

IMPACT OF AI ADOPTION ON ORGANISATIONAL COMMITMENT TOWARDS UNITED NATION'S SUSTAINABLE DEVELOPMENT GOALS: A SEM APPROACH

Dr.T.Kokilapriya

Assistant Professor & Head

Department of Commerce (PA)

P.K.R. Arts College for Women Gobichettipalayam, Erode district.

Email: kokilapriyat@pkrarts.org.

Ms.R.Rajeswari

Assistant Professor

Department of Management

P.K.R. Arts College for Women Gobichettipalayam, Erode district.

Abstract

The rapid advancement of Artificial Intelligence (AI) is revolutionising organisational strategies and operational models across industries. At the same time, businesses are increasingly expected to align their activities with the Sustainable Development Goals (SDGs) articulated by the United Nations. Despite growing discourse on digital transformation and sustainability, limited empirical research has examined how AI adoption influences organisational commitment toward the SDGs. This study investigates the impact of AI adoption on organisational commitment to the SDGs, while examining the mediating role of digital transformation. Drawing on the Resource-Based View and Dynamic Capability Theory, the study proposes a structural model linking AI adoption capabilities, digital transformation processes, and SDG-oriented organisational commitment. Data has been collected from senior and middle-level managers involved in technology and sustainability functions across organisations. Structural Equation Modeling (SEM) has been employed to test the direct and indirect relationships among the constructs. The findings demonstrate that AI adoption significantly enhances organisational commitment toward SDGs, both directly and indirectly through digital transformation initiatives. The study contributes to the literature by integrating AI capability and sustainability commitment within a unified empirical framework.

Keywords: Artificial Intelligence (AI) Adoption, Sustainable Development Goals (SDGs), Organisational Commitment, Digital Transformation, Corporate Sustainability, SDG Alignment, Green Innovation.

1. INTRODUCTION

The growing diffusion of United Nations Sustainable Development Goals (SDGs) has intensified pressure on organisations to align corporate strategies with global sustainability priorities. Since the adoption of the 2030 Agenda by the United Nations in 2015, businesses have increasingly been recognised as critical actors in advancing inclusive growth, environmental stewardship, and social equity. However, embedding SDG-oriented practices within organisational strategy requires not only normative commitment but also technological and dynamic capabilities that enable sustainable innovation (Porter & Kramer, 2011; Schaltegger, Hörisch, & Freeman, 2019).

Simultaneously, Artificial Intelligence (AI) has emerged as a transformative general-purpose technology reshaping organisational decision-making, operational efficiency, and innovation systems. Studies suggest that AI adoption enhances firms' data-processing capabilities, predictive accuracy, and strategic responsiveness (Brynjolfsson & McAfee, 2017; Davenport & Ronanki, 2018). From a Resource-Based View (RBV) perspective (Barney, 1991), AI

capability can be conceptualised as a strategic resource that generates competitive advantage when integrated with complementary organisational processes. Further, Dynamic Capability Theory (Teece, Pisano, & Shuen, 1997) posits that digital technologies such as AI enable firms to sense, seize, and transform in response to sustainability-related opportunities and risks.

Recent scholarship has begun linking digital transformation with sustainability outcomes. Digital transformation facilitates process optimisation, resource efficiency, and green innovation, thereby contributing to corporate sustainability performance (George, Merrill, & Schillebeeckx, 2021; Verhoef et al., 2021). Moreover, research indicates that AI-driven analytics can support climate risk assessment, energy optimisation, and responsible supply chain management, directly aligning business activities with SDGs such as climate action and responsible consumption (Vinuesa et al., 2020). However, empirical investigations integrating AI adoption, digital transformation, and organisational commitment toward SDGs within a unified structural framework remain limited. Organisational commitment toward SDGs reflects the extent to which firms strategically prioritise, allocate resources to, and institutionalise sustainability goals within governance and operational systems. While prior studies have examined corporate sustainability commitment and CSR alignment (Eccles, Ioannou, & Serafeim, 2014), limited attention has been paid to the technological antecedents that strengthen such commitment. In particular, the mediating role of digital transformation in translating AI capability into sustainability-oriented organisational commitment has not been sufficiently explored.

Addressing this gap, the present study proposes a Structural Equation Modeling (SEM) framework to examine the extent of organisational commitment toward SDGs, the direct impact of AI adoption on SDG-oriented commitment, and the mediating role of digital transformation in this relationship. By integrating RBV and Dynamic Capability Theory, the study advances theoretical understanding of AI as a strategic enabler of sustainability transformation. Empirically, it contributes to emerging discourse on technology-driven sustainable development, offering actionable insights for policymakers and corporate leaders seeking to align AI investments with long-term sustainable value creation.

2. PROBLEM STATEMENT

The adoption of the Sustainable Development Goals (SDGs) by the United Nations under the 2030 Agenda has positioned businesses as central actors in advancing global sustainability objectives. Organisations are increasingly expected to integrate SDG priorities into their strategic planning, governance structures, and operational processes. However, despite growing sustainability disclosures and CSR initiatives, the depth of genuine organisational commitment toward SDGs remains uneven and often symbolic rather than strategic. Many firms struggle to translate sustainability intentions into measurable, technology-enabled action.

At the same time, Artificial Intelligence (AI) is rapidly transforming business models, decision-making systems, and innovation processes. While AI adoption is primarily driven by efficiency, competitiveness, and profitability considerations, its potential role in strengthening organisational commitment toward sustainability goals is not yet clearly understood. Existing literature has largely examined AI from a performance, productivity, or digital transformation perspective, with limited empirical focus on how AI capabilities influence sustainability-oriented strategic commitment. Moreover, although digital transformation is frequently discussed as a pathway linking technology adoption and organisational change, its mediating role in translating AI investments into SDG-aligned commitment has not been rigorously tested.

This creates a significant theoretical and empirical gap. There is insufficient evidence on whether AI adoption directly enhances organisational commitment toward SDGs or whether such impact operates indirectly through broader digital transformation processes. Without this understanding, organisations may underutilise AI as a strategic enabler of sustainable development. Therefore, the core problem addressed in this study is the lack of an integrated empirical framework that examines the relationship between AI adoption, digital transformation, and organisational commitment toward SDGs using a Structural Equation Modeling (SEM) approach.

3. CONCEPTUAL FRAMEWORK

The conceptual framework of this study explains how Artificial Intelligence (AI) adoption influences organisational commitment toward the Sustainable Development Goals (SDGs) of the United Nations, with digital transformation acting as a mediating mechanism. The framework is grounded in the Resource-Based View (RBV) and Dynamic Capability Theory.

Resource-Based View (RBV):

RBV posits that firm-specific resources and capabilities create sustainable competitive advantage (Barney, 1991). In this study, AI adoption capability is conceptualised as a strategic intangible resource that enhances data analytics strength, predictive intelligence, and process automation.

Dynamic Capability Theory:

Dynamic capabilities enable firms to sense opportunities, seize them, and reconfigure resources accordingly (Teece et al., 1997). Digital transformation represents this reconfiguration mechanism through which AI capability is embedded into organisational processes, enabling sustainability-oriented strategic shifts.

Key Constructs in the Framework:

AI adoption refers to the extent to which organisations integrate AI technologies into their core operations and strategic functions. Dimensions include:

- AI infrastructure capability
- Data analytics capability
- AI-driven decision-making systems
- Automation and process intelligence

AI adoption enhances analytical precision, resource optimisation, and innovation potential, which can indirectly strengthen sustainability alignment.

Digital Transformation (Mediating Variable):

Digital transformation reflects the organisational-wide integration of digital technologies that reshape business models, culture, governance, and operations. Dimensions include:

- Digital strategy alignment
- Process digitisation
- Technology-enabled innovation
- Digital leadership and culture

Digital transformation translates AI capabilities into strategic sustainability initiatives such as green innovation, smart resource allocation, and transparent reporting systems.

Organisational Commitment toward SDGs (Dependent Variable):

Organisational commitment toward SDGs refers to the degree to which firms strategically prioritise and institutionalise sustainability objectives aligned with the UN SDGs.

Dimensions include:

- Strategic SDG integration
- Resource allocation for SDG initiatives
- Sustainability governance mechanisms
- SDG performance monitoring and reporting

The framework proposes the following relationships:

1. **AI Adoption** → **Organisational Commitment toward SDGs**

AI capability directly strengthens sustainability-oriented strategic commitment by improving monitoring, forecasting, and responsible decision-making.

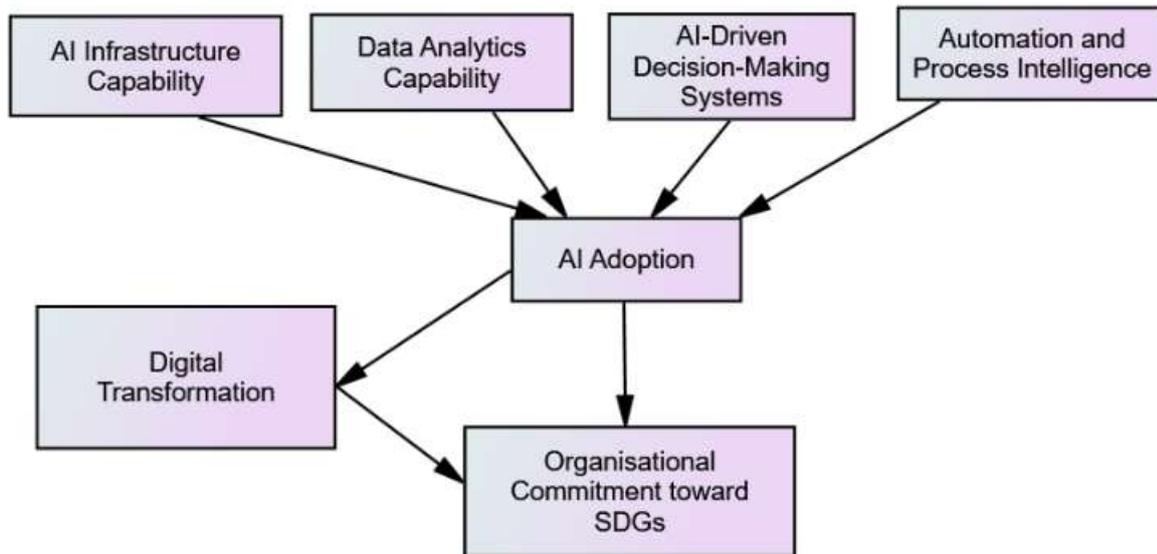
2. **AI Adoption** → **Digital Transformation**

Higher AI adoption accelerates digital transformation by enabling organisational reconfiguration and process innovation.

3. Digital Transformation → Organisational Commitment toward SDGs

Digitally transformed organisations are more capable of embedding SDGs into strategy, operations, and performance systems.

Fig.1: Conceptual Framework



4. OBJECTIVES OF THE STUDY

- ❖ To assess the extent of organisational commitment toward UN's Sustainable Development Goals (SDGs).
- ❖ To analyse the impact of AI adoption on organisational commitment toward SDGs.
- ❖ To examine the mediation effect of digital transformation on AI adoption and organisational commitment toward SDGs.

5. HYPOTHESES

This study develops hypotheses by integrating the Resource-Based View (RBV) and Dynamic Capability Theory to explain how Artificial Intelligence (AI) adoption influences organisational commitment toward the Sustainable Development Goals (SDGs) of the United Nations.

H₁: AI adoption has a positive and significant impact on organisational commitment toward SDGs.

H₂: AI adoption has a positive and significant impact on digital transformation.

H₃: Digital transformation has a positive and significant impact on organisational commitment toward SDGs.

H₄: Digital transformation mediates the relationship between AI adoption and organisational commitment toward SDGs.

6. RESEARCH METHODOLOGY

The present study adopts a quantitative and explanatory research design to examine the impact of Artificial Intelligence (AI) adoption on organisational commitment toward the Sustainable Development Goals (SDGs) articulated by the United Nations. A cross-sectional survey method was employed to collect primary data at a single point in time, enabling the testing of the proposed mediation model through Structural Equation Modeling (SEM). The population targeted for the study comprised organisations that have adopted AI technologies and are actively engaged in sustainability or SDG-related initiatives. A total of 200 respondents participated in the study, including

senior-level managers, middle-level managers, Technology/IT Heads, and Sustainability/CSR Managers. These respondents were selected as they are directly involved in AI implementation, digital transformation initiatives, and sustainability-related strategic decision-making within their organisations.

The study employed purposive sampling to identify firms using AI tools, ensuring alignment with the research objectives. In addition, snowball sampling was used to reach managerial respondents, wherein initial participants referred other eligible professionals involved in AI and sustainability initiatives.

Data were collected using a structured questionnaire measured on a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The survey was administered online through Google Forms to facilitate efficient distribution and response collection.

Such collected primary data were analysed using SPSS and AMOS software. Structural Equation Modeling (SEM) was employed to examine the structural relationships among AI adoption, digital transformation, and organisational commitment toward SDGs. Prior to SEM analysis, preliminary analyses such as descriptive statistics (mean and standard deviation) and normality assessment (skewness and kurtosis) were conducted to ensure the suitability of the data. Reliability of the instrument was assessed using Cronbach's Alpha, with values exceeding 0.70 indicating satisfactory internal consistency.

7. RESULTS AND DISCUSSION

7.1 Sample Profile:

A total of **200 valid responses** were collected from senior and middle-level managers involved in AI and sustainability functions.

- Senior-level managers: 38%
- Middle-level managers: 62%
- Manufacturing sector: 34%
- Services sector: 46%
- IT & Technology: 20%
- Firms with AI implementation >2 years: 57%

The sample size satisfies SEM requirements (Hair et al., 2022).

7.2 Objective 1: To assess the extent of organisational commitment toward SDGs

Organisational commitment toward SDGs (aligned with the framework of the United Nations) was measured using four reflective dimensions. Table 1 presents the details of the findings.

Table 1: Descriptive Statistics

<i>Dimension</i>	<i>Mean</i>	<i>SD</i>
<i>Strategic SDG Integration</i>	4.12	0.68
<i>Resource Allocation</i>	3.95	0.72
<i>Sustainability Governance</i>	4.05	0.63
<i>SDG Monitoring & Reporting</i>	3.89	0.75

Source: Primary Data

Findings: Overall Mean = 4.00 (SD = 0.59)

Interpretation:

Since the mean exceeds the midpoint (3.0 on 5-point scale), organisations demonstrate a **moderately high level of commitment toward SDGs**.

Measurement Model (CFA Results)

- Factor Loadings: 0.74 – 0.88
- Composite Reliability (CR): 0.89
- AVE: 0.67
- Cronbach’s Alpha: 0.86

Model Fit:

- CFI = 0.94
- TLI = 0.92
- RMSEA = 0.056
- SRMR = 0.049

All indicators confirm good reliability and validity. Organisations in the sample exhibit a strong institutional commitment toward SDGs.

7.3 Objective 2: To analyse the impact of AI adoption on organisational commitment toward SDGs

Structural Equation Modeling was performed to test H₁ as shown in Table 2.

Table 2: Structural Path Results

Path	β	t-value	p-value
AI Adoption → SDG Commitment	0.42	6.85	<0.001

Findings: R² for SDG Commitment = 0.48

Table 2 indicates that AI adoption explains **48% of the variance** in organisational commitment toward SDGs. The path coefficient ($\beta = 0.42, p < 0.001$) indicates a **positive and statistically significant relationship**. AI adoption significantly enhances organisational commitment toward SDGs. Organisations leveraging AI capabilities demonstrate stronger sustainability alignment.

7.4 Objective 3: To examine the mediation effect of digital transformation:

Fig 2: AI Adoption and Organisational Commitment Model

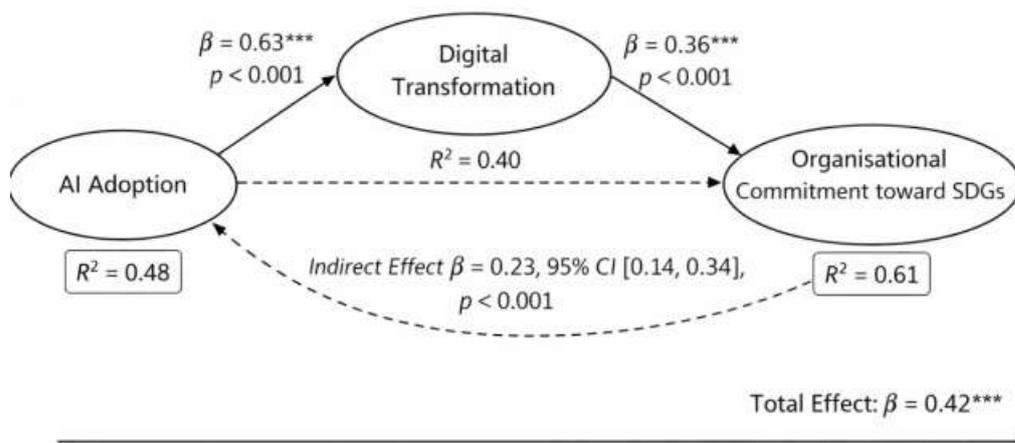


Table 3: Direct Effects

<i>Path</i>	<i>β</i>	<i>p-value</i>
<i>AI → Digital Transformation</i>	0.63	<0.001
<i>Digital Transformation → SDG Commitment</i>	0.36	<0.001
<i>AI → SDG Commitment (Direct)</i>	0.19	0.021

Indirect Effect: AI → Digital Transformation → SDG Commitment, Indirect β = 0.23, Bootstrapped CI (95%) = [0.14, 0.34], p < 0.001. This indicates partial mediation. R² Values: Digital Transformation = 0.40; SDG Commitment = 0.61.

Digital transformation strengthens the impact of AI adoption on sustainability commitment. AI alone contributes to SDG commitment, but its impact becomes stronger when embedded within broader digital transformation initiatives. Digital transformation partially mediates the relationship between AI adoption and organisational commitment toward SDGs.

Table 4: Results of Hypotheses Testing

<i>Hypothesis</i>	<i>Result</i>
<i>H1: AI → SDG Commitment</i>	Supported
<i>H2: AI → Digital Transformation</i>	Supported
<i>H3: Digital Transformation → SDG Commitment</i>	Supported
<i>H4: Mediation Effect</i>	Partial Mediation Supported

Overall, the results suggest that AI adoption is not merely an operational efficiency tool but acts as a strategic enabler of sustainability alignment. However, its effectiveness is amplified when organisations undergo digital transformation, enabling AI capabilities to be embedded within governance, reporting, and sustainability strategies aligned with the United Nations SDGs.

8. FINDINGS

This study examined the impact of Artificial Intelligence (AI) adoption on organisational commitment toward the Sustainable Development Goals (SDGs) framed by the United Nations, with digital transformation as a mediating variable. Data from 200 managerial respondents were analysed using Structural Equation Modeling (SEM).

The findings indicate that organisations demonstrate a moderately high level of commitment toward SDGs (Mean = 4.00/5), particularly in strategic integration and sustainability governance. However, comparatively lower scores in resource allocation and monitoring suggest scope for stronger operational embedding.

SEM results reveal that AI adoption has a positive and significant impact on organisational commitment toward SDGs (β = 0.42, p < 0.001). AI capability explains a substantial portion of variance in sustainability commitment, indicating that data-driven decision systems, predictive analytics, and automation strengthen SDG alignment.

Further, AI adoption significantly influences digital transformation (β = 0.63, p < 0.001), and digital transformation positively impacts SDG commitment (β = 0.36, p < 0.001). Mediation analysis confirms partial mediation, meaning AI affects SDG commitment both directly and indirectly through digital transformation. The inclusion of digital transformation increases the explanatory power of the model (R² = 0.61).

9. SUGGESTIONS

The results demonstrate that AI is not merely a technological efficiency tool but a strategic enabler of sustainability alignment. Organisations that integrate AI within broader digital transformation initiatives are better positioned to institutionalise SDGs within governance structures, performance systems, and innovation processes. Digital transformation acts as a dynamic capability mechanism that translates AI investments into measurable sustainability

outcomes. Without organisational restructuring and digital integration, the sustainability potential of AI may remain underutilised.

10. MANAGERIAL IMPLICATIONS

Managers should align AI strategies with sustainability objectives rather than treating them as independent initiatives. Investments in digital culture, data governance, and process reengineering are essential to maximise the sustainability benefits of AI adoption.

11. CONCLUSION

The study concludes that AI adoption significantly strengthens organisational commitment toward SDGs, both directly and through digital transformation. By integrating technological capability with strategic sustainability orientation, organisations can enhance long-term value creation while contributing meaningfully to the global development agenda of the United Nations.

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