

## **Bridging Digital Documentation and Green Compliance: A Study on EDMS in Sustainable Manufacturing**

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### **Abstract**

The advancement and progression towards sustainable manufacturing rely on the efficient amalgamation of technological innovation, organisational competence, and regulatory adherence. This paper presents an innovative, theory-based framework that systematically combines Electronic Document Management Systems (EDMS) with environmental compliance in manufacturing, based on the Technology-Organisation-Environment (TOE) model and the Socio-Technical Systems (STS) approach. The research employs a Systematic Literature Review and secondary quantitative analysis. It analyses how the adoption of EDMS serves as a catalyst for sustainable manufacturing. It denotes its association with real-time and precise document management, improved environmental compliance, and lower emissions. The findings indicate that organisational facilitators, including leadership commitment and digital literacy, as well as external regulatory pressures, are essential for optimising sustainability advantages derived from EDMS. This research enhances the field of sustainability by elucidating the dynamic relationships among EDMS functions, organisational readiness, and environmental demands, thereby offering fresh evidence regarding their collective impact on sustainable manufacturing. The methodology and insights provide pragmatic guidance for practitioners and policymakers to utilise EDMS as a transformative instrument for attaining accountable, efficient, and sustainable manufacturing results. This study offers actionable recommendations to achieve accountable, efficient, and sustainable manufacturing by illustrating that EDMS directly catalyses measurable enhancements in green compliance and environmental performance.

### **Keywords:**

Digital Maturity, Electronic Documents Management Systems, Green Compliance, Regulatory Compliance, Sustainable Manufacturing

JEL classification: O30, O33

## Introduction

The rapid globalisation of industry and manufacturing has raised the bar for urgency in the business sector to balance operational growth with environmental sustainability. The future of manufacturing systems is being shaped with the help of sustainability and regulatory compliance. The major aim of sustainable manufacturing is to minimise the environmental impact and adversity. Additionally, it also manages to enhance the efficiency and competitiveness (Vrchota et al., 2020; Bastas, 2021). EDMS is now at the forefront as a strategic enabler with the help of digital transformation in this dynamic landscape. Primarily associated with administrative efficiency and quality assurance, EDMS is now emerging as a catalyst for green compliance and sustainable manufacturing. It is helping in notable reductions in resource use, emissions, and improving regulatory performance (Ekin & Elitok, 2024).

One of the necessities that a manufacturer has to adhere to and align with to meet environmental standards and policies is Green Compliance. It requires real-time, traceable documentation and vigorous audit trails (Hamad-Chetan, 2024). Application of EDMS not only streamlines the management of compliance documentation but also directly contributes to sustainability by reducing paper, energy, and associated emissions (Ekin & Elitok, 2024). However, despite increasing awareness, empirical studies quantifying these benefits across countries and years remain limited (Bastas, 2021). Moreover, the integration of EDMS with green compliance strategies is underexplored in comparative international contexts. There is a need to focus especially on factors concerning sectoral performance and enabling mechanisms.

There is still a need to explore and focus on a comprehensive understanding of how strategic EDMS adoption interplays with organisational and environmental drivers across different countries and sectors, even though the EDMS is potentially recognised to act as a catalyst for sustainable manufacturing. This study aims to explain the strategic integration of EDMS and green compliance initiatives. It assesses their cumulative impact on environmental outcomes such as CO<sub>2</sub> emissions reduction and resource efficiency. This approach examines not only the technological mechanisms but also the organisational culture and external pressures that enable effective deployment of EDMS for sustainability.

Guided by this framework, the study is set around two key research questions-

RQ1: How does the strategic integration of EDMS with green compliance initiatives influence sustainability outcomes in manufacturing?

RQ2: What are the primary drivers and enablers that support sustainable manufacturing in the context of digital transformation and green compliance?

These questions aim to provide a clear and robust understanding of multiple factors that shape and outline sustainable manufacturing practices. They also aim to highlight the role of EDMS as a transformative enabler within complex regulatory and organisational settings.

## Theoretical Framework

This manuscript is structured around the STS theory, emphasising the interplay between technological infrastructures (EDMS), organisational routines (Compliance practices), and environmental outcomes in manufacturing (Bravo et al., 2025). The research uses the Technology-Organisation-Environment (TOE) framework to analyse how technological adoption (EDMS), organisational capacity (skills, processes), and regulatory setting (Green compliance requirements) collectively shape sustainability performance (Vrchota et al., 2020).

## Literature Review

Growing environmental concerns, evolving regulations, and the increasing demands of stakeholders for responsible production have propelled the journey towards sustainable manufacturing. EDMS is identified as a critical enabler in recent literature due to its adoption. It paves the way for green compliance by making a mark for efficient, transparent, and digitised control of environmental and regulatory documentation. This literature review synthesises peer-reviewed, open-access research articles, examining how EDMS and related digital innovations help in sustainability outcomes by improving resource efficiency, emission control, and regulatory adherence within manufacturing contexts (Table 1). With the help of STS theory and analysed through the TOE framework, successful integration of EDMS appears closely linked with organisational readiness, digital maturity, and regulatory pressure that drives sustainability outcomes (Bravo et al., 2025).

### The Strategic Role of Digitalisation and EDMS

The Industry 4.0 concept highlights digitalisation. This includes the significant transformations in how firms manage, monitor, and improve environmental performance. Reviews by Pei et al. such as EDMS. It will act as a foundational enabler of green manufacturing. Vrchota et al. (2020) identified that Industry 4.0 technologies, such as IIoT, big data, and simulation, amplify resource efficiency when effectively integrated with documentation and compliance systems.

Ekin and Elitok (2024) offer compelling quantitative evidence in relation to the implementation of EDMS in manufacturing and academic contexts led to significant reductions in CO<sub>2</sub> emissions, paper, and water consumption. These findings are reinforced by Zabukovšek et al. (2023), who posit that realised benefits are maximised when organisational learning and digital maturity are supported. Moreover, Miao and Zhao (2023) show that broader digital transformation management aids green transformation and compliance, fostering a culture of transparency and continuous improvement, which is a perspective followed by Bravo et al. (2025). In his study, EDMS implementation was linked to improved pro-environmental organisational culture and service satisfaction.

### Mechanisms of Green Compliance and Performance

A recurring point across studies is the utility of EDMS as a central element for regulatory alignment, audit readiness, and real-time reporting (Bravo et al., 2025; Ekin & Elitok, 2024; Xu & Chen, 2025). To simplify both internal compliance processes and responses to external audits, these systems help by enabling traceable, accurate, and readily accessible documentation. Studies like Xu and Chen (2025) show that digital disclosure requirements and public scrutiny result in driving both policy and operational shifts, which in turn result in more transparent and proactive environmental management among manufacturers. Similarly, ESG-focused work from Yang et al. (2024) and Hermawan et al. (2024) highlights how market-based regulations and green technological innovation mediate and help the effectiveness of compliance efforts, which in turn supports sustainable development goals.

### Empirical Sustainability Outcomes

Quantitative and case-based research provide strong empirical validation for a digitally enabled compliance approach. Jung et al. (2023) demonstrate, using LCA, that additive and digitally managed manufacturing methods offer lower emissions and higher efficiency than traditional methods. Similar trends were seen in a study by Nadae and Carvalho (2019), where digital tools improve resource and emission tracking.

Bastas (2021) and Pei et al. (2021) collected evidence from nearly last two decades showing digitalisation's cumulative impact. It involved automating the process, documentation, and

reporting, which collectively contributed towards significant reductions in waste, resource use, and emissions on a global level. Haleem et al. (2023) supplement this by showing the role of EDMS and digital management in mainstreaming greener practices across varied manufacturing subsectors.

### Drivers and Enablers for Sustainable Manufacturing

Various studies emphasise that sustainable manufacturing is not just a product of technological advancement, but of the deliberate interplay between policy, organisational vision, and market demands. Multiple systematic reviews also highlight how regulatory mandates, evolving ESG expectations, and competitive market forces catalyse the adoption of environmentally responsible processes. Hariyani et al. (2023) express that external regulation, coupled with internal readiness, functions as a dual lever motivating digital transformation for sustainability.

Ali et al. (2021) empirically confirm that the presence of strong environmental regulations, paired with investment in competitive digital and green capabilities, yields higher levels of sustainable performance. This aligns with the TOE theory's assertion that environmental and technological contexts must be matched by robust organisational competencies to realise measurable sustainability gains.

**Table 1 Synthesis Of Key Focus and Key Findings from the Reviewed Studies**

AUTHOR(S)	KEY FOCUS	KEY FINDINGS
Nadae & Carvalho (2019)	Green transformation and production systems	Digital tools enable better emission/resource tracking and sustainability practices.
Vrchota et al. (2020)	Industry 4.0 and sustainability	Digitalisation (including document management) drives resource savings, compliance, and competitiveness.
Pei et al. (2021)	Green manufacturing trends and digitalisation	Digital tools, including EDMS, are crucial for emission reduction and tracking sustainability.
Bastas (2021)	Green technologies and manufacturing	Digital tech (including EDMS) is vital for sustainable manufacturing
Ali et al. (2021)	Practices, competitiveness, regulation	Environmental regulation and digital practices (like EDMS) boost sustainable performance.
Hermawan et al. (2024)	Regulation, eco-innovation in green manufacturing	Regulation and eco-innovation (via digital tools) improve environmental performance
Kumar & Mani (2022)	Sustainability in operations, digital tools	Frameworks for digital assessment optimise tracking and reporting sustainability.

Hariyani et al. (2023)	Motivation/Drivers for sustainable manufacturing	Environmental regulation and digital readiness, incl. EDMS, are primary driver
Jung et al. (2023)	Emissions/resource use: digital vs. traditional	Digitalisation yields lower emissions/higher efficiency in manufacturing
Miao & Zhao (2023)	Digital info systems for green transformation	EDMS accelerates green compliance; digital systems are central to transformation
Anggraini et al. (2024)	Multi-sector EDMS adoption and sustainability	EDMS improves document control and compliance across sectors
Zabukovšek. et al. (2023)	EDMS lifecycle and sustainability	Success in EDMS adoption is linked to organisational maturity and sustainability outcomes.
Haleem et al. (2023)	Green manufacturing strategies, organisational factors	Organisational support for digital/green manufacturing is critical for sustainability
Bendig et al. (2023)	Green manufacturing frameworks, digitalisation	Integrated frameworks emphasise tech/management for sustainability
Yang et al. (2024)	ESG, green regulation, digital transformation	ESG/Green tech adoption is regulation-driven; digitalisation enhances green innovation and compliance
Ekin & Elitok (2024)	EDMS, sustainability in manufacturing	EDMS lowers CO <sub>2</sub> emissions, paper/water use, and improves compliance
Yang & Ming (2025)	Digital green manufacturing in automotive	Integrating green processes/EDMS reduces waste and emissions in the auto sector.
Bravo et al. (2025)	EDMS and pro-environmental culture	EDMS fosters sustainability and pro-environmental culture in organisations
Xu & Chen (2025)	Digitalisation, transparency, compliance	Government digitalisation increases transparency and environmental benefits.

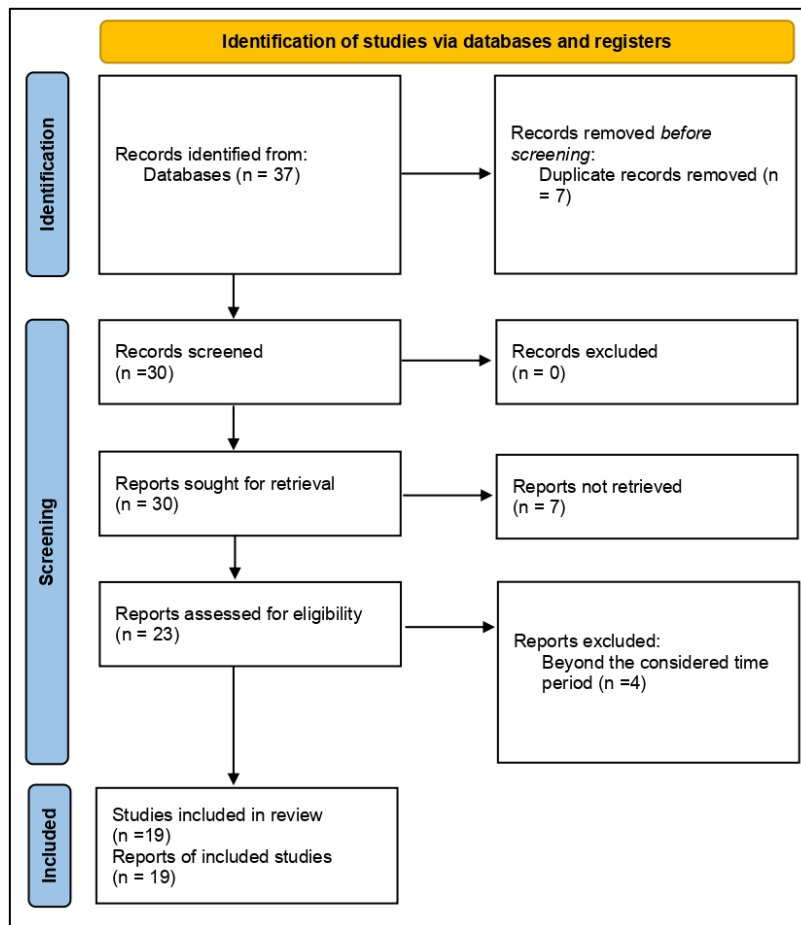
Source: Author's compilation

## Methodology

A secondary research design is adopted to address the research questions. This study uses open-access peer-reviewed literature for a systematic literature review. The SLR follows the PRISMA (Figure 1) guidelines to identify (involved 37 articles), screen (involved 30 articles), and synthesise, i.e., inclusion (included 19 articles), literature on EDMS, green compliance, and

sustainable manufacturing (Moher et al., 2009). The review covers academic databases such as PubMed, Scopus, Web of Science, and Frontiers.

**Fig. 1 PRISMA Chart**



Source: Created by authors

### Inclusion Criteria

- Peer-reviewed open-access publications
- Time period- 2015-2025
- Articles that address digital documentation, compliance strategies, and sustainability in manufacturing.

### Exclusion Criteria

- Non-English Articles
- Non-open-access articles
- Non-peer-reviewed reports, editorials
- Studies before 2014
- Research without sufficient relevance to EDMS and Sustainable Manufacturing

### Quantitative method

This study adopts a quantitative secondary data (as shown in Table 2) analysis design to examine the relationship between digital governance maturity and environmental performance in manufacturing. The central objective is to explore whether higher levels of e-governance

serving as a proxy for EDMS adoption readiness correspond with lower carbon emissions per unit of manufacturing output, thereby indicating stronger green compliance. To ground the analysis theoretically, the STS model and the TOE framework are used. These frameworks enable the interpretation of findings by considering both technological capabilities (EDMS) and their interaction with organisational structures and environmental contexts.

**Table 2 Secondary Data Sources**

DATASET	SOURCE	DESCRIPTION	USE IN STUDY
E-Government Development Index (EGDI, 2024)	United Nations Department of Economic and Social Affairs (UNDESA)	Measures the digital readiness of national governments across their components, which are online services, telecommunication infrastructure, and human capital.	Aggregated by continent to represent the digital governance maturity of Europe, Asia, Oceania, Africa, and the Americas.
CO2 Emissions per Manufacturing Value Added (MVA)	United Nations Industrial Development Organisation (UNIDO)	Provides time series data on CO2 emissions associated with manufacturing output across major global regions.	Years selected 2017-2022, to capture long-term trends with decade-based intervals.

Source: Author's compilation

## Findings

### Findings from SLR

Guided by the TOE framework and STS model, the published literature reveals a nuanced understanding of how EDMS integration functions both as a technological and organisational enabler for sustainable manufacturing and green compliance. The synthesis is presented under two interrelated sub-themes, closely linked to the research questions.

### Integration of ESDM with Green Compliance

The integration of EDMS into green compliance processes is shown to be a transformative agent for sustainability, directly addressing how these systems influence environmental outcomes. Empirical studies report that EDMS adoption facilitates accurate, real-time, and transparent environmental documentation, improving regulatory auditability and reducing administrative burdens (Ekin & Elitok, 2024). Through digital automation, manufacturers experience significant reductions in paper use, a growing pace of compliance reporting, and fewer errors, which in turn strengthen overall compliance and facilitate a more agile, data-driven response to emerging sustainability challenges (Jung et al., 2023). Furthermore, the TOE framework helps explain why these gains are considered most effective in organisations where EDMS implementation is aligned with broader sustainability strategies, supported by ongoing training and leadership commitment (Opoku et al., 2023). As a result, manufacturers not only achieve measurable reductions in CO2 emissions and resource consumption but also boost a culture of continuous improvement and stakeholder confidence (Pei et al., 2021). The literature thus substantiates the framework's argument that integrated, digitally enabled compliance systems are essential for manufacturing firms seeking to meet regulatory standards and excel in environmental performance in a dynamic global context.

### Drivers and Enablers for Sustainable Manufacturing

The literature consistently identifies a complex interplay of technological, organisational, and environmental factors as primary drivers and enablers of sustainable manufacturing, which is basically a conceptualisation at the heart of TOE and STS frameworks (Karuppiah et al., 2024). Externally, regulatory mandates and stakeholders' expectations generate strong pressure for manufacturers to improve environmental performance and reporting transparency. These external factors cause a growth in investment in digital infrastructures, with EDMS emerging as a central tool for compliance, efficient recordkeeping, and audit support (Vrchota et al., 2020). Digital literacy and cross-functional collaboration further amplify the capacity of organisations to implement EDMS and use it for ongoing compliance and performance improvement (Pei et al., 2021). Thus, successful sustainable manufacturing transformation relies on the equal activation of all three TOE dimensions, demonstrating that technology adoption alone is insufficient without enabling organisational readiness and a supportive regulatory environment (Bravo et al., 2025). The table for drivers and enablers is given below (Table 3).

**Table 3 Drivers and Enablers for Sustainable Manufacturing**

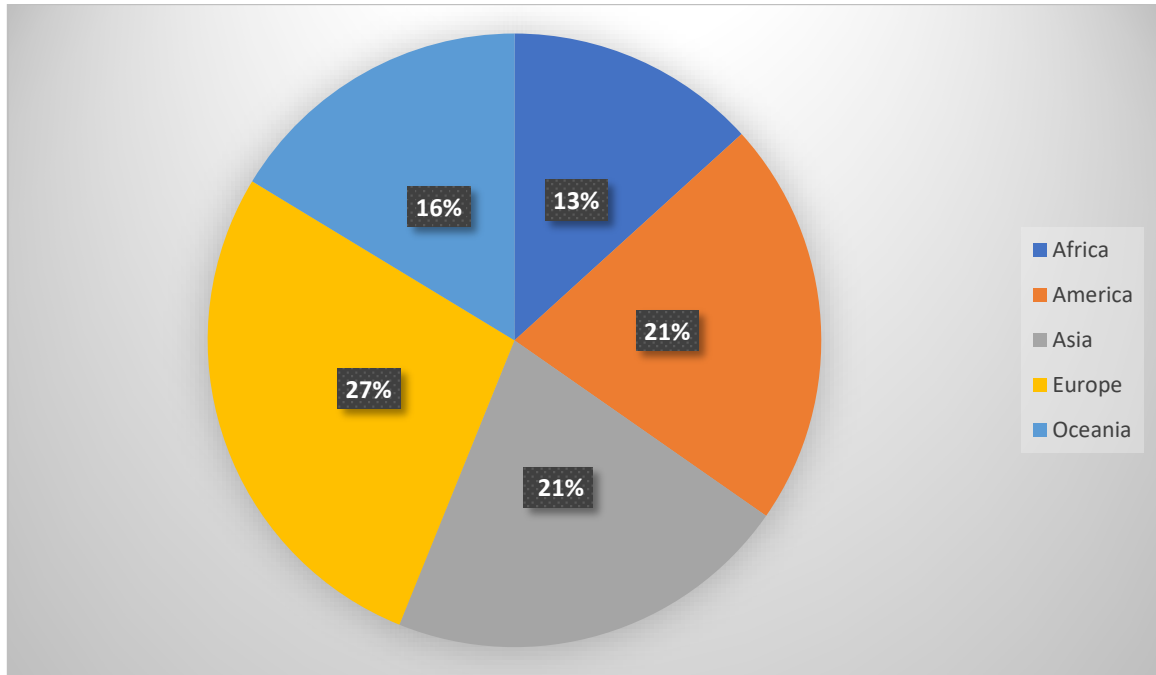
<b>DRIVER/ENABLER</b>	<b>DESCRIPTION</b>
Regulatory Mandates	Legal requirements and policies driving adoption of digital compliance systems
Market-Based Environmental Regulation/ESG Pressure	Investor, customer, and market demand for transparency and green credentials
Digital Infrastructure and Maturity	Availability and sophistication of IT, broadband, and digital tools (EDMS/Industry 4.0)
Top Management Commitment	Leadership support, vision, and resource allocation for EDMS and sustainability objectives
Digital Literacy and Culture	Skills, pro-environmental culture, and openness to digital transformation
Cross-Functional Collaboration	Integration between IT, compliance, and operational teams
EDMS Functionality and Integration	Automation, audit trails, and capacity for transparent and real-time environmental reporting
Third-Party Certifications and Standards	ISO 14001, eco-labels, and industry benchmarks are pushing green compliance
Change Management and Training	Ongoing capability building and support for end-users
Organizational Maturity	Level of process integration and readiness for digital transition

Source: Author’s compilation

**Quantitative Findings**

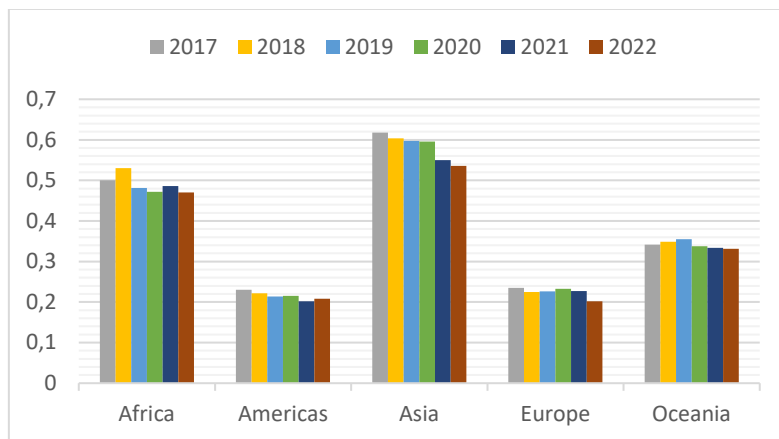
A pie chart (Figure 2) representation of EGDI rankings revealed that Europe holds the highest proportion of digital maturity, followed by Asia and the Americas. Africa and Oceania presented comparatively lower digital readiness, with an average EGDI score. This distribution underscores the varying levels of digital infrastructure and public-sector digitisation across regions, which can influence the implementation of digital systems such as EDMS.

**Fig. 2 Global EDGI Percentage (Year 2022)**



Source: Author’s compilation

**Fig. 3 Carbon Dioxide Emissions Per Unit of Manufacturing Value Added (Kilograms of CO2 Per Constant 2015 United States Dollars)**



Source: Author’s compilation

The graph (Figure 3) illustrates regional trends in CO2 emissions per unit of manufacturing value added (measured in kilograms of CO2 per constant 2015 US dollars) from 2017 to 2022. Across all regions, there is a consistent decline in emission intensity, indicating gradual

improvements in manufacturing sustainability. Asia recorded the highest emission levels throughout the period, though it showed a steady downward trend, reflecting early signs of cleaner production adoption. This graph showcases a global shift toward lower carbon intensity in manufacturing, with varying degrees of effectiveness across regions. These trends suggest that digital maturity may correlate with improved environmental performance in manufacturing.

The relationship between EGDI and carbon efficiency, although not directly causal, supports the argument that digitally advanced governance systems create a conducive environment for implementing EDMS. Such systems enable better tracking, auditing, and compliance with environmental regulations and mechanisms essential for reducing the carbon footprint of industrial activities.

## **Chapter Results**

The chapter results synthesize the evidence from the literature review and secondary findings to evaluate the impact of EDMA on environmental performance. It further shows that the findings are structured around green compliance integration, sustainability drivers, and emission trends across regions. The quantitative findings observed a reduction in CO<sub>2</sub> emissions per unit of manufacturing value added across these regions, indicating that environmental compliance and documentation have become more efficient and enforceable through digital platforms. From an STS perspective, the effectiveness of EDMS as a green compliance mechanism depends not only on the technology itself but also on how well it is embedded within organizational practices and regulatory frameworks. The qualitative findings indicate that effective EDMS adoption enhances green compliance by embedding transparent, real-time documentation practices within organizational and regulatory processes.

## **Discussion**

The integration of ESDM into green compliance significantly advances sustainability by improving environmental outcomes. This, in turn, addresses the core of the first research question. Empirical evidence shows that EDMS adoption enables accurate, real-time, and transparent environmental documentation, enhancing regulatory auditability and reducing administrative burdens (Ekin & Elitok, 2024). Digital automation reduces paper use, accelerates compliance reporting, and minimises errors, promoting stronger compliance and data-driven sustainability initiatives (Bravo et al., 2025; Jung et al., 2023). The TOE framework clarifies that these benefits are maximised when EDMS aligns with broader sustainability goals, supported by leadership and ongoing training (Opaku, 2025). Consequently, manufacturers achieve tangible reductions in CO<sub>2</sub> emissions and resource consumption while building a culture of continuous improvement and stakeholder trust (Pei et al., 2021). Further, it is affirmed that integrated, digital compliance systems are critical for excelling in environmental performance amid evolving global pressures.

The findings from the secondary data analysis lend strong support to the theoretical underpinnings of both the STS model and the TOE framework. From the perspective of the TOE framework, EGDI represents the environment dimension, capturing the broader contextual readiness that influences technological adoption. High EGDI regions, such as Europe and parts of Asia, likely offer robust digital infrastructures, regulatory enforcement mechanisms, and organisational digital literacy. These are the conditions that favour the effective implementation of EDMS. The decline in CO<sub>2</sub>/MVA in these regions suggests that environmental compliance and documentation processes are more streamlined and enforceable through digital platforms. In the STS model, the effectiveness of EDMS as a green compliance tool is not solely dependent on the technology itself, but also on its integration into organisational and regulatory structures. EDMS bridges the gap between the “technical”, such

as digital tools, databases, process automation, and the “social”, such as human actors, compliance culture, and governance norms. The observed carbon efficiency improvements in digitally mature regions affirm that socio-technical integration is essential for sustainable outcomes. The result also points to a potential disparity in environmental progress across regions. While EDMS adoption may be technically feasible, its success is contingent on the supporting ecosystems, such as policy incentives, institutional maturity, and workforce readiness. Thus, the variation in EGDI scores correlated with uneven progress in reducing emissions intensity, reinforcing the idea that green digital transformation is a wide system challenge.

## Research Gaps

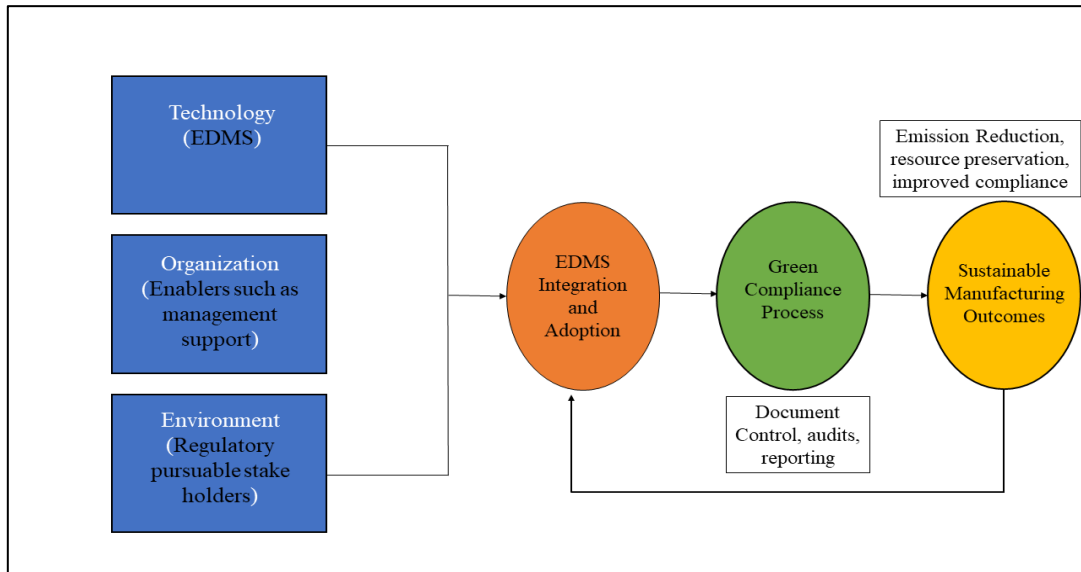
Despite progress, several research gaps persist in the integration of EDMS for green compliance in sustainable manufacturing.

- Empirical studies on the direct impact of EDMS functionalities on measurable green compliance outcomes, particularly across various regulatory and market environments, remain low and less explored (Bravo et al., 2025).
- While technology adoption is discussed widely, the organisational and socio-cultural facilitators such as leadership commitment, digital skills, and collaborative culture are also underexplored, although they are very crucial for effective EDMS use (Karuppiyah et al., 2024).
- There is a need for the research to focus on the analysis of trends and patterns of enablers interacting with external pressures such as regulatory mandates and stakeholder expectations.
- Longitudinal evidence on the sustained impacts, inclusive of both quantitative and qualitative aspects in the case of EDMS-driven green compliance, is also lacking.
- Context-specific frameworks addressing sector differences and developing country challenges need further exploration and development (Vrchota et al., 2020).

## Framework

The proposed framework (Figure 4) conceptualises sustainable manufacturing as an outcome of the dynamic interplay between technology (EDMS), organisation (enablers and culture), and environment (regulatory compliance pressure), as grounded in the STS theory and TOE framework. It visualises how EDMS adoption facilitates green compliance processes, supported by organisational and environmental drivers, ultimately leading to measurable sustainability outcomes such as reduced emissions, resource use, waste, and improved compliance effectiveness.

**Fig. 4 Proposed Framework: Strategic integration of EDMS**



Source: Author’s compilation

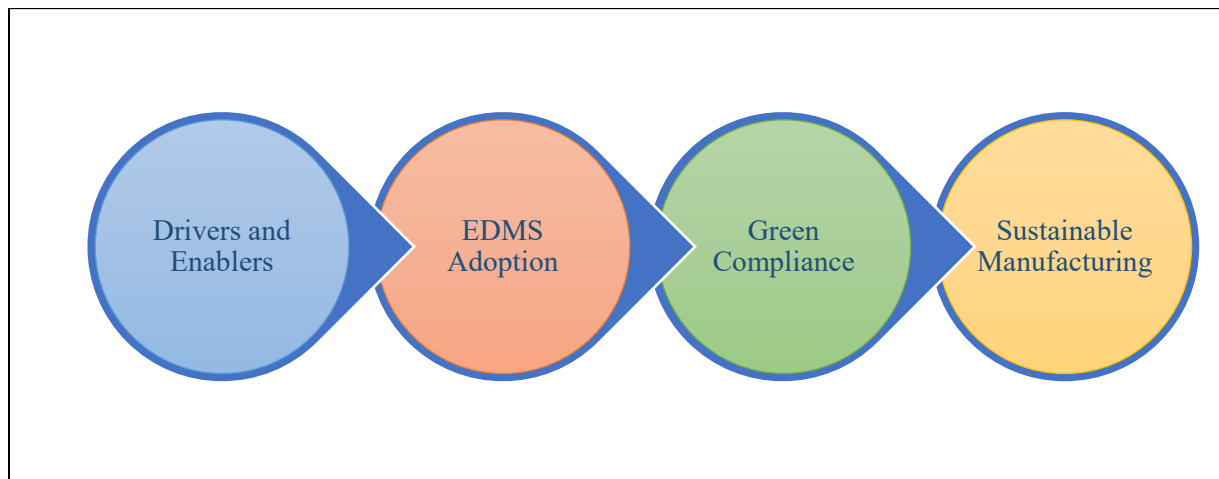
The Components of the Framework are listed and discussed below in Table 4.

**Table 4 Component of Framework**

<b>Technological Dimension</b>	<b>Organizational Dimension</b>	<b>Environmental Dimension</b>	<b>Green Compliance</b>	<b>Sustainable Manufacturing Outcomes</b>
Digital Document control, automated Workflows, audit trail management, electronic recordkeeping, and real-time compliance monitoring	Enhanced organisational capability, smoother change management, and increased effectiveness of compliance and reporting	Creates an external effect, motivating manufacturers to implement EDMS-enabled green compliance systems.	Utilises EDMS to ensure accuracy, timelines, and traceability of environmental documents	Reduction in CO <sub>2</sub> emissions, paper use, water consumption, waste generation, and compliance violations

Source: Author’s compilation

The Flow of the Framework is shown in Figure 5.

**Fig. 5 Flow And Direction of the Proposed Framework**

Source: Author's compilation

Technologically, EDMS supports document control, workflow automation, audit trails, and compliance monitoring, facilitating data accuracy and reporting efficiency while minimising errors (Bravo et al., 2025). Organisational enablers such as leadership commitment, digital literacy, and strategic alignment with sustainability goals are key elements for the successful integration of EDMS (Opoku et al., 2023). The day-to-day operational embedment becomes easier with this cross-functional collaboration. It encourages firms to adopt EDMS, as these systems fulfil the demands of transparent documentation. They are easily traceable in nature, which is one of the necessities for compliance. The framework implements green compliance by integrating and leveraging EDMS. The use of EDMS is recommended for its accurate and timely documentation, audit readiness, and continuous improvement through feedback loops. Key outcomes include measurable reductions in CO<sub>2</sub> emissions, resource use, and waste. It also shows enhanced transparency and organisational reputation, positioning EDMS as a crucial enabler of sustainability in manufacturing.

## Conclusion

This study demonstrates how an EDMS can serve as an enabler that is transformative in nature for sustainable manufacturing by successfully integrating document control with green compliance objectives. The ability of EDMS to manage environmental documentation with transparency, accuracy, and in real time effectively improves the efficiency and reliability of compliance processes. Such factors ease and minimise the administrative burdens that often hinder timely reporting and verifications. It also strengthens the auditability of records for regulatory authorities. The use and implementation of EDMS streamlines compliance reporting for manufacturers, ensuring that all required environmental data is captured, stored, and retrieved with minimal delay or manual intervention. The reduction in paper consumption directly contributes to resource conservation with the help of digitalisation. The likelihood of errors, likelihood of errors, omissions, or inconsistencies, which can otherwise compromise compliance integrity and environmental performance, is reduced with the help of the system's automated and standardised process. The operational efficiencies and tangible environmental benefits are also yielded with the help of the implementation and incorporation of EDMS. The manufacturers achieve measurable reductions in emissions, energy consumption, and waste generation with the aid of optimised processes and eliminated redundancies. System's use in an organisational setting builds a culture and environment of continuous improvement as it enables regular monitoring, performance assessment, and data-driven decision making. When aligned with the organisation's broader sustainability strategies and actively supported by leadership,

the potential of EDMS is unlocked and considered successful utilisation. The environmental goals, which are embedded into operational priorities, resource allocations, and performance evaluations, include involvement of strategic leadership. With the help of this, EDMS evolves from a purely administrative tool into a core component of an organisation's sustainability framework. Overall, the findings highlight and position EDMS as an essential mechanism and tool for enabling effective, accountable, and sustainable manufacturing practices. By linking technological efficiency with environmental responsibility, EDMS not only helps meet regulatory requirements but also strengthens an organisation's commitment to long-term ecological management.

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