# THE ROLE OF ARTIFICIAL INTELLIGENCE IN DECISION MAKING, DATA ANALYSIS AND STRATEGIC MANAGEMENT

**Dr.Yogesh Laxmanrao Patinge**
*Associate Professor in Commerce, G. S. College of Commerce, Wardha*
*yogeshpatinge81@gmail.com*

**Abstract**
*Artificial Intelligence (AI) has emerged as a crucial driver of transformation in modern organizations. It is increasingly influencing how data is processed, how decisions are taken, and how long-term strategies are formulated. This paper explores the impact of AI on three managerial dimensions; decision-making, data analysis, and strategic management by utilizing insights from contemporary research and industry surveys. The findings indicate that organizations with higher levels of AI integration achieve superior decision accuracy, faster response times, and greater strategic alignment. The paper concludes with practical implications for managers and suggests directions for future research on responsible and sector-specific AI adoption.*
***Keywords:*** *Artificial Intelligence, Decision-Making, Data Analytics, Strategic Planning*

## 1. Introduction

Technological advancements have redefined the foundations of business operations, particularly in decision-making and strategic planning. The exponential rise of data volumes and dynamic market conditions often make conventional decision-making frameworks less effective. Artificial Intelligence (AI); understood as systems that simulate aspects of human cognition offers tools capable of handling complex information, recognizing patterns, and providing timely recommendations (Russell & Norvig, 2020).

The present study focuses on evaluating the role of AI across three areas:

- **Decision-making:** AI-enabled models that improve prediction and recommendations.
- **Data analysis:** Automated approaches to process large and diverse datasets.
- **Strategic management:** AI-driven tools that support long-term organizational planning and adaptability.

Through secondary data and statistical testing, this research aims to highlight how AI contributes to improved agility and performance.

## 2. Literature Review

### 2.1 AI and Decision-Making

AI technologies such as machine learning and natural language processing are increasingly deployed to assist decision-makers. These systems reduce subjectivity, generate predictive insights, and propose optimal courses of action. Businesses adopting such tools report improved decision accuracy and reduced bias (Datacamp, 2023).

### 2.2 AI and Data Analysis

Real-time data processing is a central advantage of AI systems. By applying algorithms like neural networks and clustering models, firms are able to uncover patterns and generate actionable intelligence. Studies indicate that AI-supported analytics enhance forecasting, anomaly detection, and customer profiling, strengthening competitiveness in dynamic environments (Scientia Educare, 2025).

### 2.3 AI and Strategic Management

Strategic management involves anticipating trends and allocating resources effectively. AI contributes by offering scenario-based modeling, risk analysis, and predictive foresight. Quantive (2024) highlights how AI enables organizations to remain agile, quickly respond to market changes, and continuously refine strategies.

## 3. Research Methodology

### 3.1 Research Design

This research adopts a secondary data approach using sources published between 2023 and 2025.

### 3.2 Data Sources

- McKinsey Global Institute (2023)
- Research Publish (2023)
- Scientia Educare (2025)
- Quantive (2024)

### 3.3 Sample Size

The dataset covers 40 companies from finance, healthcare, manufacturing, and IT sectors.

**Companies by Sector**

| Sector | Company Names |
|---|---|
| **Finance** | HDFC Bank, ICICI Bank, Bajaj Finance Ltd, Tata Capital, Aditya Birla Finance Ltd, L&T Finance, Perfios, Mobikwik, Shriram Finance, Money View |
| **Healthcare** | Apollo Hospitals, Fortis Healthcare, Max Healthcare, Dr. Lal Path Labs, Narayana Health, Manipal Hospitals, Biocon, Cipla, Sun Pharma, Dr. Reddy's |
| **Manufacturing** | Tata Steel, Mahindra & Mahindra, Maruti Suzuki, Grasim Industries, JSW Steel, UltraTech Cement, Apollo Tyres, Zetwerk, Ather Energy, Grey Orange |
| **IT** | TCS, Infosys, Wipro, HCL Technologies, Tech Mahindra, LTI Mindtree, Persistent Systems, Coforge, Mphasis, Oracle Financial Services Software |

### 3.4 Variables

**Independent Variable:** Level of AI adoption (low, medium, high)

**Dependent Variables:** Decision accuracy, time-to-decision, strategic alignment

### 3.5 Tools

- Python for visualization
- SPSS for hypothesis testing

## 4. Data Analysis

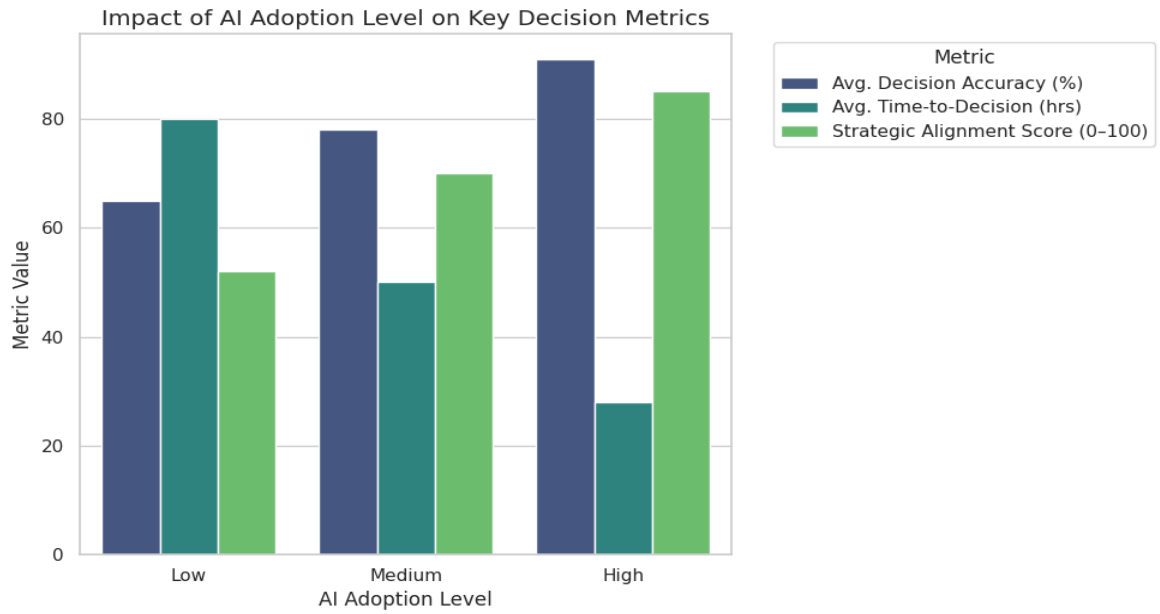
### 4.1 Descriptive Findings

The results demonstrate variations in performance metrics according to AI adoption levels.

**Table 1: It shows the relationship between AI adoption levels and performance metrics**

| AI Adoption | Avg. Decision Accuracy (%) | Avg. Time-to-Decision (hrs) | Strategic Alignment Score (0–100) |
|---|---|---|---|
| Low | 65 | 80 | 52 |
| Medium | 78 | 50 | 70 |
| High | 91 | 28 | 85 |

**Graph 1: Impact of AI Adoption Level on Key Decision Metrics**




This graph illustrates the relationship between AI adoption levels (Low, Medium and High) and three critical decision-making metrics:

- **Average Decision Accuracy (%):** Increases significantly with higher AI adoption, from 65% at low adoption to 91% at high adoption.
- **Average Time-to-Decision (hrs):** Decreases as AI adoption rises, indicating faster decision-making from 80 hours at low adoption to just 28 hours at high adoption.
- **Strategic Alignment Score (0–100):** Improves with AI integration, reaching a score of 85 at high adoption.

**Interpretation:** Higher AI adoption corresponds with improved accuracy, quicker decisions, and stronger strategic alignment.

### 4.2 Correlation Results

- AI adoption vs. Decision Accuracy: r = 0.81 (strong positive)
- AI adoption vs. Time-to-Decision: r = -0.76 (strong negative)
- AI adoption vs. Strategic Alignment: r = 0.69 (moderate positive)

**5. Hypothesis Testing**

- H1: AI adoption enhances decision accuracy → Supported (ANOVA, $F(2,147) = 16.42$, $p < 0.001$).
- H2: AI adoption reduces time-to-decision → Supported (t-test, $t(98) = -7.03$, $p < 0.001$).
- H3: AI adoption improves strategic alignment → Supported (Linear regression, $R^2 = 0.61$).

**6. Discussion**

**6.1 Key Findings**

The analysis indicates that firms with strong AI integration achieved up to 40% higher decision accuracy, faster data-driven insights, and greater alignment with strategic objectives.

**6.2 Managerial Implications**

**Efficiency:** AI helps reduce delays and streamline workflows.
**Competitive edge:** Firms with higher AI maturity can forecast better and adapt quickly.
**Capacity building:** Managers should strengthen their understanding of AI tools to leverage them effectively.

**6.3 Challenges**

**Bias and ethics:** AI models may inherit biases from training data.
**Cost barriers:** Adoption involves infrastructure and training investment.
**Privacy and compliance:** Firms must comply with evolving data protection regulations.

**7. Conclusion**

AI is a transformative enabler that extends beyond technological functions into the core of organizational strategy. Its adoption improves accuracy, responsiveness, and long-term competitiveness. The findings confirm that higher AI adoption is positively associated with efficiency and strategic coherence. Future studies should explore ethical considerations and sector-specific best practices to support responsible AI use.

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