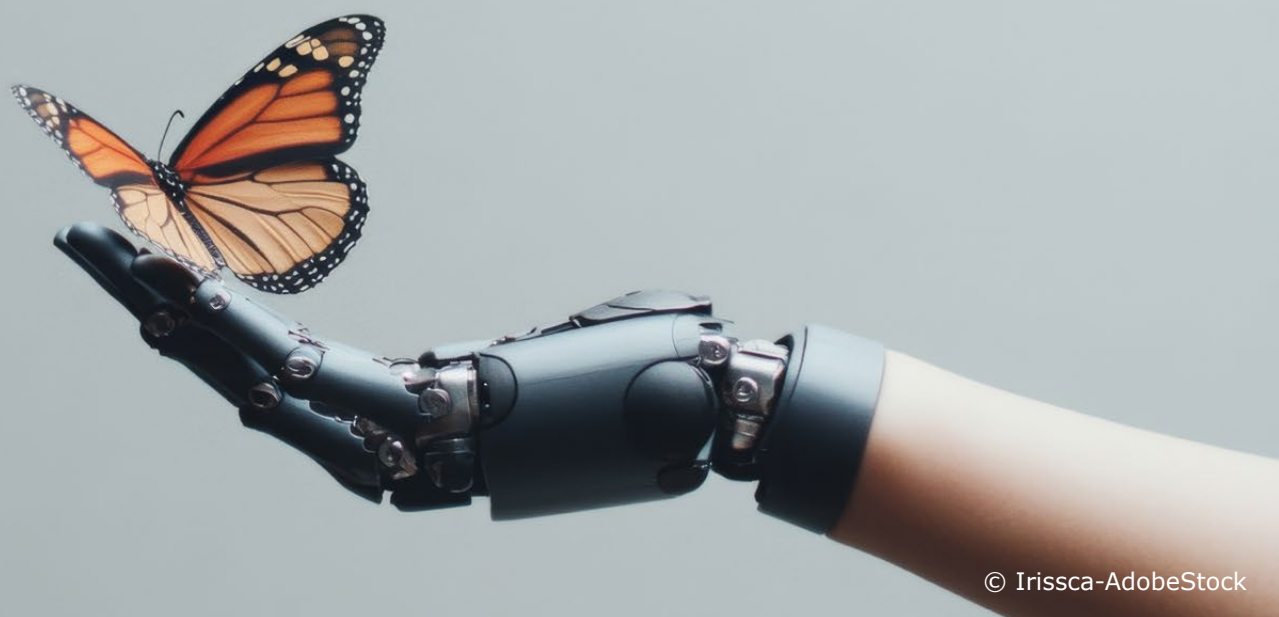




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# The augmented executive: enhancing executive decisions with human-AI collaboration

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David REINECKE - TÜV Nord Group (ESCP Alumnus)  
Maximilian WEIS - ESCP Business School

## **[ The augmented executive: enhancing executive decisions with human-AI collaboration**

David Reinecke\*  
Maximilian Weis\*\*

ESCP Business School

### **Abstract**

Executive decision-making is increasingly challenged by the complexity and uncertainty of today's business environment. At the same time, artificial intelligence (AI) offers powerful capabilities for data analysis, pattern recognition, and predictions that could support executive judgment. Based on interviews with AI experts and executives, this paper explores how AI can complement rather than replace executive cognition. We discuss our findings along three levels of AI involvement. While the promise of AI-augmented decision-making is substantial, our findings highlight persistent barriers, including organizational readiness, trust, and accountability. We propose a three-step process based on practical advice for executives looking to implement AI into their decision-making processes.

**Keywords:** decision-making, artificial intelligence, leadership, human-AI interactions

\*Strategic Assistant, TÜV Nord Group (ESCP Alumnus)

\*\*Assistant Professor, ESCP Business School

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# **The augmented executive: enhancing executive decisions with human-AI collaboration**

## **Introduction**

Executives occupy the apex of organizational decision-making. They are responsible for the company's daily operations and for setting the long-term strategic direction. Strategic decisions, in particular, are often characterized by high uncertainty, significant stakes, and long-term consequences, making them essential for organizational development and survival. Companies can outperform competitors by making better and faster decisions and implementing them more efficiently (McLaughlin, 1995).

For decades, executives have utilized data analytics and information systems to obtain data-based insights to aid their decision-making. While these tools have proven useful in making sense of organizational key figures and their surroundings, the circumstances under which executives make their decisions have become increasingly complex. Often described by the acronym VUCA (Volatility, Uncertainty, Complexity, and Ambiguity), today's business environments have become less predictable than those of the past. Navigating such environments requires executives to synthesize vast amounts of often ambiguous information under conditions of time pressure and uncertainty (Elkington, 2018).

At the same time, the rise of artificial intelligence (AI), which has been driven by rapid advances in computing power and machine learning, has opened new possibilities for enhancing organizational capabilities. AI technologies can process vast volumes of data, uncover hidden patterns, and solve complex problems with increasing autonomy. They are already transforming operational processes across industries, with applications ranging from cybersecurity threat detection and automated customer service to high-frequency trading. Yet, while AI has shown strong capabilities in rule-based environments such as games of chess and Go, its role in supporting or augmenting executive-level strategic decision-making remains contested (Trunk et al., 2020).

Based on 15 interviews with executives and AI experts, this Impact Paper explores the emerging potential of human-AI collaboration in executive decision-making, focusing on how AI can augment – not replace – executive cognition in navigating complexity and making strategic choices.

## **Human vs. AI decision-making**

Executives must make the “right” decisions to create a competitive advantage for an organization. To do so, they can make use of metrics such as financial key performance indicators to analyze the company's internal or market situation. While such metrics support rational decision-making in well-formed systems, they fall short in uncertain, dynamic environments (Bhushan et al., 2022). To deal with complex and changing influences and make faster decisions under time constraints, executives employ *heuristics* (cognitive shortcuts) and *intuition*. These forms of thinking allow executives to disregard parts of the environmental information, unconsciously access experience-based knowledge, and apply it to the relevant situation, resulting in a decision based on a “gut feeling” (Salas et al., 2010). Experience and general industry-specific knowledge are thus key pillars for executive decision-making.

Despite its strengths, human judgment is subject to limitations. In a VUCA environment, executives may face situations in which they do not have all the necessary information required to decide, or, on the contrary, are overloaded with data that the human mind cannot fully process. Furthermore, human cognition is boundedly rational, meaning humans filter the information they receive with cognitive filters such as their values, knowledge, and assumptions, leading to a subjective perception that influences decision-making (Wang & Ruhe, 2008).

To address these challenges, organizations increasingly rely on information systems to support decision-making. Tools such as Management Information Systems (MIS) and Executive Information Systems (EIS) store, analyze, and visually represent business-relevant data to provide data-based insights to support business leaders' decisions (Leidner & Elam, 1993). Traditional information systems, however, were limited to their pre-programmed ruleset and thereby linear in their algorithmic abilities. In contrast, AI systems, including machine learning (ML), neural networks, and natural language processing, are capable of non-linear, adaptive learning and advanced data analysis without pre-programmed rules. Through pattern recognition and algorithmic problem-solving, AI can process and analyze vast amounts of data at a high pace and generate recommendations. This raises the question: *Are AI's decision-making capabilities advanced enough to automate or even replace executive decision-making?*

While AI has proven to be highly effective in some areas of decision-making, our interviews with AI experts highlight challenges with its current state of development. Like humans, the data or the code used to train an AI can be biased. A biased algorithm carries the risk of generating unethical outcomes and decisions. In addition to biased input data, AI, being a programmed algorithm, has no real sense of morals and ethics, and its decisions could violate human ethical codes. Creativity, too, remains a uniquely human trait. AI can generate outputs based on existing data, but it lacks the contextual awareness that humans can develop by interacting with their surroundings. Creating meaningful strategies for businesses remains a human task and strength. Emotional intelligence, the capacity to sense and respond to others' feelings, remains out of reach for AI but is crucial in executive contexts that demand stakeholder engagement and empathy. Finally, accountability represents a core barrier. For legal and ethical reasons, strategic decisions must remain human-led, as only humans, not machines, can be held responsible for outcomes.

## **AI-augmented executive decision-making**

While AI cannot replace executive decision-making yet, its decision-making capabilities show its strong potential to become a strategic partner for executives. Recently, the US research and advisory company Gartner (2021) proposed a model to describe the level of AI involvement in decision-making processes. It contextualizes three terminologies from AI research: *decision support*, *decision augmentation*, and *decision automation*. Decision support is the first level of AI involvement, in which AI is used as a tool to generate analytical data insights that support human decision-making. The second level, decision augmentation, describes a situation where AI analyzes relevant data and gives humans suggestions on the "right" decision. This level can be imagined as a collegial collaboration in which AI and humans combine their judgment to decide. The highest level of AI involvement is decision automation. With automation, AI processes the information and makes decisions autonomously without human intervention. Human oversight, or *human-in-the-loop*, does not contradict automation and allows for managing the risk of autonomous AI systems.

To summarize the findings of the interviews we conducted with experts, we utilize a framework based on Gartner's model, depicting how AI technology can augment executive decision-making:

**Table. 1: Levels of Executive and AI Decision Collaboration**

|                             | Decision Support                                           | Decision Augmentation                                                        | Decision Automation                                           |
|-----------------------------|------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------|
| Situation                   | Limited information                                        | Partially complete information                                               | Abundant & structured information                             |
| Type of Decision            | Strategy development, fast reactive decisions              | Strategy testing (simulations & scenario planning)                           | Routine operational decisions                                 |
| Primary Decision Mechanisms | Heuristics & Intuition, descriptive & predictive analytics | Pattern recognition, prescriptive analytics, executive knowledge & intuition | Rule-based algorithmic decisions                              |
| Collaboration Strengths     | Improved data insights, rationality                        | Breadth of insights, precise planning, cognitive complementation             | Time efficiency, real time operations, scalability & cut cost |
| Collaboration Challenges    | Data biases                                                | Distrust & dependency                                                        | Transparency & accountability                                 |
| Examples                    | Generating board-reports, sales forecasts                  | Market analysis, strategic staffing, project investing                       | Trading Algorithms, capacity planning, automated payments     |

Source: Author's illustration extending Gartner's Framework "Consider the degree of augmentation required from advanced analytics and AI" (2021)

Most interviewed executives use AI for operational contexts, where repetitive tasks and structured data make automation feasible. These applications, such as automated payments, calendar and travel management, and capacity planning, generate time and cost efficiencies and allow for real-time decision-making (Akerkar, 2019). As a result, executives can dedicate more attention to major strategic decisions. During the interviews, one executive said that they use AI to automate contract renewals. Renewal notifications are automatically generated and sent, with an AI algorithm selecting specific pricing, communication styles, and arguments based on customer data. However, automation also raises accountability concerns, particularly due to AI's "black box" problem, in which the logic behind outputs can be opaque and further complicate human oversight (Omrani et al., 2022).

"Just try, it's not just for automation and scaling operations, et cetera. I think now most of the use cases we hear about are around [for example] how Klarna replaced 700 support agents with AI. And this will probably make a big ROI use case. But on a strategic level, I'm sure, internally [AI] could be as good as strategic consultants who you would pay 10K to dig into a particular topic." (CRO of a financial software company)

Our interviews revealed that AI is primarily used at the *decision-support level* in strategic decisions. In situations with limited information, heuristics, environmental interaction, and emotional intelligence make the executive role in decision-making vital. With the help of AI-based analyses, decision support material such as board reports or sales and financial forecasts can be generated quickly, without human error, and help executives make more rational decisions. Generative AI provides executives with quick access to a vast knowledge base; one executive explained that they utilized the knowledge base of an LLM when developing a business strategy to identify suitable business prospects. Decision support is best adapted to creative tasks like strategy development or agile decision-making, e.g., crisis management. A major AI challenge in decision support would be biased or flawed data input that leads to false conclusions.

On the *decision-augmentation level*, new approaches show promising first results in situations where larger amounts of data are provided to the algorithm. In this context, AI gives executives tangible decision recommendations by leveraging its pattern recognition and prescriptive analytical abilities.

“AI-supported, we can even tell you A, how much money you're losing, and B, how much potential for improvement you have, and C, how specifically you can make the improvement.” (Principal of a process mining company)

While the recommendation is given by AI, executives can still rely on their intuition to make the call. During the interviews, two executives described examples of strategic recommendations by Microsoft's Tool *Copilot* and OpenAI's *ChatGPT* in strategic staffing and market analysis. One of the interview subjects demonstrated how their AI system could recommend the number of new employees that the company should hire in the coming year to achieve its growth objectives. Another AI expert talked about developing digital twins of companies to simulate and test complex scenarios and decisions with AI. With these examples in scenario planning and simulations, we can conclude that decision augmentation is particularly beneficial in strategy testing. In addition to flawed input data, a new challenge can arise at the augmentation level due to executives' lack of trust in AI technology and its recommendations. On the other hand, an increasing dependency of executives on AI recommendations could negatively affect critical thinking, a potential threat companies should be aware of.

In contrast, the *decision-automation level* currently plays a negligible role in executive strategic decision-making. The limitations discussed earlier, such as AI's lack of contextual awareness, creativity, emotional intelligence, and moral reasoning, continue to restrict its use in autonomous strategic decision-making. It can only be speculated whether AI will make strategic decisions autonomously in the future.

## **Managerial implications & practical recommendations**

AI holds strong potential to augment executive decision-making, but the right implementation is key (Trunk et al. 2020). Our interviews revealed several obstacles: First, many executives noted that their organizations lacked the necessary digital readiness and data collection capabilities. Others mentioned they felt pressure to adopt AI, either as a result of FOMO (Fear of Missing Out) or of direct pressure from stakeholders like investors. In some cases, resistance was rooted in fear: fear of replacement, cybersecurity risks, loss of control, or exposure due to increased transparency.

At the heart of these challenges lies an absence of understanding of AI technology. Bridging this gap requires executives to engage directly with the technology and its potential. Building expertise and learning about AI's strengths and weaknesses can help executives set implementation goals, address data readiness through business transformation, and shake off the fear of replacement. But understanding AI also prepares executives to recognize and avoid threats this technology poses, such as cyber risks or psychological dependency. To fully benefit from AI technology and augment their decision-making, executives must lead change and take complete ownership of AI adoption. Based on our interviews, executives can take three main steps to integrate AI into their decision-making:

1. **Set goals for the integration:** Executives need to identify where and how AI can create value across their decision-making process. This is done by first asking: Why is AI integration necessary? Where can AI enhance current processes?
2. **Prepare (the organization) for change:** This includes strengthening data infrastructure, enabling the storage and analysis of relevant information such as financial data and market intelligence. It also includes developing new skills like delegation to AI ("prompting"), technical skills, and strategic creativity, as well as adopting a mindset of experimentation and learning.
3. **Scout for suitable AI applications:** Executives could proactively monitor the market for emerging AI tools and engage with external advisors and AI experts. Curiosity and a commitment to stay informed are key to identifying high-value use cases.

Since companies, industries, and executives vary, there is no one-size-fits-all blueprint for AI adoption. However, by following these three steps and embracing AI as a complementary tool, executives can improve the quality, speed, and foresight of their strategic decisions, which sets them apart in an increasingly data-driven business environment.

## Conclusion & outlook

Executives play a central role in shaping the strategic direction of their organizations. In an era defined by complexity and uncertainty, AI offers a promising avenue to support this role through enhanced data analysis and decision augmentation. Our research revealed complementary strengths and weaknesses of AI and executive decision-making and disproved the notion that AI will soon replace executives. Instead, we see growing potential in collaborative decision-making where AI supports, augments, and enables executives. AI is currently most useful in operational and decision-support roles. At the strategic level, its role is expanding through augmentation, providing simulations, forecasts, and tailored insights. Full automation of strategic decisions remains speculative and unlikely in the near term due to the importance of human intuition, ethics, creativity, and accountability.

Looking forward, we can expect an increase in decision-support applications and a push toward the second, augmentation level, with most operational decisions becoming automated. The role of executives will evolve, and their main tasks will be to design new, creative strategies, delegate and oversee AI agents, anticipate technological risks, and manage human relations. As AI augments executive decision capabilities, it will help executives out-decide competitors and ensure the survival and growth of their company. In other words, executives will become their company's primary source of competitive advantage. To succeed in this transformation, executives need to overcome mistrust and fear, build technological expertise, and lead AI adoption with clarity, vision, and purpose.

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