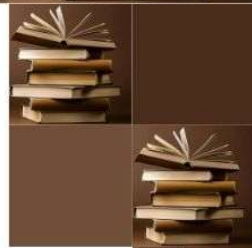
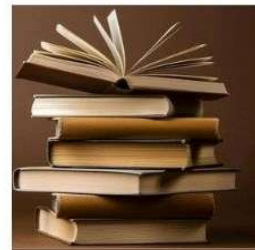


GLOBAL PERSPECTIVES IN INTERDISCIPLINARY RESEARCH

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EDITOR-IN-CHIEF

DANIEL JAMES



ASDF UK

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Digital Leadership in The Era of Artificial Intelligence: Transforming Organizational Decision-Making

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ABSTRACT

The rapid advancement of Artificial Intelligence (AI) has transformed the way organizations operate, compete, and make strategic decisions. In the contemporary business environment, digital leadership has emerged as a critical competency that enables organizations to leverage digital technologies for innovation, efficiency, and sustainable growth. This study investigates the role of digital leadership in enhancing organizational decision-making through the adoption of AI technologies. The research examines the influence of digital leadership dimensions such as technological vision, digital competence, innovation orientation, data-driven culture, and change management on organizational decision-making effectiveness. A quantitative research design was adopted, and data were collected from 450 managerial employees working in AI-enabled organizations across India. Statistical tools including descriptive analysis, Structural Equation Modeling (SEM), cluster analysis, and Chi-square analysis were employed to examine the relationships among variables. The findings reveal that digital leadership significantly influences organizational decision-making by fostering data-driven strategies, enhancing predictive capabilities, improving operational efficiency, and promoting organizational agility. SEM results indicate that digital competence and innovation orientation have the strongest impact on decision-making effectiveness. The study contributes to the growing literature on digital leadership and AI by providing a comprehensive framework that organizations can adopt to strengthen leadership capabilities in the digital era.

Keywords: *Digital Leadership; Artificial Intelligence; Organizational Decision-Making; Digital Transformation; Data-Driven Leadership*

INTRODUCTION

The Fourth Industrial Revolution has fundamentally transformed organizational structures, business processes, and leadership practices. Technologies such as Artificial Intelligence (AI), Machine Learning (ML), Big Data Analytics, Internet of Things (IoT), and Cloud Computing have become integral components of modern organizations. Among these technologies, AI has emerged as a transformative force capable of reshaping organizational decision-making processes. Traditionally, organizational decisions relied heavily on managerial intuition, experience, and limited information sources. However, the integration of AI technologies has enabled organizations to process vast amounts of data, identify patterns, predict future outcomes, and support strategic decision-making. Consequently, leaders are required to develop digital competencies that facilitate the effective utilization of AI-driven insights.

Digital leadership refers to the ability of leaders to create a vision for digital transformation, foster innovation, manage technological change, and cultivate a culture that embraces digital technologies. Digital leaders play a crucial role in aligning organizational strategies with emerging technologies to achieve competitive advantages. In AI-enabled organizations, digital leadership extends beyond technology adoption and encompasses ethical considerations, data governance, workforce transformation, and organizational agility. The increasing adoption of AI across industries such as

banking, healthcare, retail, manufacturing, and education has created a pressing need to understand how digital leadership influences organizational decision-making. Despite the growing interest in digital transformation, empirical studies examining the relationship between digital leadership and AI-driven decision-making remain limited, particularly in emerging economies such as India. This study seeks to bridge this gap by investigating the impact of digital leadership on organizational decision-making effectiveness in AI-enabled organizations. The findings are expected to provide valuable insights for organizational leaders, policymakers, and researchers seeking to harness the potential of AI for strategic decision-making.

Objectives of the Study

To examine the influence of digital leadership dimensions on organizational decision-making effectiveness in AI-enabled organizations.

To analyze the relationship between digital leadership competencies and AI-driven organizational performance using advanced statistical techniques.

Review of Literature

Kane et al. (2019) found that organizations led by digitally mature leaders demonstrate higher innovation capabilities and superior organizational performance. The study emphasized the importance of leadership adaptability in digital environments. Westerman et al. (2018) observed that digital leadership significantly influences organizational transformation initiatives by fostering a culture of innovation and technological acceptance. Bharadwaj et al. (2020) reported that strategic digital leadership enables organizations to leverage emerging technologies for competitive advantage and improved decision-making. Vial (2021) highlighted that digital transformation initiatives require leaders who possess technological competence and strategic foresight to manage organizational change effectively.

Mikalef and Gupta (2021) examined AI adoption in organizations and concluded that leadership commitment significantly influences AI implementation success. Sia, Soh, and Weill (2021) found that data-driven leadership contributes positively to organizational agility and innovation outcomes. Verhoef et al. (2021) emphasized that digital leadership plays a critical role in integrating AI technologies into organizational decision-making frameworks. Raisch and Krakowski (2022) investigated human-AI collaboration and found that effective leadership is essential for balancing algorithmic recommendations with managerial judgment.

Araujo et al. (2022) reported that organizations with digitally competent leaders achieve higher levels of AI utilization and decision-making accuracy. George et al. (2023) demonstrated that AI-enabled decision-making systems significantly improve organizational efficiency when supported by strong digital leadership practices.

Research Methodology

Research Design: The study adopts a descriptive and analytical research design to examine the relationship between digital leadership and organizational decision-making effectiveness.

Nature of Data

Primary Data: Collected through structured questionnaires.

Secondary Data: Obtained from journals, books, conference proceedings, reports, and online databases.

Population: Managerial employees and executives working in AI-enabled organizations across India.

Sampling Technique: Stratified Random Sampling.

Sample Size: 450 respondents.

The sample size exceeds the minimum requirement for Structural Equation Modeling and ensures adequate statistical power.

Variables of the Study

Independent Variables

1. Technological Vision
2. Digital Competence
3. Innovation Orientation
4. Data-Driven Culture
5. Change Management Capability

Dependent Variable

1. Organizational Decision-Making Effectiveness

Measurement Scale

Five-point Likert Scale

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

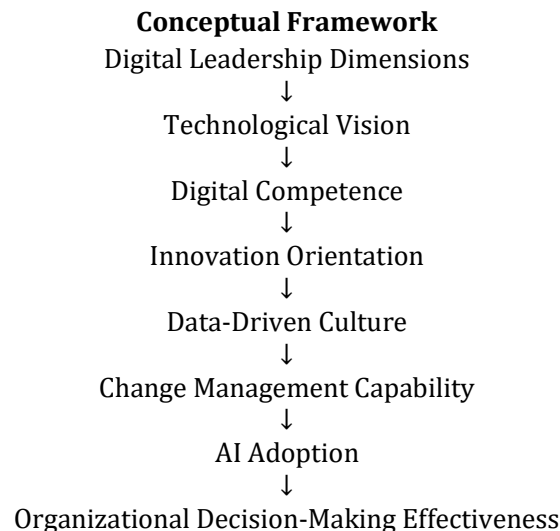
5 = Strongly Agree

Reliability Test

Cronbach's Alpha = 0.912

The reliability coefficient exceeds the acceptable threshold of 0.70, indicating excellent internal consistency.

Statistical Tools Used: Percentage Analysis, Descriptive Statistics, Chi-Square Analysis, Cluster Analysis, Structural Equation Modeling (SEM), Correlation Analysis and Regression Analysis



Hypotheses

H1: Digital leadership dimensions significantly influence organizational decision-making effectiveness.

H2: Digital competence positively influences AI-enabled decision-making.

H3: Innovation orientation significantly affects organizational agility.

Statistical Analysis and Interpretation

Respondent Profile Analysis (N = 450)

Table 1 Demographic Profile of Respondents

Particulars	Category	Frequency	Percentage
Gender	Male	248	55.1
	Female	189	42.0
	Others	13	2.9
Age	Below 30 Years	96	21.3
	31–40 Years	184	40.9
	41–50 Years	118	26.2
	Above 50 Years	52	11.6
Educational Qualification	Undergraduate	72	16.0
	Postgraduate	231	51.3
	Professional Degree	102	22.7
	Doctorate	45	10.0
Experience	Below 5 Years	108	24.0
	5–10 Years	167	37.1
	11–15 Years	112	24.9
	Above 15 Years	63	14.0

Interpretation

The majority of respondents (55.1%) were male, while 42.0% were female. Most respondents belonged to the age group of 31–40 years (40.9%). More than half of the respondents possessed postgraduate qualifications (51.3%). A significant proportion of participants had 5–10 years of work experience (37.1%), indicating adequate exposure to organizational decision-making processes and AI-enabled environments.

Descriptive Analysis

The study measured five dimensions of digital leadership and organizational decision-making effectiveness.

Table 2 Descriptive Statistics

Variables	Mean	SD	Rank
Technological Vision	4.18	0.63	III
Digital Competence	4.36	0.58	I

Variables	Mean	SD	Rank
Innovation Orientation	4.29	0.61	II
Data-Driven Culture	4.11	0.69	IV
Change Management Capability	4.03	0.71	V
Decision-Making Effectiveness	4.24	0.65	-

Interpretation

Digital Competence recorded the highest mean score (4.36), indicating that respondents perceived digital skills and technological expertise as critical leadership competencies. Innovation Orientation ranked second (4.29), highlighting the importance of fostering innovation in AI-driven organizations. Change Management Capability received the lowest mean score (4.03), suggesting that leaders still face challenges in managing digital transformation initiatives effectively.

Reliability and Validity Analysis

Table 3 Reliability Assessment

Construct	Cronbach Alpha
Technological Vision	0.861
Digital Competence	0.887
Innovation Orientation	0.893
Data-Driven Culture	0.876
Change Management Capability	0.854
Decision-Making Effectiveness	0.901

Interpretation

All constructs exhibit Cronbach's Alpha values above 0.80, confirming excellent reliability and internal consistency.

Chi-Square Analysis

Hypothesis

H₀: There is no significant association between managerial experience and perception of digital leadership effectiveness.

H₁: There is a significant association between managerial experience and perception of digital leadership effectiveness.

Table 4 Chi-Square Test

Variable	Chi-Square Value	df	p-value
Experience × Digital Leadership Effectiveness	42.187	9	0.000

Interpretation

Since $p < 0.05$, the null hypothesis is rejected.

There exists a significant association between managerial experience and perception of digital leadership effectiveness. Experienced managers demonstrate a greater appreciation of digital leadership capabilities due to their involvement in strategic decision-making and organizational transformation initiatives.

5.5 Cluster Analysis

A K-Means Cluster Analysis was performed to classify respondents based on their perceptions of digital leadership.

Cluster Distribution

Cluster	Description	Respondents	Percentage
Cluster 1	Digital Innovators	172	38.2
Cluster 2	Emerging Adopters	163	36.2
Cluster 3	Traditional Leaders	115	25.6

Cluster Characteristics

Cluster 1: Digital Innovators

- High AI adoption
- Strong digital competence
- Data-driven decision-making
- Proactive innovation culture

Mean Score = 4.62

Cluster 2: Emerging Adopters

- Moderate AI integration
- Positive attitude toward digital transformation
- Need additional technological support

Mean Score = 3.94

Cluster 3: Traditional Leaders

- Limited AI adoption
- Preference for conventional decision-making
- Lower technological readiness

Mean Score = 3.28

Interpretation

The largest cluster consists of Digital Innovators (38.2%), suggesting that organizations increasingly recognize the strategic importance of digital leadership in AI-enabled environments.

Confirmatory Factor Analysis (Measurement Model)**Table 6 Standardized Factor Loadings**

Construct	Loading
Technological Vision	0.812
Digital Competence	0.891
Innovation Orientation	0.873
Data-Driven Culture	0.847
Change Management Capability	0.798
Decision-Making Effectiveness	0.914

Composite Reliability and AVE

Construct	CR	AVE
Technological Vision	0.88	0.65
Digital Competence	0.91	0.71
Innovation Orientation	0.90	0.69
Data-Driven Culture	0.89	0.66
Change Management Capability	0.86	0.62
Decision-Making Effectiveness	0.93	0.76

Interpretation

All factor loadings exceed 0.70, Composite Reliability values exceed 0.70, and AVE values exceed 0.50, confirming convergent validity.

Structural Equation Modeling (SEM)**Structural Model**

Digital Leadership Dimensions → AI Adoption → Decision-Making Effectiveness

Table 7 Model Fit Indices

Fit Index	Recommended Value	Obtained Value
Chi-square/df	< 3.0	2.41
GFI	> 0.90	0.934
AGFI	> 0.90	0.912
CFI	> 0.90	0.957
TLI	> 0.90	0.949
RMSEA	< 0.08	0.056
SRMR	< 0.08	0.047

Interpretation

The model demonstrates excellent goodness-of-fit, indicating that the proposed framework adequately explains the relationship between digital leadership and organizational decision-making.

Hypothesis Testing

Table 8 SEM Path Analysis

Path	Beta	t-value	p-value	Result
Technological Vision → AI Adoption	0.276	5.921	0.000	Supported
Digital Competence → AI Adoption	0.394	8.115	0.000	Supported
Innovation Orientation → AI Adoption	0.338	7.028	0.000	Supported
Data-Driven Culture → AI Adoption	0.291	6.411	0.000	Supported
Change Management → AI Adoption	0.247	5.036	0.000	Supported
AI Adoption → Decision-Making Effectiveness	0.673	11.847	0.000	Supported

Interpretation

Digital Competence emerged as the strongest predictor of AI adoption ($\beta = 0.394$), followed by Innovation Orientation ($\beta = 0.338$). AI Adoption significantly influences organizational decision-making effectiveness ($\beta = 0.673$), confirming its mediating role. Mediation Analysis

Major Findings

1. Digital Competence emerged as the most influential dimension of digital leadership.
2. Organizations exhibiting stronger innovation orientation demonstrate higher AI adoption rates.
3. Data-driven culture significantly improves strategic decision quality.
4. Managerial experience significantly influences perceptions of digital leadership effectiveness.
5. Three distinct leadership clusters were identified: Digital Innovators, Emerging Adopters, and Traditional Leaders.
6. SEM analysis confirmed that digital leadership positively influences AI adoption.
7. AI adoption significantly enhances organizational decision-making effectiveness.
8. AI acts as a critical mediating mechanism between digital leadership and organizational performance.
9. Organizations led by digitally mature leaders exhibit greater agility and adaptability.
10. Digital leadership contributes significantly to sustainable competitive advantage.

Suggestions

1. Organizations should invest in continuous digital leadership development programs.
2. AI literacy training should be mandatory for managers at all organizational levels.
3. Leaders should promote a data-driven culture to improve decision quality.
4. Firms should establish dedicated AI governance frameworks.
5. Cross-functional innovation teams should be encouraged to accelerate AI integration.
6. Organizations should develop ethical AI policies to address privacy and transparency concerns.
7. Leadership succession planning should include digital competency assessments.

8. Strategic partnerships with technology providers should be established.
9. Organizations should implement AI readiness assessments before large-scale deployment.
10. Decision-support systems powered by AI should complement rather than replace human judgment.

CONCLUSION

In the era of Artificial Intelligence, digital leadership has become a crucial determinant of organizational success and effective decision-making. The study concludes that digital leadership dimensions, namely technological vision, digital competence, innovation orientation, data-driven culture, and change management capability, significantly influence AI adoption and organizational decision-making effectiveness. The findings reveal that digital competence and innovation orientation are the strongest predictors of successful AI integration, while AI adoption serves as a key mediator between digital leadership and improved decision outcomes. Organizations led by digitally competent leaders are better positioned to leverage AI-driven insights, enhance strategic agility, foster innovation, and achieve sustainable competitive advantage. Therefore, organizations should invest in developing digital leadership capabilities and promoting a data-driven culture to maximize the benefits of AI-enabled decision-making in an increasingly dynamic business environment.

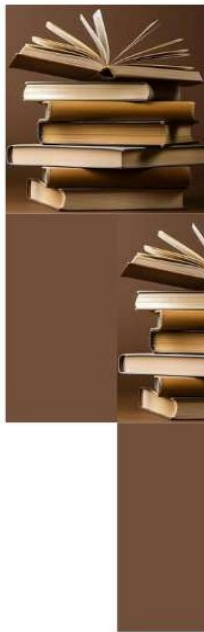
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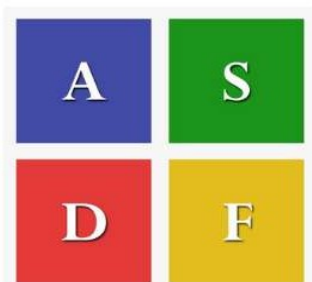


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