
ENHANCING DECISION- MAKING: HOW AI ELEVATES OUR CHOICES

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ABSTRACT:

Artificial Intelligence (AI) has emerged as a transformative force in the realm of decision-making, revolutionizing the way individuals and organizations make choices. This abstract explores the profound impact of AI in augmenting decision-making processes, elucidating how it empowers us to make smarter and more informed decisions. This article provides a brief overview of the key points discussed in this paper. It highlights the various application of AI in decision making. It also focuses the benefits of AI in terms of improved the skill of decision making. It also mentions the limitation of the study and suggests avenues for future research in the field.

ARTIFICIAL INTELLIGENCE:

Artificial Intelligence, often abbreviated as AI, is a rapidly advancing field of computer science that aims to create machines and software capable of performing tasks that typically require human intelligence. These tasks include learning from experience, reasoning, problem-solving, understanding natural language, recognizing patterns, and making informed decisions.

AI systems are designed to mimic human cognitive functions, and they can be broadly categorized into two main types:

Narrow or Weak AI: This type of AI is designed for a specific task or a narrow set of tasks. It operates under predefined constraints and does not possess general intelligence or the ability to perform tasks outside its designated domain. Examples of narrow AI include virtual personal assistants like Siri and Alexa, as well as recommendation systems used by streaming services and e-commerce platforms.

General or Strong AI: General AI, also known as strong AI or artificial general intelligence (AGI), is a hypothetical form of AI that possesses human-like intelligence and is capable of understanding, learning, and applying knowledge across a wide range of tasks, much like a human being. AGI remains a goal of AI research but has not yet been achieved.

DECISION-MAKING:

Decision making is a fundamental cognitive process that plays a crucial role in various aspects of human life, from everyday choices to complex organizational and strategic decisions. Research papers on decision making delve into the multifaceted nature of this cognitive process, exploring its underlying mechanisms, influencing factors, and real-world applications. This introduction provides an overview of key themes and insights from research papers on decision making.

BENEFITS OF AI IN DECISION MAKING:

Artificial intelligence (AI) can be a powerful tool for improving decision-making in many different ways. Some of the key benefits of using AI for decision-making include:

- **Speed and efficiency:** AI systems can process and analyze large amounts of data in real time, which can help businesses and organizations make decisions much faster than would be possible manually. This can be especially valuable in high-stakes situations where time is of the essence.
- **Accuracy and objectivity:** AI systems can analyze data in a more objective and unbiased way than humans, which can help to reduce errors and improve the overall accuracy of decision-making.
- **Improved insights:** AI systems can identify patterns and trends in data that humans may not be able to see, which can lead to new and innovative insights that can inform decision-making.
- **Scalability:** AI systems can be scaled up or down to meet the needs of any organization, regardless of size. This makes them a viable option for businesses of all sizes.

Here are some specific examples of how AI is being used to improve decision-making in different industries:

- **Healthcare:** AI is being used to develop new diagnostic tools, predict patient outcomes, and personalize treatment plans.
- **Finance:** AI is being used to detect fraud, predict market trends, and make investment decisions.

- **Retail:** AI is being used to personalize product recommendations, optimize supply chains, and predict customer churn.
- **Manufacturing:** AI is being used to improve quality control, reduce waste, and optimize production schedules.

HOW AI MAKES OUR CHOICES SMARTER:

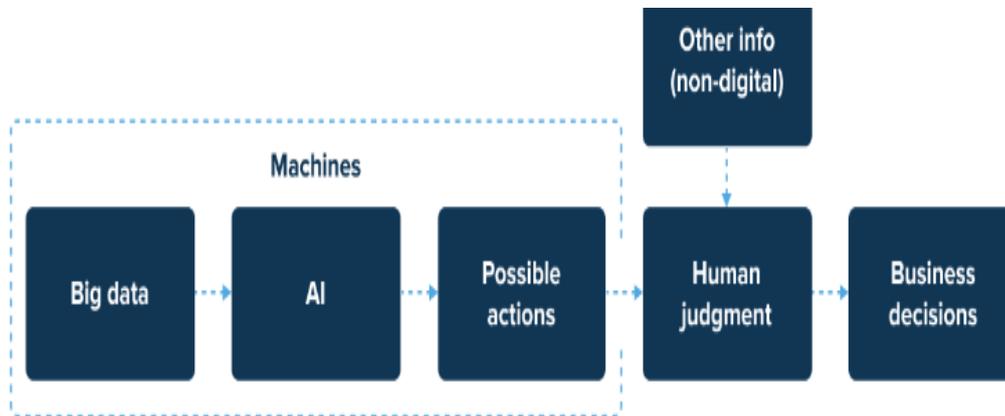


Fig. 1 Flow chart (Source: <https://indatalabs.com/blog/artificial-intelligence-decision-making>.)

In the business industry huge quantity of data are available. It is impossible to deal with whole type of data which are available in the business market but AI make big data analysis simpler by automating & enhancing data preparation. AI represents data in simple language & short in quantity. With the help of AI big data can be converted into possible actions that are related to specific goal of an organization. The possibility of accuracy of human judgment can be high with the help of AI because it concise, clear, correct, concrete & short the data. As we all know that the data work as a fuel for the organization which converted by AI in accurate form with the help of Machine Learning, So the companies can take managerial decision effectively for their future growth.

Overall, AI has the potential to revolutionize decision-making in many different industries and areas of life. By providing faster, more accurate and more insightful decisions, AI can help businesses and organizations to improve their performance and achieve their goals.

Artificial intelligence (AI) plays a significant role in decision making across various fields and industries. It has the potential to enhance decision-making processes by providing valuable insights, automating tasks, and improving overall efficiency.

The integration of Artificial Intelligence (AI) technologies into the decision-making process has heralded a new era in which choices are made with a level of sophistication and efficiency previously unattainable. AI algorithms, powered by machine learning and data

analytics, have emerged as invaluable tools in a myriad of decision-making scenarios, spanning industries from healthcare to finance and beyond. This article offers a comprehensive exploration of AI's transformative role in decision-making, highlighting both its applications and advantages, while also acknowledging the inherent challenges and presenting areas for future research.

Artificial Intelligence (AI) can make our choices smarter by providing us with valuable insights, augmenting our decision-making processes, and helping us make more informed, data-driven decisions. Here's how AI achieves this:

Data Processing: AI systems can quickly process and analyze vast amounts of data from various sources. This enables data-driven decision-making by providing insights that may not be immediately apparent to humans.

Forecasting: AI can predict future trends and outcomes based on historical data. Businesses use predictive analytics to make informed decisions about inventory management, sales forecasting, and more.

Risk Assessment: In finance and insurance, AI models can assess risk factors and determine appropriate actions to minimize risks.

Personalization: AI can customize content and recommendations for individuals based on their preferences and behaviors, enhancing the user experience and improving decision-making.

Automation: AI-driven automation can streamline decision-making processes. In manufacturing, for instance, AI-controlled robots can make real-time decisions on the assembly line to improve efficiency and quality.

Natural Language Processing (NLP): AI-powered chatbots and virtual assistants can provide information and assistance to customers, aiding in decision-making processes, such as choosing a product or service.

Healthcare and Diagnosis: AI can assist healthcare professionals by providing diagnostic insights, analyzing medical images, and recommending treatment options based on vast medical databases.

Finance and Investment: AI-driven algorithms can analyze market data and recommend investment strategies or trading decisions.

Supply Chain Management: AI can optimize supply chains by analyzing real-time data on inventory, demand, and logistics, allowing companies to make more efficient decisions about production and distribution.

Customer Service: AI-powered customer service tools can assist in decision-making by providing immediate responses to common inquiries, resolving issues, and routing complex cases to human agents.

Security: AI systems can detect and respond to security threats in real-time, helping organizations make quick decisions to protect their data and systems.

Policy and Governance: AI can assist policymakers by analyzing data and making recommendations for evidence-based decisions on various issues, from urban planning to healthcare policy.

Environmental and Climate Modeling: AI models can process large datasets to make predictions about climate change and help policymakers and researchers make informed decisions regarding environmental conservation and adaptation.

Human Resources: AI can assist in talent acquisition and workforce management by analyzing resumes, predicting employee turnover, and recommending training and development opportunities.

Personal Assistants: Virtual personal assistants like Siri, Alexa, and Google Assistant can help users make decisions ranging from setting reminders and managing schedules to finding information online.

Research and Development: AI-driven simulations and data analysis can aid researchers in fields like pharmaceuticals, materials science, and astrophysics to make informed decisions about experiments and studies.

It's essential to note that while AI can enhance decision-making, it is not a panacea. Ethical considerations, data quality, transparency, and the potential for bias in AI systems must be carefully managed. Additionally, human oversight is often necessary to ensure that AI-driven decisions align with an organization's goals and values.

AN OVERVIEW OF USING AI FOR DECISION MAKING:

Use of the AI for decision making has been one of the most crucial applications in AI history. The roles of AI are classified in different ways. AI system used to support the human decision makers or replace them (Edward, Duan & Robins, 2000). AI system plays a crucial role for decision-making, eg: expert system for decision-making is also discussed depends on the decisions structure that is named by (Simon, 1987) as such: structure, semi-structure & unstructured decision. (Edward et.al.,2000) held an analysis of expert system for making business decision at variety of levels & various roles based on experiments carried out two decades ago. The role of AI is determined by three organizational decision making levels.

Findings of these study show that: (1) for operational & tactical decision levels expert system plays an effective role but not possible for the strategic levels. (2) To make good decision at all three levels, expert system plays a supportive role but effectiveness can only be fulfilled by their users. (Davenport, 2018) inspected 152 AI deployment projects which are making use of AI based-system cover a large range of business functions. In findings of Davenport classified AI system application into three categories: (1) Cognitive process automation (2) Cognitive insights (3) Cognitive engagement.0000000000AI enhances Decision Support Systems (DSS) by processing complex data, identifying patterns, and making predictions, which aids in strategic decision-making (Qadiri et al., 2024).

- Organizations leveraging AI can improve operational efficiency and reduce costs by optimizing resource allocation and demand forecasting (Ahuja, 2024).

LIMITATION OF AI IN DECISION MAKING:

- **Lack of common sense.** AI systems are trained on massive datasets of data, but they may not be able to apply common sense reasoning to new situations. This can lead to errors, particularly when dealing with novel or unexpected situations.
- **Bias.** AI systems are only as good as the data they are trained on. If the data is biased, the AI system will also be biased. This can lead to unfair or discriminatory decisions.
- **Lack of transparency.** It can be difficult to understand how AI systems make decisions. This is because AI algorithms are often complex and opaque. This can make it difficult to trust AI systems and to hold them accountable for their decisions.
- **Lack of creativity.** AI systems are good at following rules and procedures, but they are not good at coming up with new ideas or solutions. This limits their ability to make decisions in complex or uncertain environments.
- **Ethical concerns.** AI systems can be used to make decisions that have a significant impact on people's lives. It is important to ensure that AI systems are used in an ethical and responsible manner.

Here are some examples of how the limitations of AI can impact decision making:

- An AI system used to predict loan risk may be biased against certain groups of people, such as minorities or low-income individuals.
- An AI system used to hire employees may be biased against certain types of candidates, such as women or people with disabilities.
- An AI system used to self-drive cars may not be able to make safe decisions in certain weather conditions or traffic scenarios.

- An AI system used to diagnose diseases may not be able to accurately diagnose patients with rare or complex conditions.

SUGGESTIONS:

Despite its limitations, AI has the potential to revolutionize decision making in many different industries. As AI technology continues to develop, it is important to be aware of these limitations and to take steps to mitigate them.

Improving AI is an ongoing and multifaceted endeavor, involving technological advancements, ethical considerations, and broader societal impacts. Here are some suggestions for improving AI:

Ethical AI Development: Prioritize ethical considerations throughout AI development, including fairness, transparency, accountability, and privacy. Encourage interdisciplinary collaboration between technologists, ethicists, social scientists, and policymakers to address ethical concerns.

Transparency and Explain ability: Develop AI systems that provide clear explanations for their decisions and actions, allowing users to understand and trust AI-driven outcomes.

Data Quality and Bias Mitigation: Ensure that training data is diverse and representative of the population to reduce bias in AI systems. Implement techniques for detecting and mitigating bias in AI algorithms.

Robustness and Security: Enhance AI systems' robustness to adversarial attacks and unexpected inputs. Improve the security of AI systems to prevent unauthorized access and data breaches.

Interoperability: Promote standards and interoperability to enable different AI systems to work together seamlessly.

Continual Learning: Develop AI models that can learn continuously and adapt to changing environments and data.

Energy Efficiency: Focus on reducing the energy consumption of AI training and inference processes to make AI more sustainable.

Human-AI Collaboration: Design AI systems that augment human capabilities and support collaborative decision-making.

Education and Training: Invest in AI education and training programs to ensure that people have the skills to work with AI systems effectively.

Furthermore, this article has underscored the significant benefits of AI in enhancing the skill of decision-making, from its ability to process vast volumes of data rapidly to its capacity for

predictive analysis and pattern recognition. These capabilities enable us to derive valuable insights, optimize strategies, and ultimately make more effective decisions.

CONCLUSION:

Artificial Intelligence (AI) has indeed emerged as a transformative force in the realm of decision-making. This research paper has delved into the profound impact of AI in augmenting our decision-making processes, illustrating how it empowers individuals and organizations to make smarter and more informed choices. It has provided a concise overview of the key points discussed in this paper, shedding light on the diverse applications of AI in decision-making across various domains. While the potential of AI in decision-making is vast, it's essential to acknowledge the limitations and challenges that exist. These include concerns related to ethical considerations, bias, and the need for explainable AI. Moreover, AI should be regarded as a tool to aid, rather than replace, human decision-makers. Looking ahead, the field of AI and decision-making holds promising avenues for future research. This may encompass refining AI algorithms to be more transparent and accountable, exploring novel applications in emerging fields, and further investigating the symbiotic relationship between AI and human decision-makers. By continuing to innovate, address limitations, and promote responsible AI development, we can unlock the full potential of AI as a powerful ally in our ongoing quest for better decision-making processes.

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