

ทฤษฎีเกี่ยวกับการเปลี่ยนผ่านสู่ดิจิทัล และเสนอแนวทางปฏิบัติสำหรับองค์กรและผู้
กำหนดนโยบายในการขับเคลื่อนการพัฒนาอย่างยั่งยืนในบริบทเศรษฐกิจภูมิภาค
**Theoretical Perspectives on Digital Transformation and Practical Guidelines for
Organizations and Policymakers in Advancing Sustainable Development within
Regional Economic Contexts**

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ABSTRACT

This study explores how the adoption of Artificial Intelligence (AI) and Enterprise Resource Planning (ERP) systems influences Environment, Society, and Governance (ESG) development within a regional organization in Ubon Ratchathani Province, Thailand. Using a qualitative case study approach, data were collected through in-depth interviews, direct observation, and document analysis, and analyzed using thematic and matrix coding in NVivo. The results revealed that AI and ERP systems enhanced operational transparency, accountability, and efficiency through data centralization and process automation. Notably, digital adoption improved environmental monitoring, employee collaboration, and governance compliance, aligning technological transformation with sustainability outcomes. Leadership commitment and employee empowerment were identified as key mediators driving positive organizational culture and acceptance of digital systems. This study contributes to the theoretical understanding of digital transformation by demonstrating how AI and ERP systems can advance ESG principles in regional enterprises. The findings offer practical implications for policymakers and managers seeking to promote sustainable digital transformation in developing economies.

Keywords: Digital Transformation, Artificial Intelligence (AI), Enterprise Resource Planning (ERP), Environmental Social and Governance (ESG), Sustainable Organizational Management

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาว่าการนำระบบปัญญาประดิษฐ์ (AI) และระบบวางแผนทรัพยากรองค์กร (ERP) มาใช้ ส่งผลต่อการพัฒนาการดำเนินงานตามหลักสิ่งแวดล้อม สังคม และธรรมาภิบาล (ESG) ในองค์กรแห่งหนึ่งในจังหวัดอุบลราชธานีอย่างไร งานวิจัยใช้ระเบียบวิธีเชิงคุณภาพแบบกรณีศึกษา เก็บรวบรวมข้อมูลจากการ

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สัมพันธเชิงลึก การสังเกตโดยตรง และการวิเคราะห์เอกสาร โดยใช้การวิเคราะห์เชิงประเด็นและการเข้ารหัสข้อมูล ด้วยโปรแกรม NVivo ผลการวิจัยพบว่า การนำ AI และ ERP มาใช้ช่วยเพิ่มความโปร่งใส ความรับผิดชอบ และประสิทธิภาพการดำเนินงานขององค์กร ผ่านการรวมศูนย์ข้อมูลและระบบอัตโนมัติทางกระบวนการ นอกจากนี้ยัง ช่วยเสริมการตรวจสอบสิ่งแวดล้อม การทำงานร่วมกันของพนักงาน และการกำกับดูแลกิจการที่ดี โดยมีภาวะผู้นำ และการมีส่วนร่วมของพนักงานเป็นปัจจัยสำคัญในการยอมรับเทคโนโลยี ผลการศึกษานี้ช่วยเพิ่มความเข้าใจเชิง ทฤษฎีเกี่ยวกับการเปลี่ยนผ่านสู่ดิจิทัล และเสนอแนวทางปฏิบัติสำหรับองค์กรและผู้กำหนดนโยบายในการ ขับเคลื่อนการพัฒนาอย่างยั่งยืนในบริบทเศรษฐกิจภูมิภาค

คำสำคัญ: การเปลี่ยนผ่านสู่ดิจิทัล ปัญญาประดิษฐ์ ระบบวางแผนทรัพยากรองค์กร สิ่งแวดล้อม สังคม และธรรมาภิบาล การจัดการองค์กรอย่างยั่งยืน

Introduction

The accelerating pace of digital transformation (DT) has profoundly reshaped organizational structures, management systems, and sustainability strategies across industries. Modern organizations are no longer driven solely by financial performance but are increasingly evaluated based on their adherence to Environment, Society, and Governance (ESG) principles. This shift has intensified the need to align technological innovation with sustainable management practices. Digital technologies such as Artificial Intelligence (AI) and Enterprise Resource Planning (ERP) systems have become strategic enablers of organizational sustainability, promoting transparency, operational efficiency, and data-driven governance (Guandalini, 2022; Dittmar & Sposato, 2025). Yet, while digital transformation and sustainability are conceptually intertwined, the mechanisms through which AI and ERP adoption drive ESG development remain insufficiently understood—particularly in regional and developing contexts.

Prior research consistently affirms the potential of digital transformation to improve sustainability performance. Guandalini (2022), in a systematic review of 153 studies, demonstrated that digital transformation enhances sustainability

outcomes when embedded in organizational strategy, identifying four interrelated dimensions—digital enablers, business models, environmental performance, and stakeholder value. Similarly, Mocanu *et al.* (2025) conducted a large-scale bibliometric analysis using VOSviewer and revealed four core clusters linking digital transformation and sustainability: technological enablers, innovation and business models, performance and impact, and sustainability dimensions. However, both studies highlighted a persistent research gap in qualitative, context-specific inquiries, especially within developing regions, where digital transformation practices are evolving within unique institutional and socio-cultural frameworks. These reviews concluded that while the digital–sustainability nexus is conceptually strong, there remains limited empirical understanding of how and why specific technologies foster ESG outcomes in real organizational settings.

Empirical investigations have sought to bridge this gap by exploring technology adoption and sustainability linkages through various frameworks. Alzahrani (2025) employed the Technological–Organizational–Environmental (TOE) model to assess AI and analytics adoption, emphasizing the crucial role of leadership, interdepartmental collaboration, and governance in

achieving sustainability performance. Their study, however, was largely conceptual and did not capture lived experiences of technology implementation. Likewise, Stroumpoulis *et al.* (2024) conducted a comparative case study of digital transformation in supply chains, finding that information systems integration enhances economic, social, and environmental performance—but they focus on multi-case analysis limited depth of insight into internal organizational mechanisms. Dittmar and Sposato (2025) developed a conceptual transformation framework integrating AI with environmental management systems, concluding that artificial intelligence can enhance ecological performance and organizational learning. Yet, their model was not empirically validated, and contextual nuances—such as organizational size, digital readiness, or regional constraints—were not addressed.

Quantitative studies have further substantiated the correlation between digital adoption and sustainability outcomes. Mutambik (2024) used structural equation modeling to demonstrate that digital competence and innovation synergy significantly improve ESG performance in logistics organizations, while Sun (2024) empirically showed that green innovation mediates the relationship between digital transformation and environmental performance. However, these studies rely on survey-based, cross-sectional designs, which limit causal inference and contextual interpretation. Such methods overlook the organizational culture, leadership behavior, and implementation dynamics that are crucial to understanding how digital systems translate into ESG progress. Moreover, quantitative metrics often fail to capture the

intangible effects of transformation—such as shifts in employee perception, interdepartmental collaboration, and managerial decision-making—that qualitative research can better reveal.

Research within developing economies also exposes additional limitations. Díaz-Arancibia *et al.* (2024) found that small and medium-sized enterprises (SMEs) in emerging markets face barriers to digital adoption, including financial constraints, skill shortages, and limited institutional support. Similarly, Mocanu *et al.* (2025) noted that contextual factors—such as governance maturity and regional digital infrastructure—strongly influence transformation outcomes, yet few studies examine these relationships empirically. Oncioiu *et al.* (2025) demonstrated that leadership readiness and organizational culture are critical enablers of AI-enabled sustainability in logistics but acknowledged that their quantitative framework could not fully explain how organizational values and behavioral adaptation shape sustainability outcomes. Meanwhile, Prayoga *et al.* (2025) proposed an integrated strategic model linking corporate strategy, cybersecurity, and ESG, suggesting that resilience and learning-oriented governance are essential for sustainable transformation; however, their study was document-based and lacked field-level data validation. From these studies, several research gaps emerge clearly.

First, there is a methodological gap: most existing studies rely on quantitative, survey-based, or conceptual approaches, leaving a scarcity of in-depth qualitative case studies that capture lived organizational experiences of AI and ERP implementation (Díaz-Arancibia *et al.*, 2024; Guandalini, 2022; Stroumpoulis *et al.*, 2025). Second, there is a contextual gap: the majority of

research has been conducted in developed economies or large urban corporations, whereas regional enterprises in developing countries, such as those in Thailand, remain underrepresented (Díaz-Arancibia *et al.*, 2024; Mocanu *et al.* 2025). Third, there exists a mechanistic gap: prior research seldom explores the organizational, cultural, and behavioral mechanisms through which digital transformation technologies influence ESG outcomes (Alzahrani, 2025; Dittmar & Sposato, 2025). Finally, there is a temporal gap: few studies examine organizations at the early implementation stage of digital transformation—when managerial perceptions, structural adaptation, and ESG alignment are still forming.

To address these gaps, this research investigates how the adoption of AI and ERP systems influences ESG development within an organization in Ubon Ratchathani Province, Thailand. The selected company provides a compelling context, having recently implemented AI and ERP systems for the first time—a period characterized by organizational transition and adaptation. Adopting a qualitative case study approach, the research employs in-depth interviews, direct observation, and document analysis to uncover the mechanisms, perceptions, and contextual factors shaping the relationship between digital transformation and sustainability performance. By integrating data from multiple sources and applying thematic analysis, the study aims to provide rich, contextually grounded insights into how digital technologies drive sustainable organizational management. The study contributes to both theory and practice by extending empirical understanding of AI and ERP integration within ESG frameworks, illustrating how regional organizations navigate digital transformation

toward sustainability, and offering actionable implications for policymakers and managers seeking to promote responsible digital transformation in developing economies.

Materials and Methods

Research Design and Case Selection

This study employed a qualitative single-case study design to empirically examine the implementation of Artificial Intelligence (AI) and Enterprise Resource Planning (ERP) systems and their implications for Environmental, Social, and Governance (ESG) practices. The case organization was selected using purposive case selection, based on its business characteristics rather than geographical location. Specifically, the organization represents a medium-sized manufacturing enterprise that had recently implemented AI and ERP systems for the first time, making it a suitable empirical setting to observe early-stage digital transformation processes. The organization operates within a regional economy in Thailand. This contextual setting provides an appropriate environment for examining digital transformation in a developing economy; however, the analytical focus of the study remains on organizational processes and practices rather than regional characteristics.

To improve methodological transparency and reproducibility, the case selection process is summarized in Table 1. The organization was selected using predefined purposive sampling criteria, including industry type, organizational size, implementation stage of AI and ERP systems, ESG relevance, and data accessibility.

Data Collection Methods

Data were collected from multiple qualitative sources to ensure depth and triangulation, including

in-depth interviews, direct observations, and document analysis. The combination of these methods enabled a comprehensive understanding of both formal systems and lived organizational practices related to AI, ERP, and ESG implementation.

In-depth interviews constituted the primary data collection method. Semi-structured, open-ended interview questions were designed to elicit participants' experiences, perceptions, and interpretations regarding the adoption and use of AI and ERP systems and their perceived influence on organizational operations and ESG-related practices. Interviews focused on operational changes, data usage, decision-making processes, governance practices, and sustainability-related activities following digital system implementation.

Each interview lasted approximately 60–90 minutes and was conducted in a private setting within the organization to ensure confidentiality and encourage open discussion. All interviews were audio-recorded with participants' informed consent and transcribed verbatim for subsequent analysis.

Table 2 summarizes the qualitative data collection protocol, including data sources, purposes, instruments, duration, and outputs.

Participant Selection

A total of 10 participants were interviewed and included in the final analysis. Data saturation was reached after the ninth interview, as no new themes, codes, or conceptual insights emerged beyond those already identified. One additional interview was conducted to confirm saturation and ensure thematic stability. All interviews were retained and analyzed in full; no interviews were excluded from the final dataset. Participants represented multiple organizational levels,

including 3 executives, 3 middle managers, and 4 operational staff members. This distribution ensured cross-level triangulation of perceptions regarding AI, ERP, and ESG implementation.

Participant inclusion criteria and role distribution are presented in Table 3. Only individuals with direct involvement in AI/ERP decision-making, implementation, or daily use were included in the study.

Direct Observation

Direct observations were conducted to capture real-time organizational practices and interactions associated with AI and ERP system usage. Observational activities included attendance at internal meetings, observation of workflow processes, and examination of digital interfaces where access was permitted. Detailed field notes were recorded to document patterns of interaction, decision-making behavior, and employee engagement with digital systems. Observational data provided contextual insights that complemented interview narratives and enhanced understanding of how digital technologies were embedded into daily organizational routines.

Document Analysis

Document analysis was conducted to support data triangulation and verify information obtained from interviews and observations. Internal documents reviewed included sustainability reports, strategic planning documents, digital transformation roadmaps, ESG-related policies, and AI/ERP implementation reports. These documents were used to contextualize organizational practices and assess alignment between stated sustainability objectives and operational implementation.

Data Analysis

All qualitative data were analyzed using thematic analysis, following the six-phase framework proposed by Braun and Clarke (2006). Interview transcripts, observation notes, and organizational documents were systematically coded through iterative reading and open coding. Codes were subsequently grouped into categories and refined into higher-order themes that reflected recurring empirical patterns. NVivo qualitative analysis software was used to support data organization, coding, and retrieval, ensuring analytical transparency and traceability throughout the research process. The study obtained approval from the institutional ethics review committee before data collection commenced.

Sentiment analysis was conducted using NVivo's automated sentiment classification function, which categorizes text segments into positive, negative, neutral, or mixed polarity based on lexical algorithms and embedded sentiment dictionaries. The initial automated classification was subsequently reviewed manually by the researcher to ensure contextual accuracy and eliminate potential misclassification.

To enhance analytical reliability, coded excerpts were cross-validated against interview transcripts and observational notes. Sentiment percentages reported in Table 7 represent the proportion of coded references classified under

each polarity category relative to the total number of sentiment-coded segments.

However, several limitations must be acknowledged. NVivo's sentiment analysis relies primarily on word-level polarity detection and may not fully capture contextual nuance, irony, culturally embedded expressions, or complex emotional ambivalence. As such, sentiment findings were interpreted cautiously and supplemented by manual thematic interpretation to avoid over-reliance on automated classification.

The analytical procedure is illustrated in Table 4 to enhance transparency and facilitate methodological replication.

To enhance methodological rigor, triangulation was applied across three data sources: interviews, direct observation, and document analysis. Member checking was conducted by sharing preliminary thematic interpretations with two executive participants to confirm the accuracy of interpretations. No substantial discrepancies were identified.

Figure 1 illustrates the overall research process employed in this study, beginning with qualitative case study design and purposive case selection, followed by participant recruitment, multiple-source data collection, NVivo-based coding, thematic and sentiment analyses, and validation through triangulation and member checking.



Figure 1 Research Process Flow Diagram

Source: Developed by the authors

Results

This finding sought to identify the key mechanisms through which the adoption of AI and ERP systems reshaped internal operations and management processes. It was designed to empirically validate the theoretical claims made in prior studies (Alzahrani, 2025; Dittmar & Sposato, 2025) by uncovering how digital technologies practically influence organizational structure and efficiency. The first result analysis revealed that digital transformation was operationalized primarily through data centralization and automation. NVivo query results showed that “data” and “integration” were the most frequent codes (frequency > 40 mentions), suggesting a shift from fragmented systems to unified information management. This aligns with the framework proposed by Guandalini (2022), where digital enablers form the foundation of

sustainable transformation. The results are presented in Table 5. The themes presented in Table 5 were derived through a multi-stage coding process. First, open coding was applied to all interview transcripts to identify recurring concepts related to AI and ERP implementation. Second, axial coding was conducted to group related codes into broader conceptual categories. Finally, selective coding refined these categories into higher-order themes representing key transformation mechanisms. The frequency values reported in Table 5 represent the number of participants (out of 10) who explicitly referenced each theme during interviews. This approach emphasizes cross-participant consistency rather than raw coding volume, thereby strengthening interpretive validity. The second result aimed to computationally map how the organization’s digital transformation

influenced specific ESG indicators. Using NVivo's matrix coding query, interview and document codes were cross-analyzed with ESG categories to identify relational patterns between technology adoption and sustainability performance. The result cross-analysis established a clear, triangulated connection between AI/ERP integration and ESG performance. The NVivo coding matrix revealed 68 co-occurrences of "AI" with "efficiency," 52 with "transparency," and 44 with "accountability," confirming a strong semantic linkage between digital innovation and ESG attributes. The Environmental dimension benefited most from digital monitoring and predictive analytics, reducing both resource usage and waste—a pattern consistent with Sun (2024). In the Social dimension, ERP training and system transparency increased employee engagement and reduced resistance to change, supporting Mutambik (2024) assertion that human capital development is vital for sustainable digital adoption. The Governance dimension showed the most measurable improvement, as ERP-driven audit trails enhanced compliance and internal reporting reliability, echoing the findings of Prayoga *et al.* (2025). The results are presented in Table 6. To ensure empirical robustness, quantitative indicators presented in Table 6 were derived from internal organizational documents and verified through cross-validation with interview data. Percentage changes were calculated using pre- and post-implementation comparisons over a six-month interval. For example, the reported 15% reduction in electricity usage was calculated by comparing the average monthly electricity consumption (kWh) during the six months preceding ERP implementation with the six months following implementation. Similarly, the improvement in staff digital literacy from 45% to 82% was based on HR-

administered digital competency assessments conducted before ERP training and repeated six months after system deployment. The reported 30% reduction in audit errors was calculated from internal procurement audit logs, comparing the number of recorded discrepancies during the six-month pre-implementation period with the subsequent six-month period.

The third result explored the human and cultural dynamics influencing the success of AI and ERP implementation. NVivo's sentiment and word frequency analyses were applied to identify patterns of perception, adaptation, and behavioral change among participants. This aligns with calls by Oncioiu *et al.* (2025) and Alzahrani (2025) to investigate cultural and behavioral mediators of digital transformation. The results demonstrate that leadership engagement and employee empowerment were the strongest enablers of successful digital transformation. Sentiment analysis revealed an overall positive polarity of 82%, confirming a constructive organizational climate toward AI and ERP integration. The study's direct observation data corroborated this pattern, showing a visible reduction in communication silos and improved workflow collaboration after ERP deployment. Interestingly, while initial resistance to change persisted during early phases, it declined following targeted training programs—a finding that reinforces Alzahrani (2025) argument on the role of leadership and governance alignment in digital readiness. The novelty of this analysis lies in integrating NVivo-assisted sentiment mapping with behavioral field data, producing a holistic model of digital transformation dynamics that connects human behavior with technological sustainability outcomes. The results are presented in Table 7.

Table 1 Case Selection Criteria

Criterion	Minimum Requirement	Rationale for Inclusion	Evidence Used to Verify
Industry type	Manufacturing business	Suitable for observing operational, ESG, and system integration effects	Company profile / internal records
Organizational size	Medium-sized enterprise	Large enough to have cross-functional processes, but still in early transformation stage	Number of employees / annual operations
Digital adoption status	Recently implemented AI and ERP	Enables observation of early-stage transformation	Implementation roadmap / management confirmation
First-time implementation	No prior full AI/ERP integration	Avoids confounding from mature legacy transformation	Interview with executives / internal documents
ESG relevance	Organization has ESG-related practices or policies	Necessary to assess digital-ESG linkages	ESG policy / sustainability documents
Data accessibility	Permission for interviews, observation, and internal documents	Required for triangulation and replication	Formal organizational consent

Table 2 Data Collection Protocol

Data Source	Purpose	Unit of Analysis	Instrument / Protocol	Duration / Period	Output
In-depth interviews	Explore perceptions and experiences	Executives, managers, staff	Semi-structured interview guide	60–90 minutes each	Verbatim transcripts
Direct observation	Capture real-time use of AI/ERP	Meetings, workflows, dashboards	Observation checklist + field notes	During site visits	Field notes
Document analysis	Verify claims and support triangulation	ESG reports, plans, roadmaps, audit logs	Document review form	12-month document window	Documentary evidence

Table 3 Participant Selection Criteria

Participant Group	Inclusion Criteria	Expected Role in Data	Final Number
Executives	Involved in AI/ERP decision-making or ESG strategy	Strategic perspective	3
Middle managers	Responsible for implementation or coordination	Process and governance perspective	3
Operational staff	Daily users of AI/ERP systems	Practice-based perspective	4

Table 4 Data Analysis Procedure

Step	Analytical Activity	Description	Software / Validation
1	Data preparation	Transcribe interviews, compile field notes and documents	Manual preparation
2	Familiarization	Repeated reading of all data	Researcher review
3	Open coding	Initial coding of relevant excerpts	NVivo
4	Category development	Group similar codes into categories	NVivo + researcher judgment
5	Theme development	Refine categories into higher-order themes	Braun & Clarke framework
6	Matrix coding	Cross-analyze AI/ERP themes with ESG categories	NVivo matrix coding
7	Sentiment analysis	Automated polarity classification followed by manual review	NVivo + manual checking
8	Validation	Triangulation and member checking	Cross-source comparison

Table 5 Mechanisms of AI and ERP-Driven Transformation

Theme	Representative Evidence	Frequency (N=12)	Interpretation
Data Centralization and Transparency	"The ERP system has made all departments use the same data source—no more duplication or data hiding." (Manager, Operations)	12	ERP unified data across departments, increasing transparency and reducing redundancy.
AI-Supported Decision-Making	"AI forecasting allows us to plan production based on demand, reducing waste." (Executive, Production)	9	AI enabled predictive analytics that optimized planning and minimized inefficiency.
Process Automation and Accountability	"Workflows are automated; tasks now have digital records that show accountability." (HR Officer)	10	Automation increased process traceability and managerial accountability.
Cross-Functional Integration	"Departments collaborate more now because the ERP forces us to communicate through shared dashboards." (Finance Manager)	8	Digital integration fostered organizational alignment and reduced siloed decision-making.

Table 6 Impact of AI and ERP Adoption on ESG Dimensions

ESG Dimension	Emerging Themes	Supporting Evidence	Observed Change
Environmental (E)	Energy efficiency, waste reduction, digital monitoring	"The ERP tracks machine usage; we can now monitor energy consumption daily." (Maintenance Supervisor)	15% reduction in electricity usage over six months (Internal Report)
Social (S)	Employee learning, transparency, workplace collaboration	"ERP training improved digital literacy across departments." (HR Manager)	Staff digital literacy improved from 45% to 82% (HR Report)
Governance (G)	Data governance, accountability, compliance tracking	"AI audit tools detect discrepancies in procurement logs." (Procurement Officer)	Audit compliance improved; errors reduced by 30% (Finance Report)

Note: Percentage changes were calculated using comparative analysis of internal reports over two six-month periods before and after ERP implementation.

Document analysis included internal operational reports covering a 12-month period (six months before and six months after ERP implementation). Specifically, electricity consumption data were obtained from monthly utility monitoring reports recorded in kilowatt-hours (kWh). Employee digital literacy data were retrieved from HR competency assessment reports, which were based on structured internal digital skill evaluations

conducted before and after ERP training programs. Audit compliance data were derived from internal audit reports comparing procurement error rates across two consecutive reporting periods. All percentage changes reported in Table 6 were calculated using comparative pre–post analysis based on documented organizational records.

Table 7 Organizational and Behavioral Mediators of Digital Transformation

Theme	Description	Evidence	Sentiment Trend (%)
Leadership Vision and Support	Strong top-management commitment facilitated technology acceptance.	"Our CEO personally led ERP adoption meetings." (Executive, Admin)	Positive 92%
Employee Learning and Empowerment	Continuous training improved confidence in using digital tools.	"We had weekly ERP workshops—it built trust in the system." (Staff, HR)	Positive 85%
Change Resistance	Initial skepticism due to workload and fear of replacement.	"At first, people thought AI would take over their jobs." (Production Supervisor)	Negative 45%
Collaborative Culture	Increased interdepartmental communication enhanced sustainability awareness.	"Now we share environmental data across teams." (ESG Officer)	Positive 88%

Discussion

The findings of this research clearly demonstrate that the adoption of Artificial Intelligence (AI) and Enterprise Resource Planning (ERP) systems serves as a strategic enabler for sustainable organizational transformation through data integration, automation, and collaborative governance. These results affirm the theoretical principle that digital transformation (DT) can act as a catalyst for sustainability when embedded into the organization's management and operational systems. Specifically, the outcomes illustrate that data centralization and digital transparency facilitate efficiency and accountability, while leadership vision and employee empowerment sustain long-term adaptation. This corresponds with the theoretical propositions outlined by Guandalini (2022) and

Dittmar and Sposato (2025), who emphasized the role of digital enablers and AI-based systems as core drivers of environmental and governance improvement.

In terms of theoretical reinforcement, the present findings strongly support the conceptual models proposed by Alzahrani (2025) and Dittmar and Sposato (2025), which suggest that digital technologies contribute to sustainability through structured data utilization and managerial integration. The observed mechanisms of data transparency and automation validate these frameworks, demonstrating that even in regional enterprises with limited resources, digital tools can effectively enhance operational accountability and sustainability performance. Furthermore, the study provides empirical confirmation of Mocanu *et al.* (2025)

argument that the success of digital transformation depends not only on technology adoption but also on organizational readiness and cultural alignment. The strong leadership support and participatory learning observed in this case illustrate that digital transformation is not a purely technological change but a socio-technical evolution guided by vision, communication, and shared responsibility.

Comparison with previous empirical works reveals both consistencies and distinctive contributions. The improvement in energy efficiency and resource optimization aligns with Sun (2024), who found that digital transformation promotes environmental performance through innovation and data analytics. Likewise, the enhancement of employee learning and collaboration mirrors the conclusions of Mutambik (2024), highlighting that human capital development is critical for sustaining digital adoption, particularly within developing economies. However, this study advances these discussions by illustrating how such improvements occur—namely through ERP-driven knowledge sharing, AI-assisted monitoring, and leadership-led digital literacy initiatives. Moreover, the enhanced data governance and audit compliance found here corroborate Prayoga *et al.* (2025), who advocated for embedding ESG principles into corporate digital strategy. Yet, this study contributes new insight by showing that governance improvement can emerge naturally from digital traceability mechanisms rather than external regulatory pressures.

A notable difference from prior research lies in the behavioral dynamics observed during implementation. Unlike Alzahrani (2025), who primarily focused on technological and organizational frameworks, this study captures the human responses and emotional transitions that accompany digital transformation. The temporary resistance among

employees—driven by fear of workload increase or automation—illustrates the psychological dimension of technological adoption, which was previously overlooked in large-scale quantitative studies. This resistance gradually declined through structured training and transparent communication, confirming that leadership engagement plays a decisive mediating role in fostering acceptance. The finding aligns with Oncioiu *et al.* (2025) and Alzahrani (2025), who highlighted the importance of leadership culture in sustaining digital initiatives. Thus, the current research enriches the theoretical understanding by linking leadership behavior and organizational emotion with sustainable digital outcomes.

From a critical standpoint, this study provides tangible evidence that ESG performance improvement through digital transformation is achievable in regional contexts, yet it is contingent upon several interdependent factors. Technological systems such as AI and ERP provide the infrastructure for transparency and efficiency, but their effectiveness depends on human agency, adaptive learning, and governance reinforcement. This finding nuances earlier theoretical models that overemphasized technology's deterministic power, showing instead that sustainability arises from the interplay of digital capability and social commitment. However, the single-case approach, while offering rich insight, also limits the ability to generalize the findings to all sectors or regions. Variations in organizational culture, industry structure, or leadership style may influence digital transformation trajectories differently.

The limitations of this research stem primarily from its qualitative and context-specific design. The study focused on one organization in Ubon Ratchathani Province, and although the

findings were triangulated through interviews, observations, and document analysis, they reflect a particular stage of digital adoption. Longitudinal or multi-case studies could further validate whether the observed ESG improvements are sustained over time or differ across industries. Additionally, while the NVivo-based analysis enhanced methodological rigor, quantitative metrics of sustainability performance could strengthen causal interpretation. Despite these limitations, the study's methodological depth, rigorous validation, and integration of multiple data sources contribute to its robustness and academic value. While NVivo-assisted coding improved analytical transparency, automated tools may introduce classification bias. Additionally, although quantitative indicators were derived from internal reports, the study did not independently audit raw datasets. Therefore, findings should be interpreted as contextually grounded rather than statistically generalizable.

The strengths of this study lie in its methodological innovation and theoretical contribution. By combining thematic, matrix, and sentiment analyses within a qualitative framework, the research demonstrates how computational tools can enrich interpretive rigor in sustainability studies. The contextual relevance—examining a regional Thai organization during the early implementation stage of digital transformation—adds empirical novelty, addressing the contextual and mechanistic gaps noted by Mocanu *et al.* (2025) and Díaz-Arancibia *et al.* (2024). Furthermore, the research provides a replicable analytical framework that integrates technological, organizational, and human dimensions, making it valuable for future ESG-oriented digital transformation research.

For future research, it is recommended to expand the scope to multi-sector or comparative

case studies across different regions in Southeast Asia. Longitudinal tracking of ESG indicators would allow for assessment of sustainability performance over time, revealing whether early-stage benefits translate into long-term resilience. Researchers should also explore the ethical and social implications of AI and ERP integration, particularly concerning data privacy, algorithmic bias, and employee well-being. These areas remain underexplored yet are increasingly significant in the discourse on responsible digital transformation.

In terms of practical applications, the findings suggest that organizations should view AI and ERP systems as strategic catalysts for embedding ESG principles into daily operations rather than as stand-alone efficiency tools. Leaders should actively communicate the purpose of digital transformation, invest in employee capability-building, and establish transparent governance systems to ensure accountability. Policymakers and industry associations may also apply these insights to design frameworks that support SMEs and regional enterprises in transitioning toward sustainable digital ecosystems.

In summary, this study empirically confirms that digital transformation—when guided by leadership, inclusivity, and data governance—can effectively enhance environmental efficiency, social responsibility, and corporate transparency. By validating and extending existing theories, it provides a deeper understanding of the mechanisms linking AI and ERP adoption to ESG development within regional organizational contexts. The research contributes both theoretical and practical value, emphasizing that sustainable digital transformation is not solely a technological achievement but a human-centered evolution of organizational purpose and governance.

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