

## AI in Decision Making: Transforming Business Strategies

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### Abstract

Artificial intelligence has developed as a phenomenon greatly influencing numerous corporate sectors, particularly in decision-making processes. AI has matured into an intrusive instrument, impacting various corporate sectors, including their essential processes like decision-making. Ongoing improvements in AI technology have assisted organizations in optimizing their operations and strategic development. This research analyzes the function of AI in decision-making and its consequent impact on the enhancement of corporate strategy. A complete literature review was done for this inquiry. This article tries to evaluate the repercussions of AI across multiple sectors and its influence on business environments. It provides cases of AI application across different sectors and a critical critique of the present literature on AI within the business setting. It also discusses the challenges a corporation may face when integrating AI technology and evaluates probable developments that influence AI in business planning. Artificial intelligence positively benefits the business sector by boosting organizational decision-making capacities, leading to superior corporate decisions. The analysis points out a number of areas where AI has considerably enhanced efficiency as well as performance measures. The fundamental constraint of the study is that the deployment of AI is dynamic, with differing development rates across different industries. Additionally, there are additional limits such as data privacy and ethical difficulties and considerable expenses associated to using AI. The study stresses the relevance of AI in current management and proposes that firms should implement AI solutions to generate a competitive advantage. Managers and decision makers should consider the opportunities for employing AI and the diversity of possible difficulties that may occur. The provided study is valuable since it focuses on furthering our awareness of the true nature of threats and opportunities connected with AI, as well as reviewing the influence of this technology on numerous professions. This research adds to the achievements in understanding AI in organizational strategy and gives knowledge that is beneficial for academics and practicing managers.

### Keywords

Artificial Intelligence, Business operations, AI integration, strategic planning, AI-driven decision making.

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## INTRODUCTION

A new era of decision-making within business environments has been brought about by the exponential increase of digital data and the advancements in Artificial Intelligence (AI) technology in recent years.

This introduction examines how AI has a significant impact on organizational strategy and shows how AI-powered solutions are now essential to running a modern corporation.

Businesses may now take on complicated challenges, seize new opportunities, and accomplish strategic goals with previously unheard-of efficiency and effectiveness thanks to the integration of AI. Artificial Intelligence (AI) is a game-changer in business strategy, enabling large-scale, fast, data-driven decision-making. Organizations can quickly evaluate enormous volumes of data, get insights that can be put into practice, and make decisions that advance their strategic objectives by utilizing AI.

It's clear from looking at different industry sectors how important AI is to changing the way the old paradigms of strategic management operate. Companies can adjust to changing market conditions, streamline processes, and preserve a competitive advantage thanks to AI's ability to collect and analyze data in real time. The significance of artificial intelligence (AI) in transforming decision-making procedures is emphasized in this introduction, along with its influence on modern corporate procedures.

This debate offers a thorough grasp of how AI-powered solutions are altering traditional methods to strategic management by analyzing AI's impact on organizational strategy. The knowledge gathered from this investigation shows how revolutionary artificial intelligence (AI) may be in improving decision-making skills and propelling corporate performance in the contemporary day.

Muhammad, B. (2023) highlights this revolutionary change, describing how AI's capabilities are changing conventional management approaches as well as establishing new benchmarks for productivity and efficacy in business decision-making.

## OBJECTIVES OF THE STUDY

The main objective of this study is to investigate how AI technologies affect business decision-making. However, there are some specific objectives-

1. To investigate the uses of artificial intelligence in enhancing business plans in several functional domains.
2. Examine the advantages, difficulties, and prospects of using AI in corporate decision-making.
3. To give executives of companies looking to use AI for strategic benefit practical knowledge and suggestions.

## LITERATURE REVIEW

The literature on AI in decision-making comprises detailed studies and debates of numerous perspectives addressing the deployment and effects of AI technology across many industries. AI's expanding influence is seen in its role in enhancing organizational performance, notably in decision-making processes, where it brings considerable benefits. According to Johnson (2022), AI acts as a crucial managerial tool for strengthening organizational management and business operations.

Specifically, in decision-making, AI has become a vital asset, enhancing performance through its capacity to handle enormous volumes of data rapidly and deliver real-time insights. These skills allow firms to make more educated, data-driven decisions, ultimately enhancing overall operational efficiency and strategy execution.

Chui and Manyika (2018) dive into the evolutionary path of AI adoption, noting the progress made and the hurdles that still hamper its full-scale application. They explain how industries have embraced AI to varied extents, focusing on overcoming technological, infrastructural, and regulatory challenges.

Despite its potential, AI has yet to fully overcome the pre-conditional obstacles that are necessary for widespread, seamless deployment. These problems include concerns such as data quality, interaction with legacy systems, and the requirement for specialist AI personnel within enterprises.

In their foundational book, Davenport and Ronanki (2018) outline major practical domains where AI is transforming corporate processes. They emphasize how AI may disrupt sectors by allowing real-time

analytics and automation, leading to faster, more accurate decision-making. AI is increasingly being utilized to improve operations, automate routine jobs, and provide deeper insights into customer habits and market trends. This move helps organizations to function more efficiently and gain a competitive edge by exploiting AI's capacity to evaluate massive datasets quickly.

Smith (2023) analyzes the ethical dimensions of AI, investigating both the benefits and the potential problems that accompany its integration into decision-making processes. While AI offers various advantages, such as better efficiency and improved decision accuracy, Smith warns of possible drawbacks, including data privacy problems and algorithmic prejudice.

These ethical considerations are crucial, as the use of AI in decision-making typically involves sensitive data and might lead to unforeseen effects if not properly managed. For example, algorithmic discrimination can occur when AI systems, unintentionally or otherwise, prefer certain groups over others based on biased data inputs.

Zhang (2022) discusses another significant use of AI in supply chain management. AI technologies, particularly predictive analytics, are being used to optimize demand forecasting and inventory management. By examining previous data and market trends, AI systems may estimate future demand more precisely, helping firms to prevent overstocking or under stocking. This application of AI not only improves productivity but also decreases costs and boosts customer satisfaction by ensuring that products are available when needed.

In conclusion, the research demonstrates that AI is playing an increasingly crucial role in decision-making across industries. From increasing organizational management and operational efficiency to resolving ethical concerns and revolutionizing supply chain management, AI's influence is both broad and profound. However, its full potential has yet to be realized because to continuous obstacles relating to deployment, data management, and ethical considerations. As AI continues to evolve, overcoming these difficulties will be important to unlocking its powers in decision-making and beyond.

## METHODOLOGY

An exhaustive literature analysis was first done to gather essential material from existing research and reports on AI technology, their applications, and their influence on organizational strategies. Key academic sources, such as the works by Chui & Manyika (2018) and Davenport & Ronanki (2018), provided useful insights into the trends, problems, and advancements in industries implementing AI solutions. These articles examined how AI is revolutionizing several sectors, showing both the potential opportunities and the hurdles organizations have in integrating AI into their operations (Chui & Manyika, 2018; Davenport & Ronanki, 2018).

The breadth of this investigation included numerous industries, including but not limited to retail, healthcare, banking, and manufacturing. These areas were deliberately picked to showcase a broad spectrum of AI use cases, highlighting its diverse uses across different business environments.

In particular, case studies were included to illustrate how AI is actively being deployed in real-world scenarios, with specific examples that demonstrate both the advantages and limitations of AI technology in developed economies. These case studies not only offered a clear understanding of AI's influence but also helped to evaluate its efficiency, cost-effectiveness, and adaptability in diverse industries.

Data for the case analysis was rigorously collected from a combination of reputable sources, such as company records, papers published in professional publications, and comments from subject-matter experts in the AI field. Contributions from notable experts, such as Johnson (2022) and Marr (2020), significantly extended the analysis by presenting contemporary perspectives on AI's function in modern enterprises,

thereby allowing for a more thorough understanding of how AI is transforming organizational strategies across industries.

## MAJOR FINDINGS

### ***Machine Learning Algorithms***

Computers may now learn from data and make predictions or judgments without explicit programming thanks to machine learning (ML) approaches (Smith, L., 2023). This technology supports a wide range of applications involving artificial intelligence, such as:

1. Building models for classification or regression tasks using labeled data under supervision.
2. Unsupervised Pattern and structure identification in data without annotated examples.
3. Reward Learning educates robots to interact with their surroundings and, through trial and error, learn the best behaviors.

### ***Natural Language Processing (NLP)***

NLP makes human language understandable, interpretable, and generated by computers. Crucially important is this technology in

1. Analysis of texts Textual data insights extraction techniques, such as topic modeling or sentiment analysis.
2. Dictionary Translation High-precision text translation from one language to another.
3. Chatbots and virtual assistants are natural language interfaces for user interaction. (Zhang, Y., 2022)

### ***Predictive Analytics***

Using machine learning and statistical methods, predictive analytics projects future results from past data. This technology helps with-

1. Demand Forecasting Estimating customer demand to maximize inventory control. Assessing Risk assessing creditworthiness or spotting possible fraud using predictive models. (T. H. Davenport & R. Ronanki , 2018)
2. Market Trend Study predicting market trends to guide strategic choice-making.

### ***Reinforcement Learning***

Reinforcement Learning (RL) enables autonomous agents to learn optimal behavior through interactions with an environment. Key applications include

1. Autonomous Systems Training robots or self-driving vehicles to navigate complex environments.
2. Game Playing: Mastering complex games like chess or go through trial and error. (Brynjolfsson, E., & McAfee, A., 2017)
3. Resource Management Optimizing energy usage or traffic flow in dynamic settings.

### ***Autonomous Decision-Making Systems***

Autonomous Decision-Making Systems employ AI technologies to make judgments independently, frequently in real-time circumstances. These mechanisms are critical for:

1. Automated Trading Executing buy/sell orders in financial markets based on predefined strategies.
2. Healthcare Diagnostics Assisting physicians in diagnosing diseases and recommending treatments.
3. Smart Cities Managing urban infrastructure and services to enhance efficiency and sustainability. (Marr, B., 2020)

## APPLICATIONS OF AI IN BUSINESS DECISION-MAKING

Because artificial intelligence (AI) uses sophisticated algorithms to evaluate enormous volumes of data and extract valuable insights, it is transforming business decision-making across many functional domains (Chui, M., & Manyika, J., 2018). The following parts cover the application of AI in important corporate activities to enhance decision-making in detail.

### *Marketing and Customer Insights*

AI-powered technologies are essential to contemporary marketing plans since they let companies examine consumer preferences, behavior, and feelings for customized initiatives. A few uses consist of Marketing that is-

1. Tailored AI systems examine consumer data to produce offers, adverts, and suggestions customized to each person's tastes. (Ghosh, S., 2021). Customer Segmentation Customers are grouped using AI clustering algorithms according to shared characteristics, which allows for more focused marketing efforts and higher consumer involvement.
2. Examining Sentiment Artificial intelligence programs assess customer comments, reviews, and social media posts to determine mood and modify marketing plans as needed.
3. Predictive Analytics AI-driven models analyze consumer behavior, allowing companies to foresee market trends and maximize marketing initiatives.

### *Supply Chain Management*

Making better decisions (Chen, H., Chiang, R. H. L., & Storey, V. C., 2012). Significant uses consist of-

1. Demand forecasting AI algorithms examine past data, market trends, and outside variables to forecast demand precisely. This optimizes inventory control and lowers stockouts.
2. Optimal Logistics AI reduces expenses and streamlines supply chain operations by optimizing warehouse operations, inventory replenishment schedules, and transportation routes.
3. Supplier management AI examines market dynamics and supplier performance data to identify risks, negotiate contracts, and maximize supplier relationships.
4. Predictive Maintenance AI-enabled models plan preventative maintenance and predict equipment breakdowns, reducing downtime and maximizing asset use.

### *Financial Analysis and Risk Assessment*

AI algorithms enhance financial decision-making by offering real-time insights, risk assessments, and predictive analytics to support informed decisions. Key applications include

1. **Algorithmic Trading:** AI-driven algorithms execute trades based on market trends, news sentiment, and historical data patterns to optimize investment strategies. (Domingos, P., 2015)
2. **Fraud Detection:** AI analyzes transaction patterns, customer behavior, and external data to detect anomalies and prevent fraud.
3. **Credit Scoring:** By examining credit history, transaction data, and alternative sources of information, credit scoring artificial intelligence models assess creditworthiness and hence enable more accurate risk evaluations.
4. **Regulatory Compliance:** AI automates compliance monitoring, identifies regulatory risks, and ensures financial regulations and standards adherence.

### *Human Resource Management*

1. **Recruitment and Talent Acquisition:** AI-powered tools automate candidate screening, analyze resumes, and predict candidate suitability based on skills and cultural fit.
2. **Employee Engagement:** Sentiment analysis technologies driven by artificial intelligence track employee contentment, spot any problems, and suggest fixes to strengthen corporate culture.

3. **Training and Development:** AI-enabled personalized learning platforms deliver customized training content based on individual learning styles and performance data.
4. **Performance Management:** AI systems examine performance indicators, spot trends, and offer actionable insights for staff retention and performance enhancement. (Dhar, V., 2020)

### ***Product Development and Innovation***

AI accelerates product development and innovation by facilitating data-driven decision-making, optimizing design processes, and fostering creativity in product ideation. Key applications include

1. **Market Research and Product Ideation:** AI analyzes market trends, consumer preferences, and competitor data to generate product ideas and validate concepts.
2. **Design Optimization:** AI-driven generative design tools create innovative product designs based on functional requirements and performance criteria. (Bostrom, N., 2014)
3. **Quality Control and Testing:** AI automates quality assurance processes, detects defects, and optimizes product testing to ensure high-quality standards.
4. **Innovation Management:** AI-powered innovation platforms streamline collaboration, facilitate idea generation, and prioritize R&D projects based on market potential and strategic objectives.

### ***Advantages of decisions driven by artificial intelligence***

Because artificial intelligence (AI) gives so many advantages through advanced decision-making capabilities, it is radically transforming company strategy (Agrawal, A., Gans, J., & Goldfarb, A., 2018). Companies can reach previously unheard-of accuracy, efficiency, and client delight when AI technologies are used in multiple business processes. The primary benefits of using AI to business strategy are addressed in this section.

**Greater Precision and Effectiveness** Decision-making systems driven by artificial intelligence are good at precisely evaluating vast volumes of data, which considerably lowers the margin of error over conventional human-led approaches. Analyzing past trends and present data, machine learning algorithms can swiftly and precisely provide well-informed decisions (Kaplan, J., 2016). This higher accuracy lowers costly mistakes and simplifies processes, which boosts organizational efficiency.

**Make Decisions in Real-Time** the capacity of AI to help real-time decision-making is among its most significant advantages in corporate strategies. By constantly evaluating data streams, AI systems may discover trends and problems fast to deliver insights promptly. Essential is this talent in fast-paced sectors like banking, where swift choices directly affect risk management and profitability.

**Better Customer Service** Decisions generated by AI assist firms to efficiently estimate requests and personalize consumer interactions. AI algorithms can recommend specialized items or services, improve pricing schemes, and provide proactive customer service by evaluating user behavior and preferences. Customer pleasure is raised, brand loyalty is developed, and finally, revenue growth is generated by this tailored strategy.

**Cost Savings and Resource Allocation** AI apps help save large money by automating repetitive operations and allocating resources as best they can. Predictive maintenance powered by AI, for example, can prevent equipment faults, cutting downtime and repair expenses (LeCun, Y., Bengio, Y., & Hinton, G., 2015). AI algorithms in supply chain management maximize logistics and inventory levels while lowering waste and operational costs.

**Data-driven Perspectives and Prognostics** Businesses may make well-informed strategic decisions because of AI technology's extraordinary capacity to extract meaningful information from massive datasets.

A subfield of artificial intelligence called predictive analytics uses historical data to forecast future patterns, allowing organizations to foresee changes in the market, spot prospects, and avoid risks. These

data-driven insights give a competitive advantage in fast-changing marketplaces and boost strategic planning.

Range and Modularity Systems of AI-driven decision-making are scalable and versatile enough to fit into many commercial situations. Artificial intelligence (AI) solutions can be used by enterprises in a range of departments, from operations and human resources to marketing and sales (Silver D. et al., 2016). This scalability means that firms may expand and change with the market while being operationally effective.

## CHALLENGES IN AI IMPLEMENTATION

### *Data Quality and Availability*

AI systems learn and make decisions primarily on data. Depending on data availability and quality, AI models can function and be accurate exceptionally. Important obstacles include-

1. **Data Silos:** Data kept by organizations in many different systems is hard to access and combine for thorough analysis.
2. **Data Quality:** The quality of the Data Decisions could have been better, and complete, consistent, or correct data might have resulted.
3. **Data Privacy and Security:** Information Security and Privacy: Data privacy and security must be guaranteed, particularly when dealing with confidential client information. Compliance with data protection laws adds yet another level of complication. (Paschen, J., Wilson, M., & Ferreira, J. J. (2020)

### *Technical Complexity and Expertise*

Putting AI technology into practice might be difficult for many businesses because it requires specific technical knowledge and infrastructure. Principal obstacles consist of:

1. **Skill shortages:** Building and maintaining AI systems is challenging due to the dearth of qualified experts in data science, machine learning, and artificial intelligence.
2. **Technical Base:** The development and implementation of AI solutions require a robust technological infrastructure that includes high-performance computing resources and scalable data storage alternatives.
3. **Linking with Backend Systems:** Complex and time-consuming, integrating AI technology with current legacy systems frequently calls for significant upgrades or changes. (Kaplan, J., 2016)

### *Ethical and Regulatory Concerns*

Applications of AI bring up significant ethical and regulatory issues that businesses must deal with to guarantee responsible and legal technology use. Significant obstacles consist of -

1. Fairness and bias unintentionally, prejudices found in training data might be perpetuated by AI models, producing unfair or discriminating results. AI decision-making must be transparent and equitable.
2. Accountability and openness: Building trust and compliance requires determining responsibility for AI decisions and guaranteeing openness in the way AI models reach conclusions.
3. Compliant Regulation Organizations face enormous obstacles when navigating the intricate terrain of AI-related laws and standards, which differ between countries and industries. (Domingos, P., 2015)

## ***Change Management and Organizational Culture***

AI implementation done right calls for a cultural change and support from many internal stakeholders. The main obstacles consist of the following-

1. **Change Resistance:** Fear of losing their jobs or ignorance of the advantages of AI may cause employees to oppose the adoption of AI technologies. (Dhar, V., 2020)
2. **Training and Up skilling:** Companies must invest in up skilling and training staff members so they can collaborate with AI systems and adjust to new processes.
3. **Support for Leadership:** Overcoming opposition and promoting an innovative culture needs a clear vision for AI integration and strong leadership support.

## ***Cost and Resource Constraints***

Implementing AI technologies can be resource-intensive, posing financial and logistical challenges for organizations. Key challenges include

1. **Initial Investment:** First Investment Creating and implementing AI solutions calls for large upfront technological, infrastructure, and talent acquisition investments..
2. **Ongoing Maintenance:** Continual maintenance to guarantee best performance and relevance, artificial intelligence systems must be constantly monitored, maintained, and upgraded.
3. **Return on Investment (ROI):** ROI—return on investment showing the return on investment of artificial intelligence projects can be difficult, particularly in the early phases of deployment and makes it difficult to get continuous support and finance. (LeCun, Y., Bengio, Y., & Hinton, G., 2015)

## **CASE STUDIES**

### ***Case Study 1 Retail - Amazon's Recommendation Engine***

Background information: Amazon, a leader in e-commerce worldwide, wanted to improve the shopping experience and increase sales by offering customized product recommendations.

Amazon built a highly developed machine learning-based recommendation engine using AI to examine surfing trends, purchase history, and user behavior.

The AI-driven recommendation engine has enhanced customer engagement and sales; personalized recommendations now make up a sizable percentage of Amazon's revenue.

### ***Case Study 2 Healthcare - IBM Watson for Oncology***

Information about the background IBM Watson for Oncology was developed to provide doctors with evidence-based therapy recommendations for cancer diagnosis and treatment.

With machine learning and natural language processing, Watson for Oncology analyzes a ton of medical literature, clinical trial data, and patient records.

Findings The AI system has significantly improved patient outcomes and optimized treatment regimens by providing perceptive information and alternative therapies. AI has demonstrated promise to revolutionize healthcare decision-making through its integration in oncology. By significantly boosting the abilities of medical staff, the growth and development of AI technology in oncology will eventually improve patient care.

### ***Case Study 3 Finance - JPMorgan Chase's COiN Platform***

In order to increase productivity and save operating expenses, JPMorgan Chase sought to automate and speed the analysis of intricate legal documents.



Using machine learning and natural language processing, the COiN (Contract Intelligence) platform analyzes and extracts important information from legal documents.

The time needed to review papers has been drastically cut down from thousands of hours to seconds thanks to the COiN platform. Significant cost reductions and increased organizational operational efficiency have resulted from this AI-driven automation.

### ***Case Study 4 Manufacturing - General Electric's Predix Platform***

1. General Electric (GE) sought to optimize asset performance and maintenance in industrial manufacturing environments.
2. GE developed the Predix platform, an industrial Internet of Things (IoT) solution powered by AI and predictive analytics, to monitor and analyze real-time equipment performance. (Agrawal, A., Gans, J., & Goldfarb, A., 2018)
3. The Predix platform has enabled GE to implement predictive maintenance strategies, reducing equipment downtime and maintenance costs. The AI-driven insights have improved operational efficiency and asset utilization across GE's manufacturing operations.

## **FUTURE TRENDS IN AI-DRIVEN DECISION MAKING**

As AI technologies evolve, their impact on business decision-making will deepen, driving innovation and transformation across various industries. This section explores critical future trends that will shape the integration of AI in business strategies-

### ***Explainable AI (XAI)***

Decision-making in AI systems needs to be more transparent and interpretable as they get more complicated. Explainable AI (XAI) seeks to improve the transparency and trustworthiness of AI models by elucidating the decision-making process. This tendency will increase stakeholder trust, ease regulatory compliance, and improve accountability. (Russell, S., & Norvig, P., 2020)

### ***AI Ethics and Governance***

As businesses work to guarantee justice, responsibility, and openness in AI-driven decision-making, the ethical use of AI is growing in significance. Future developments will center on building robust AI ethics frameworks and governance systems to handle problems like prejudice, discrimination, and privacy. Businesses will prioritize ethical AI methods to reduce risks and increase public trust. (Chen, H., Chiang, R. H. L., & Storey, V. C., 2012) The objective is to guarantee AI technologies' just, open, and responsible development and application.

### ***AI and Human Augmentation***

Artificial intelligence (AI) in corporate strategy will entail a mutually beneficial partnership between AI systems and human decision-makers. By automating repetitive processes, facilitating difficult decision-making, and delivering data-driven insights, artificial intelligence will enhance human skills. This trend will highlight how crucial it is for humans and AI to work together, with AI serving as a useful tool to improve human expertise and judgment. (S. Ghosh, 2021)

### ***Edge AI***

Increasing real-time decision-making skills and lowering reliance on cloud computing require edge AI to be integrated with Internet of Things devices. As a result, there is huge potential for innovation and progress in many sectors, opening the door to a more intelligent and linked future.

### ***AI-Driven Personalization***

Hyper-personalization, in which AI algorithms provide highly customized experiences to individual clients, will be the hallmark of AI's future use in business strategy (Vasant Dhar, 2020). Businesses will

be able to more accurately identify and predict customer wants thanks to advanced machine learning techniques like deep learning and reinforcement learning, which will increase customer satisfaction and loyalty.

## ***Quantum Computing and AI***

Quantum computers have the potential to drastically change artificial intelligence since they can evaluate massive amounts of data at previously unheard-of speeds. With the advancement of quantum computing technology, AI-driven decision-making will have more opportunities, ranging from solving intractable problems in healthcare and finance to optimizing complex supply chain networks (Wilson, M., J. J. Ferreira, & J. Paschen, 2020).

## **CONCLUSION**

Artificial intelligence (AI) is poised to revolutionize corporate decision-making with its unparalleled data analysis, predictive modeling, and automation capabilities. To emphasize the significant advantages and difficulties of implementing AI, this research paper has investigated the many uses of AI in optimizing business strategies across several functional areas. Organizations must negotiate ethical, technological, and cultural issues as AI technologies develop to utilize AI-driven decision-making fully. In a world growing more dynamic and data-driven, companies may profit from increased efficiency, customer happiness, and competitive advantage by using AI as a strategic enabler.

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