National Research Journal of Information Technology & Information Science
Volume No: 12, Issue No: 2, Year: 2025 (July- December)
PP: 105-108
ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS IN STRATEGIC MANAGEMENT

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ABSTRACT

Artificial Intelligence (AI) and Data Analytics (DA) are transforming how organizations design, implement, and monitor strategy. This paper explores their role in enhancing strategic decision-making, competitive advantage, and organizational agility. A survey of 320 managers from IT, manufacturing, and retail organizations in India was conducted to examine how AI-driven analytics capability affects strategic planning quality, innovation, and business performance. Regression and mediation analyses reveal that AI and DA adoption positively influence strategic decision quality and innovation, which in turn drive organizational performance. The study suggests that embedding AI and analytics into strategic management processes is essential for sustaining long-term competitiveness.

Keywords

1. Artificial Intelligence (AI)Data Analytics (DA), Strategic Planning, Quality, Innovation Capability, Decision-Making, Organizational Performance, Competitive Advantage

INTRODUCTION

Rapid advances in AI and data analytics have redefined the business landscape.

Organizations now have access to vast datasets and predictive algorithms that enable faster, evidence-based decisions. Strategic management, which traditionally relied on intuition and historical data, is evolving into a technology-augmented discipline.

However, many firms struggle to operationalize AI and analytics at the strategic level due to skill gaps, cultural resistance, and unclear ROI. This study examines the impact of AI and DA adoption on strategic planning quality, innovation, and performance in Indian organizations.

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OBJECTIVES:

1. To assess the relationship between AI & DA adoption and strategic planning quality.
2. To examine the mediating effects of innovation and decision quality on organizational performance.
3. To propose guidelines for integrating AI and DA into strategic management practices.

LITERATURE REVIEW

Artificial Intelligence encompasses machine learning, natural language processing, and expert systems that enable machines to mimic cognitive functions. Research shows AI can improve forecasting accuracy, automate scenario planning, and support dynamic resource allocation.

Data Analytics refers to techniques for analyzing large data sets to uncover hidden patterns and insights. Predictive and prescriptive analytics allow managers to evaluate alternative strategies and anticipate risks.

The Resource-Based View suggests that AI and DA can become strategic assets when integrated with organizational processes and culture. Studies link analytics capability with agility, innovation, and sustainable competitive advantage.

AI-driven tools enhance decision speed, reduce bias, and provide real-time performance tracking. However, over-reliance on algorithms may reduce managerial judgment, highlighting the need for human–AI collaboration.

METHODOLOGY

Research Design: A quantitative, cross-sectional design was adopted.

Sample:

- Population: Middle and senior managers in Indian IT, manufacturing, and retail firms.
- Sample size: 320 respondents (approx. 110 IT, 105 manufacturing, 105 retail).
- Sampling: Purposive sampling of firms using AI/analytics in their operations.

Instruments:

- AI & Analytics Adoption Scale (extent of AI/DA use in strategy).
- Strategic Planning Quality Scale (clarity, adaptability, data-driven nature).
- Innovation Capability Scale (new products/processes introduced).
- Organizational Performance (self-reported growth, market share, efficiency). Responses recorded on a 5-point Likert scale.

Data Collection: Online questionnaires distributed between April–June 2024. Responses were anonymized.

Analysis Techniques: Descriptive statistics, reliability tests, correlation analysis, multiple regression and mediation, and model fit via Structural Equation Modelling (SEM).

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ANALYSIS

Reliability: Cronbach's α ranged 0.81–0.89.

Correlations: AI/DA adoption strongly correlated with planning quality ($r = 0.54$) and innovation ($r = 0.50$).

Regression: AI/DA significantly predicted strategic planning quality ($\beta = 0.46$, $p < 0.001$) and innovation ($\beta = 0.42$, $p < 0.001$).

Mediation: Innovation and decision quality partially mediated the link between AI/DA and performance.

SEM Fit: CFI = 0.94, RMSEA = 0.06.

RESULTS

1. Direct Impact: AI and DA adoption positively affects strategic planning quality and innovation capacity.
2. Indirect Impact: Decision quality and innovation partially mediate the relationship between AI/DA and organizational performance.
3. Sectoral Insight: Effect strongest in IT ($\beta = 0.48$), moderate in retail, lowest in manufacturing — likely due to data readiness levels.
4. Barriers Identified: Skill shortages, high implementation costs, and resistance to cultural change.

CONCLUSION

AI and data analytics are no longer optional add-ons but core enablers of effective strategy. Organizations that develop analytical capabilities, foster innovation, and align culture with technology adoption are more likely to outperform competitors.

Practical Recommendations:

- Invest in data infrastructure and advanced analytics tools.
- Provide training for managers to combine algorithmic insights with strategic thinking.
- Foster cross-functional teams to implement analytics-driven strategy.
- Build governance frameworks to ensure ethical AI use and data privacy.

Limitations & Future Research:

- Self-reported data may bias results; future work should use objective performance metrics.
- Longitudinal studies needed to track causality over time.
- Explore the role of generative AI and real-time analytics in future strategy formation.

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