRS Foundation. (2023). IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information.

3. IFRS Foundation. (2023). IFRS S2 Climate-related Disclosures.

4. Teece, D. J. (2007). Explicating dynamic capabilities. Strategic Management Journal, 28(13), 1319–1350. https://doi.org/10.1002/smj.640

5. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. Journal of Strategic Information Systems, 28(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003

6. Weill, P., & Ross, J. W. (2004). IT Governance. Harvard Business School Press.