

The Next Frontier in Intelligent Augmentation: Human-Machine Collaboration in Strategic Marketing Decision-Making

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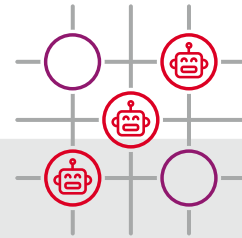
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Smart algorithms are taking over marketing decision-making ✕ Sending personalized newsletters with individual product recommendations and the right catchy headline at the right time of the day – no problem for the newest member of the marketing team, aka “artificial intelligence (AI).” On an operational level, many marketing decisions are already widely automated. In recent years, we have witnessed an almost exponential growth in the capabilities of AI systems fueled by new technological developments such as even more capable graphic chips and more advanced algorithms. Today, the boundaries of AI in decision-making are shifting from the operational to the strategic level. The list of expected benefits from using smart algorithms in strategic decision-making is long. It encompasses increased rationality by reducing cognitive biases, saving time and resources through faster decision-making and the identification of undiscovered opportunities by identifying underlying patterns in customer data – just to name a few.

So, is AI about to decide which new markets companies tackle, which products they launch or which communication and pricing strategy they pursue? Or will it at least be assisting managers in making such decisions? In a recent study (Box 1), we investigated the state-of-the-art of AI in strategic marketing.

Automation in operational marketing is mainstream, but businesses are aiming for more ✕ In our sample, not using AI to automate operational business decisions is the exception: 83% of the managers in our study state that their company already uses AI, such as for automating processes, interacting with their customers or analyzing data.



BOX 1

Study: The status quo of AI in strategic decision-making

To learn more about the status quo of AI in strategic marketing decisions, we surveyed 500 high-level B2C managers responsible for marketing or business strategy from the 2,000 biggest public companies in the world, listed in the Forbes Global 2000. The survey was conducted in early 2022 and encompassed the current role of AI in marketing decisions, managers' expectations and preferences for the future, and it covered a wide range of potential obstacles to the deployment of AI.

The results show that AI is indeed working its way up from the operational to the strategic decision-making level. Managers generally expect AI to play a greater role in shaping a company's strategic path and its market decisions in the future.

But many aim for more. Already, over half of the managers (56%) say their company uses AI for making strategic decisions. Another 20% state that they are running test and pilot cases, while 19% are at least considering doing so. Use cases named range from utilizing AI to analyzing data as a basis for strategic decisions to strategy formulation and execution. For these companies, AI already seems to be an established part of the decision-making process.

From assistant to manager – roles of smart machines in strategic decisions ✕ Machines and humans have different strengths in dealing with complex and uncertain decisions. Therefore, it makes sense for managers to team up with machines to augment each other's capabilities. But what does human-machine collaboration ideally look like from a manager's perspective?

To picture such collaboration between machines and human managers, we developed a typology that differentiates five roles AI can take on in a decision-making process, based on the capabilities of the machine and its level of autonomy. Within this typology, the role of AI can range from "no AI involved" to "assistant" to "collaborator" to "project manager" to "manager" (see Figure 1). As an "assistant," AI just performs certain tasks, while full control of the process lies with humans. This is the role that AI currently holds in

most cases in our survey. In the role of a "collaborator," AI applications already control certain parts of the process, but humans regularly interact with the AI and continue to control the overall process. About 26% of respondents state that they consider AI applications in their company to be operating in that role. About 9% of managers surveyed see AI systems that act as a "project manager," where smart machines are in control and make decisions autonomously, while humans still oversee the process and intervene in case of problems. AI applications acting like a general "manager" are still a thing of the future: Only about 1% of respondents stated that full control of strategic decision processes lies with a smart machine that acts without any direct human involvement.

The preferred future is one of augmented decision-making with humans in control ✕ As the capabilities of intelligent machines continue to evolve at a rapid pace, the exciting question is where the journey will take us. For the future, the majority of interviewed managers are ready to hand over more control to smart machines and extend the role of AI in strategic decision-making processes. However, they still want to remain in the driver's seat. Most wish to have AI as a collaborator (46%), but 30% of our respondents would also prefer AI to be a project manager 10 years from now when it comes to strategic decision-making.



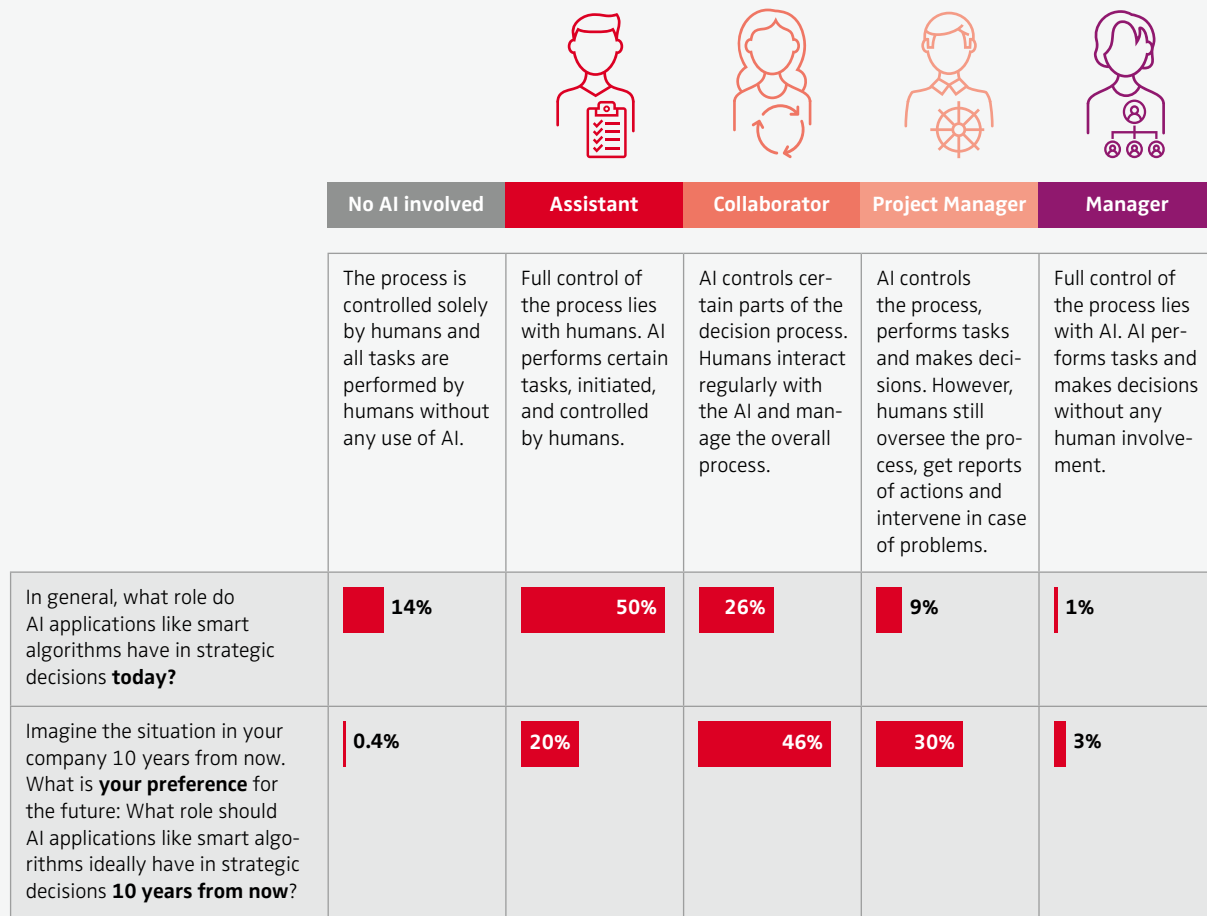
It makes sense for managers to team up with machines to augment each other's capabilities.



FIGURE 1 > Role of AI in strategic decision-making today and 10 years from now

Let’s look at the role that AI plays in strategic decisions in your company – today and 10 years in the future.

Please select the adequate role of AI from the five provided categories ranging from “No AI involved” to “Manager.”



Study by the Nuremberg Institute for Market Decisions | Telephone interviews with n=500 high-level executives from large public companies in the USA and Europe in 2022

While managers are generally open to using AI, algorithm aversion – the partial or general rejection of algorithms – can pose major challenges to businesses. One way to reduce or overcome algorithm aversion is exactly what most of the interviewed managers preferred: keeping control or, in other words, keeping the “human in the loop.” Research showed that human decision-makers accept an algorithm more frequently when they can modify its decisions or forecasts. It makes the humans feel more comfortable and satisfied with the process.

In an earlier study by the NIM, we found two additional easy but effective measures to overcome algorithm aversion.

Algorithm aversion declines over time when people can learn about the technology and get familiar with it. And algorithm aversion can be reduced when decision-makers learn about others who are successfully using the technology.

Still a long way to go – obstacles to the successful application of AI in strategy ✘ With a majority of managers open to teaming up with machines to enhance decision-making, what obstacles are there that prevent organizations from doing so? We have found that the challenges companies face change with their experience and the number of use cases already established.

For laggards, namely companies that have not yet conducted pilot projects for using AI in strategic decision-making, the top-of-mind obstacles are related to a lack of necessary resources. Respondents name issues like insufficient budgets, the lack of the right technological infrastructure, a shortage of know-how inside the company and the unavailability of skilled staff (see Figure 2).

For pioneers – companies that are ahead of the game and already have “some” or “many” AI use cases in place – money and other resource-related obstacles become less important. One exception to the rule is the perceived shortage of skilled staff, which is also among the most relevant challenges for pioneers. With AI experience, other difficulties come to the fore. The pioneers see their biggest challenges in data-related issues, such as dealing with an insufficient

database, a lack of transparency of algorithms and problems in sufficiently standardizing complex strategic decisions to apply algorithms.

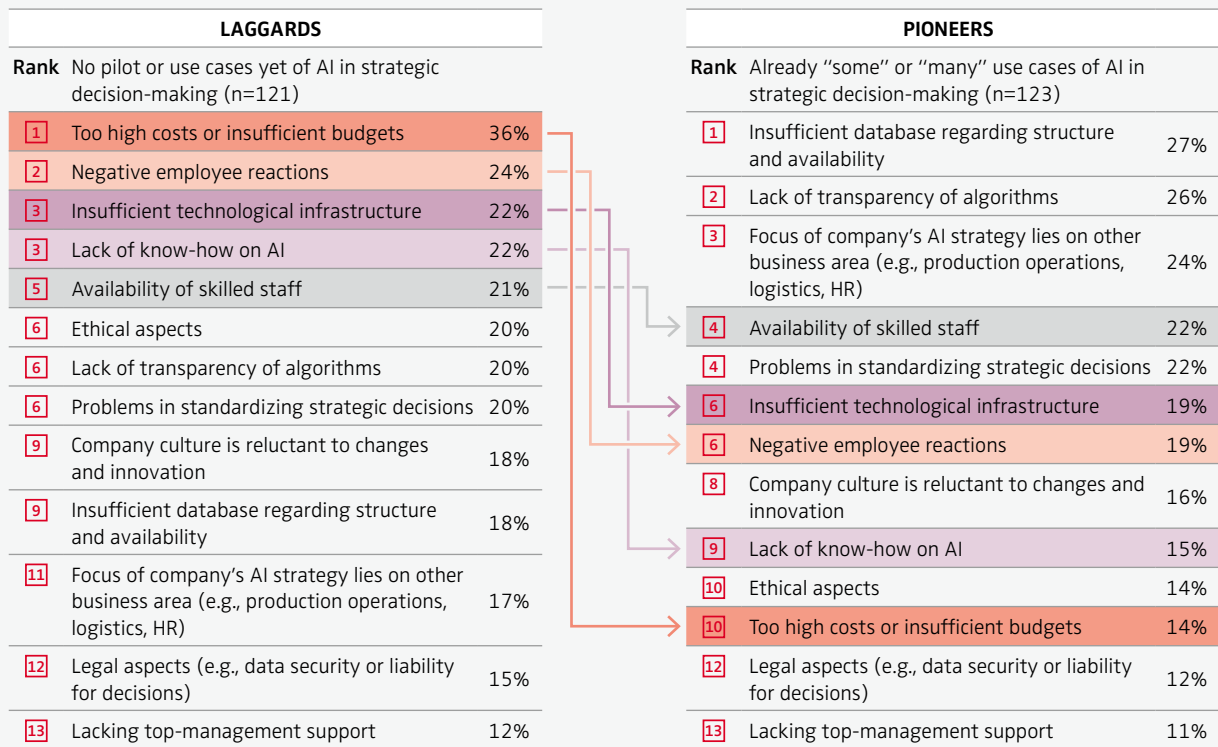
The algorithm aversion mentioned above can be observed in the obstacle of “negative employee reactions.” For laggards that’s the second biggest perceived challenge and a major problem, reported by 24% of managers. While it is not among the most important factors for pioneers, even in companies with considerable AI-systems experience, 19% of managers interviewed still see AI-related fears and reservations as a major problem. Therefore, even AI pioneers should invest in measures to overcome algorithm aversion.

Companies need to realize that a successful implementation of extended AI support is not only a question of finding the

FIGURE 2 > Obstacles to the use of AI in strategic decision-making

What are the main obstacles for using AI in making strategic decisions in your company?

Please select up to three most important factors that hinder the use of AI in making strategic decisions in your company from the following list or add another factor.



Numbers are percentages of cases within each group | Multiple answers (up to 3) possible
 Study by the Nuremberg Institute for Market Decisions | Telephone interviews with n=500 high-level executives from large public companies in the USA and Europe in 2022

FIGURE 3 > How to prepare your organization for taking AI to the strategic level



> **Goals & Expectations**

AI is a very complex subject that often suffers from unrealistic and misguided expectations by management. Make sure that senior leaders have clear objectives and realistic expectations of AI use.



> **Organization & Processes**

Cooperate across departments to identify available data and existing use cases. Organize workshops or hackathons to build bridges between data science and product teams. Work closely with internal IT.



> **Systems & Data**

Define a clear data strategy, prioritize AI use cases to solve relevant business problems, clarify data protection issues at an early stage and make sure that data is stored in a standardized way all over the company.



> **Staff & Skills**

As war for talent in data science is tough, be prepared to make some serious investments in attracting and retaining the right dedicated AI specialists.



> **Culture & Mindset**

Address algorithm aversion: Keep the “human in the loop” and give employees the opportunity to playfully try and learn how to work with algorithms. Communication is key: Make it clear that AI implementation is not about replacing humans but about the opportunity to improve decision-making by augmenting human capabilities.

right systems and tools. The power structure changes as soon as AI is used to make strategic decisions. To be prepared as best as possible, it is essential to know in advance which challenges have to be overcome. Figure 3 gives some concrete advice for making your organization fit for AI application in strategic decision-making processes.

Augmented management – building an algorithm-friendly organization ✕

An intelligent machine that tells managers what marketing strategy to pursue may still sound like science fiction. And of course, AI is currently still a long way away from “strong AI” in the sense of reaching human-like intelligence. Therefore, handing over strategic decision-making to machines completely does not (yet) seem fully achievable. But even if humans are unlikely to vanish from strategic marketing decision-making in the near future, we see that AI has already entered the arena, and its capabilities are constantly increasing.

74% of managers polled believe that the technical capabilities of AI will evolve significantly over the next 10 years,

and 63% are convinced that AI will have a positive impact on their business. Organizations should stop wasting time and address these developments right away by rethinking job descriptions and the necessary skills to prepare for a future of synergetic collaboration where humans and algorithms are joining forces. ✕



FURTHER READING

Eriksson, T.; Bigi, A.; & Bonera, M. (2020): “Think With Me, or Think For Me? On the Future Role of Artificial Intelligence in Marketing Strategy Formulation,” *The TQM Journal*, Vol. 32 (4), 795 – 814.

Freisinger, E. & Unfried, M. (2021): “What Drives the Acceptance of Algorithms in Decision Situations?,” *NIM Research Report*.

Haesevoets, T.; Cremer, D.; Dierckx, K.; & Van Hiel, A. (2021): “Human-Machine Collaboration in Managerial Decision Making,” *Computers in Human Behavior*, Vol. 119, 106730.