ESCP
BUSINESS SCHOOL

IT ALL STARTS HERE

BERLIN | LONDON | MADRID | PARIS | TURIN | WARSAW

B. Business Impact

Strategy and Artificial Intelligence: A double-edged sword for strategic decision-makers

ESCP Impact Paper No.2023-06-EN

Maximilian WEIS
ESCP Business School

ESCP RESEARCH INSTITUTE OF MANAGEMENT (ERIM)

ESCP Impact Paper No.2023-06-EN

Strategy and Artificial Intelligence: A double-edged sword for strategic decision-makers

Maximilian Weis*

ESCP Business School

Abstract

The adoption of AI-based technologies has the potential to transform strategic decision-making in firms. This paper highlights the benefits and challenges of using AI-based technologies in strategic decision-making. While AI may help firms and their executives in making informed and more data-driven choices and free up time and resources for more strategic actions, it can also introduce bias and necessitate the acquisition of new skills and capabilities. To make sure AI is utilized ethically and successfully, the CEO, top executives, and the board of directors all have important parts to play. Effective communication and collaboration across different levels of the organization are critical to ensure that the adoption and implementation of AI-based technologies align with the overall strategy of the firm.

Keywords: Strategy, decision-making, CEO, board of directors, artificial intelligence

* Assistant Professor, ESCP Business School

Strategy and Artificial Intelligence:
A double-edged sword for strategic decision-makers

Introduction

The adoption of artificial intelligence (AI) has gained momentum in recent years, and has affected business strategy profoundly. AI-based technologies have the potential to revolutionize the way strategic decisions are made in firms. This paper addresses the benefits and challenges of using AI-based technologies in strategic decision-making by highlighting the important roles that the CEO and leadership team as well as the board of directors play in ensuring the ethical and successful utilization of AI in firms.

AI-based technologies are computer systems that can mimic human intelligence and reasoning to perform tasks that traditionally require human intervention. These systems rely on a variety of advanced techniques, including machine learning algorithms, deep learning neural networks, and natural language processing to analyze data, recognize patterns, make predictions, and provide recommendations (Tschang and Almirall 2021). The use of AI-based technologies in strategic decision-making is based on the idea that these systems can provide valuable insights and support to top executives and decision-makers, enabling them to make more informed and data-driven decisions. These technologies have the potential to transform the way organizations operate and compete by providing a competitive advantage through increased efficiency, accuracy, and innovation. However, the adoption of AI-based technologies also raises several ethical, legal, and social concerns, such as bias, privacy, and job displacement, which must be addressed to ensure their responsible and sustainable use.

One area in which AI has a profound impact is strategic decision-making (Kretschmer and Khashabi 2020; Iansiti and Lakhani 2020). Traditionally, top executives make strategic decisions based on their knowledge, experience, and intuition. A decision is considered strategic when it has a significant impact on the long-term success or survival of the firm. Strategic decisions involve high-level planning and the consideration of multiple factors, such as market trends, competition, financial resources, and organizational capabilities. In the context of using AI for strategic decision-making, such decisions could include entering new markets, investing in new technologies, or restructuring the organization. AI-based technologies are increasingly used to augment or automate these decisions, allowing firms to make more informed and data-driven choices (Raisch and Krakowski 2021; Tschang and Almirall 2021).

Decision-making types: augmentation versus automation

One of the main differences in decisions made using AI-based technologies lies in the analytical techniques used at various points in the decision-making process and in who ultimately makes the decision. There are three types of AI-based decision-making processes: decision automation, decision augmentation, and decision support.

In *decision automation*, a system makes decisions using prescriptive or predictive analytics. The benefits of decision automation include speed, scalability, and consistency in decision-making. This approach is particularly useful for routine and well-defined decision-making. For instance, Walmart uses predictive analytics to automatically adjust inventory levels and optimize pricing based on factors such as weather, seasonal demand, and competitors'

prices. This allows Walmart to make data-driven decisions that can improve profitability and competitiveness (Repko 2023).

Decision augmentation involves a system recommending a decision or multiple decision alternatives to human decision-makers using prescriptive or predictive analytics. This approach benefits from the synergy between human knowledge and the capability of AI to rapidly analyze high volumes of data and deal with complexity. Decision augmentation is particularly useful when human judgment is required but can be enhanced by data-driven insights. For instance, BlackRock, a global investment management corporation, uses a machine-learning platform to analyze vast amounts of financial data and offer insights to its investment teams. While human analysts make the final decision on whether to invest in a particular asset, the AI system can provide valuable recommendations and help identify trends that might otherwise be missed (Novick et al. 2019).

In *decision support*, human employees make decisions, supported by descriptive, diagnostic, or predictive analytics. The main benefit of decision support is the combined application of data-driven insights and human knowledge, expertise, and common sense, including a 'gut feel' and emotions. This approach is particularly useful when there is a high level of ambiguity or uncertainty in the decision-making process. An example of this is the American multinational conglomerate General Electric (GE) that uses a decision support system called "Digital Twin" to assist executives in making strategic decisions. The system integrates data from various sources, including Internet of Things (IoT) devices, to provide a comprehensive view of GE's operations. The system provides executives with interactive dashboards and visualizations that allow them to explore data and identify trends. For example, GE uses Digital Twin to analyze data from wind turbines to identify performance issues and predict when maintenance is required. This helps GE and its customers to make informed decisions about where to invest resources and how to optimize operations. However, while the system provides data-driven insights, the final decision-making process is still driven by human expertise and judgment. Executives may consider factors such as market conditions, competitive landscape, and the company's overall strategy when making decisions based on the data provided by Digital Twin (Parris 2023).

Benefits and challenges

The benefits of each decision-making process depend on the type of decision and the level of complexity involved (Krakowski, Luger, and Raisch 2022). Decision automation provides speed, scalability, and consistency in decision-making. Decision augmentation benefits from the synergy between human knowledge and AI's capability to rapidly analyze high volumes of data. And decision support combines data-driven insights with human knowledge, expertise, and common sense, including intuition and emotions. Therefore, the best approach depends on the specific decision-making context and the desired outcomes. By assessing and evaluating the appropriate approach, organizations can make better-informed decisions, gain competitive advantage, and achieve their goals more effectively.

While AI-based decision-making processes offer several benefits, there are also significant challenges that must be addressed. One of the main challenges is ensuring the quality and accuracy of the data used to train AI models and make decisions. Biases in the data can lead to biased decisions, perpetuating existing inequalities and discrimination. More importantly, there is a risk of over-reliance on AI-based decision-making, which could lead to a loss of human skills and expertise. Even though methods like machine learning appear to be unconstrained by the rigidity and limitations of human cognition, they are not truly sentient learning and still rely on formal statistical analysis. Additionally, temporal myopia, which describes the circumstance that firms frequently favor short-term fixes over long-

term ones, poses a serious risk to the learning process. This myopia in human decision-making results from the simplicity of defining short-term problems and the rewards of tackling them right away. A lack of routine diversity in AI, and particularly in machine learning, leads to this myopia because these algorithms tend to prefer variants that perform well based on prior data while discarding those that do not. This selection process enhances a firm's efficiency in similar contexts but might hamper its ability to recognize and respond to longer-term issues that may differ from those in the historical data (Balasubramanian, Ye, and Xu 2022). Finally, there is a concern that AI-based decision-making could be used to justify decisions that are unethical or illegal, with the technology being used as a cover for discriminatory or unjust practices. These challenges require careful consideration and management to ensure that AI-based decision-making is used ethically and responsibly.

Implications for CEOs and top executives

As AI-based technologies continue to advance, CEOs must pay attention to the implications of their use for strategic decision-making. While these technologies can provide significant benefits, such as faster decision-making, increased efficiency, and better data-driven insights, they also pose significant challenges, particularly in terms of transparency, accountability, and bias.

One of the key challenges that CEOs and top executives should address is the potential for bias in AI-based decision-making. AI systems are only as unbiased as the data they are trained on; if the data are biased, the decisions made by the AI system will also be biased. This can have significant implications for companies, particularly in areas such as hiring, promotions, and customer service, where bias can lead to discrimination and legal liabilities. To address this challenge, CEOs must ensure that their AI systems are transparent and auditable, and that they are regularly tested for bias and other issues.

Another challenge is the potential for AI-based decision-making to undermine human judgment. While AI systems can provide valuable data-driven insights, they cannot replace the judgment and expertise of human decision-makers. CEOs should ensure that their AI systems are designed to augment human decision-making in strategic questions, rather than replace it, and that they are integrated into the decision-making process in a way that allows human decision-makers to exercise their judgment and expertise.

CEOs should also be aware of the potential unintended consequences of AI-based technologies. For example, AI-based decision-making can lead to unintended outcomes if the decision-making process is not transparent or if the system is not designed to account for all relevant factors. This can lead to decisions that are not in the best interests of the company or its stakeholders, and can result in reputational damage or legal liability. CEOs should ensure that their AI systems are designed with the potential for unintended consequences in mind, and that they are regularly monitored and audited to ensure that they are performing as intended.

In conclusion, these novel technologies have significant implications for strategic decision-making in the upper echelons. Top executives must be aware of these challenges and take steps to address them, such as ensuring that their AI systems are transparent and auditable, designed to augment human decision-making, and monitor for unintended consequences. By doing so, CEOs can harness the power of AI-based technologies to drive better strategic decision-making and improve their companies' competitiveness and profitability.

Implications for boards of directors

Boards of directors play a crucial role in setting the strategic direction of an organization and overseeing its performance. With the increasing use of AI-based technologies in strategic decision-making, boards must stay informed about the opportunities and risks associated with these technologies. Boards should consider the following implications.

First, boards should ensure that the organization has a clear strategy for integrating AI-based technologies into its decision-making processes. This includes setting clear objectives for the use of AI and ensuring that the organization has the necessary talent and resources to implement these technologies effectively.

Second, boards should oversee the ethical use of AI-based technologies, including ensuring that the organization is transparent about the use of AI and that it complies with legal and regulatory requirements. This includes addressing concerns regarding bias, privacy, and security.

Third, boards should ensure that the organization has appropriate governance structures in place to oversee the use of AI-based technologies. This includes ensuring that there is clear accountability for decision-making and that the organization has mechanisms to monitor and evaluate the effectiveness of its AI-based decision-making processes.

Finally, boards should consider the potential impact of AI-based technologies on the organization's workforce and ensure that the organization is prepared to manage any potential workforce changes that may result from the use of AI. This includes considering the potential impact on job roles and skills requirements and developing strategies to upskill and reskill employees as necessary.

Overall, boards can view AI-based technologies as an opportunity to improve decision-making and drive innovation within the organization, but they must also ensure that these technologies are used ethically and responsibly. By overseeing the integration of AI-based technologies into the organization's decision-making processes, boards can help ensure that the organization remains competitive and is well positioned for future success.

Conclusion

The increasing adoption of AI-based technologies has had a significant impact on how strategic decisions are made. While there are numerous benefits in using AI in strategic decision-making, the adoption of these technologies also raises ethical, legal, and social concerns, that must be addressed to ensure their responsible and sustainable use. The type of decision-making process used, whether decision automation, decision augmentation, or decision support, depends on the type of decision and the level of complexity involved. Therefore, the role of the CEO and other top executives, as well as the board of directors is crucial in ensuring a successful utilization of AI in firms, ultimately leading to increased efficiency, accuracy, and innovation in strategic decision-making.

References

Balasubramanian, Natarajan, Yang Ye, and Mingtao Xu. 2022. "Substituting human decision-making with machine learning: Implications for organizational learning." *Academy of Management Review* 47 (3): 448-465.

Iansiti, Marco, and Karim R Lakhani. 2020. "From disruption to collision: The new competitive dynamics." *MIT Sloan Management Review* 61 (3): 34-39.

Krakowski, Sebastian, Johannes Luger, and Sebastian Raisch. fortcoming. "Artificial intelligence and the changing sources of competitive advantage." *Strategic Management Journal*.

Kretschmer, Tobias, and Pooyan Khashabi. 2020. "Digital transformation and organization design: An integrated approach." *California Management Review* 62 (4): 86-104.

Novick, Barbara, D Mayston, S Marcus, R Barry, G Fox, B Betts, S Pasquali, and K Eisenmann. 2019. "Artificial intelligence and machine learning in asset management." *Blackrock*.

Parris, Colin. 2023. "What is a Digital Twin?". GE Digital. https://www.ge.com/digital/blog/what-digital-twin.

Raisch, Sebastian, and Sebastian Krakowski. 2021. "Artificial intelligence and management: The automation–augmentation paradox." *Academy of Management Review* 46 (1): 192-210.

Repko, Melissa 2023. "Walmart chases higher profits powered by warehouse robots and automated claws." *CNBC*, 11.04.2023. https://www.cnbc.com/2023/04/11/walmart-warehouse-automation-powers-higher-profits.html.

Tschang, Feichin Ted, and Esteve Almirall. 2021. "Artificial intelligence as augmenting automation: Implications for employment." *Academy of Management Perspectives* 35 (4): 642-659.

Declaration of the author: This Impact Paper has been written with the help of AI-based technologies i.e. for formulating and paraphrasing purposes. Prompts available upon request.