

How to succeed with an AI-first strategy?

Mika Ruokonen and Paavo Ritala

The concept of artificial intelligence (AI) was introduced in the 1950s, but the newest wave of machine learning-based AI has started to emerge in firms' strategic agenda only recently. One defining moment was the keynote address given in 2017 by Google CEO Sundar Pichai, who announced that the company was shifting from a mobile-first world to an AI-first world. Since then, many leading firms have hopped on the AI train, with numerous success stories across industries. The newest advances with generative AI have further accelerated AI adoption across industries and professional tasks. Yet the promise of AI seems elusive for many. Can any company put AI at the front of their strategic agenda?

Let us first revisit Pichai's key message. In promoting an AI-first strategy, he stated that Google was "rethinking all products and applying ML [machine learning] and AI to solve users' problems," and he introduced AI-enabled voice and vision as "more natural and immersive ways for users to interact with computers." This strategy clearly applies to companies like Google that both need and can prioritize learning from data and improving user value as a result. But does AI provide major improvements or strategic advantages for other types of companies, even if their starting points differ markedly from Google's or the other digital superpowers?

The answer is a resounding yes: AI is a general-purpose technology (Crafts, 2021) with a concrete business case and measurable benefits across different industries. For instance, General Electric (GE) has saved \$80m a year by optimizing payables and receivables (Davenport and Ronanki, 2018), JPMorgan Chase has cut 360,000 h in mundane tasks by lawyers and loan officers (Son, 2017) and PayPal has reduced the digital transaction fraud rate to only 0.32% of revenues (Capgemini Research Institute, 2019). Further, companies like Netflix and Spotify rely on AI algorithms to continuously improve their customer experience. These examples show that there is clearly a strategic role for AI in both core business processes and customer value creation.

In addition, since late 2022, generative AI tools have emerged, introducing a range of attractive functionalities such as content generation and conversational user interfaces. These advancements have significantly expanded the practical applications of AI, making it more accessible and applicable across various industry segments. In fact, it is estimated that generative AI will significantly accelerate productivity growth and help automate previously human-dominated tasks in the coming decades (Brynjolfsson *et al.*, 2023; Gilardi *et al.*, 2023) as organizations adopt the technology and include it as part of their organizational processes and business strategies (Chui *et al.*, 2023).

However, the number of genuinely "AI-first" companies has remained small, as deploying the technology has typically been limited to isolated use cases and pilots. AI has become an all-round marketing term for many software companies, making any assessment of its strategic role difficult. Despite these reservations, we argue that AI will play an increasingly important strategic role in companies. Forward-looking managers will consider putting AI in

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the forefront of their strategy to stand out from the crowd. For such managers, the key question is deciding precisely what adopting an AI-first strategy means.

Defining AI-first strategy

What does an “AI-first strategy” look like? AI is perceived as a core competitive resource and is put in front of other potential focuses as a strategic priority (Fontana, 2019). Strategic prioritizing does not, of course, mean that customer value or efficiency will be overlooked. AI could actually be complementary to other relevant strategic priorities if integrated thoughtfully. Second, AI is the key driver of the operating model of the firm, in which intelligence and automation are prioritized (Leavy, 2020). Putting AI high on the strategic agenda will result in concrete changes in organizational processes, business models and the customer experience.

Building further from this previous work, we define a firm’s AI-first strategy as the *persistent strategic intent to seek data, algorithmic and execution advantages built on AI technology*. Data advantages, including securing access to the data that feed AI algorithms, are the bread and butter of AI-first firms. Without proper data, there is no workable AI. The algorithmic advantage refers to the quality and performance of the AI algorithms themselves, based not only on the available data but also on how the company implements AI algorithms to solve prediction, automation and other computationally intensive core problems. Finally, the execution advantage refers to concrete implementations of data and AI advantages that lead to superior benefits in efficiency and customer value.

An AI-first strategy is a fundamentally different lens through which managers can think, perceive and evaluate key business decisions and priorities. It views competitive advantage as a unique combination of data and AI algorithms and the ability to execute outcomes that differ from firms that are not building on these assets. The AI-first approach differs from (but does not necessarily conflict with) other approaches such as “mobile-first” or “digital-first” (Yoo and Euchner, 2020) because it prioritizes data quality, the predictions made from that data and the concrete business value that can be created by using those predictions. The recent generative AI revolution only highlights the relevance of data, algorithms and execution even further, as AI now covers various content creation use cases (text, images, video, designs, etc.) in various types of creative and knowledge-intensive work (Ritala *et al.*, 2023) and for variety of business cases and processes (Chui *et al.*, 2023). Depending on the firms’ starting point, there are three AI-first strategy archetypes (Table 1) that each have fundamentally different situations, characteristics and challenges. Their strategic approaches to and potential paths toward AI-first also vary. Managers need to decide whether the strategy is for them and, if so, what type to pursue:

- *Digital tycoon strategy*: companies like Google, Amazon and Spotify, which dominate the field with continuously growing data sets, increasingly accurate AI-based predictions, and digital platforms with complementary product–service offerings;
- *Niche carver strategy*: companies like Speechly, HeadAI, Aiforia and LastBot, which build AI algorithms with superior performance in a particular domain, such as speech recognition, machine vision or collaborative task execution; and
- *Asset augments strategy*: companies like Siemens, John Deere and GE, that use sensor and process data to feed AI algorithms and capture value from their superior access and control of their physical assets.

Below, we walk through each strategy, using illustrative examples to show how companies can reap the data, algorithmic and execution advantages of an AI-first strategy and describing the strategic bottlenecks that create barriers to realizing those advantages.

Table 1 Three AI-first strategy archetypes

	<i>Digital tycoon</i>	<i>Niche carver</i>	<i>Asset augments</i>
<i>Strategic intent</i>	Dominate a selected field with data and algorithms	Carve out a niche and scale up	Turn legacy assets into an AI advantage
<i>Data advantage</i>	Digital products and services designed to accumulate real-time data flows	Customer- or domain-specific data accessed and harnessed to train AI models	Tangible core assets producing a continuous flow of sensory and process data
<i>Algorithmic advantage</i>	Core business processes and AI algorithms improve in a mutually reinforcing manner through an AI flywheel effect	Superior algorithmic performance within a spearhead area	Ability to use algorithms inside closely controlled physical environments
<i>Execution advantage</i>	Dominating position helps feed the AI flywheel, leading to continuously increasing user value and lower costs	Deep-tech AI capability enables superior value propositions to be provided to a niche market	Exclusive access to tangible asset base enables AI-driven efficiency and augmentation in processes and product-service portfolios
<i>Strategic bottlenecks and risks</i>	Massive digital scope creates regulatory pressure, internal coordination costs and reputational risks	Intense technological focus might overshadow broader customer value creation	Legacy mindsets, practices and systems

Source: Authors

Digital tycoon strategy: dominate with data and algorithms

Digital tycoons like Google, Amazon and Spotify are best positioned to become and remain truly AI-first companies. They have a limited number of core products that are already highly digital, highly global and highly standardized. They typically dominate their business areas by orchestrating one or more digital platforms, ecosystems or marketplaces. These companies are truly “data rich,” which allows them to dominate with data and algorithms, much as the classic railroad and oil tycoons were able to gain monopolistic industry positions.

Digital tycoons’ data advantage stems from their untrammelled access to massive amounts of data that are the core resource in their predictive AI algorithms and the recently introduced generative AI interfaces. Google, for instance, accumulates data across usage patterns of its portfolio of products: maps, search, calendar and so on. This enables not only synchronization of functionalities across products but also better-targeted recommendations for both advertisers and users. Behind this development is the “AI flywheel” (Gurkan and de Véricourt, 2022), through which more data improves predictions and outcomes, which improve the user experience, which leads to more adoption and more data, creating a self-reinforcing prediction machine (Agrawal *et al.*, 2018). At the same time, Google benefits from learning from this data internally, as it can hone its processes to react to those learnings and develop new services accordingly. The new large language models (as part of generative AI paradigm) are another testament to the power of the AI flywheel and the digital tycoon strategy. So far, the most commercially visible and successful generative AI models include Microsoft’s collaboration with OpenAI and Google Bard, both of which are being integrated into Microsoft and Google product portfolios, respectively. These models are trained with massive data sets and computing power, and access to such capabilities has been thus far available mainly for companies in the digital tycoon league (even if open-source projects are arising as we speak).

The algorithmic advantage that operates the AI flywheel – or multiple flywheels for different product categories – relies on the digital tycoons’ strong data science capabilities, vast resources to develop AI, and highly digitalized processes unencumbered by too many

legacy systems. These firms can truly place AI algorithms at the heart of their products, user experiences and operations; this is also a necessity if they are to take full advantage of their invaluable data assets. These firms generally have comprehensive AI development agendas. Google has several AI tools and trainings available for its people, Amazon strives to foster AI thought leadership and culture and Spotify invests in a solid data foundation and continuous algorithm improvement in both the back and front ends of its technology stack.

The execution advantage of digital tycoons relies on their dominant positions in specific market segments, usually operated on a digital platform that grants unique access to vast data sets. When these data sets are combined with high AI capability, these companies are able to reap business benefits from the AI flywheel effect. For instance, Netflix originally rose to dominate movie streaming because it was able to increase its user engagement and recommendation engine accuracy while lowering costs per user (Verganti *et al.*, 2020). Similarly, Spotify continuously learns more about their customers' use habits and preferences, helping to improve the customer experience and use value of their platform on an unprecedented scale. Finally, Google and Microsoft can use the new generative AI capabilities across their product portfolios, leading to integration into Google Workspace and MS Office suites, for example.

The massive scale typical of digital tycoons can be a double-edged sword, however, by creating bottlenecks that limit business growth (Leavy, 2020). Several governments have placed global platform leaders such as Meta (Facebook), Amazon and Google under heavy scrutiny to ensure that they use data and algorithms responsibly and do not misuse their dominant market position. Increasing regulatory pressure is good for society but also makes it harder to share data internally and externally, creating barriers to AI development. Moreover, some companies have suffered from reputational damage, making the recruitment of critical top data science talent more challenging, with Twitter (currently known as "X") being a recent case in point. Massive scale also creates coordination costs and complexity. With increasing size, it is more difficult to allocate the right data science resources and investments in the right places. This can lead to bloated organizations. In the aftermath of COVID-19 and with the growing cost of capital, many digital tycoons have been aggressively downsizing.

To stay ahead in the AI game, data tycoons need to secure and retain access to their ever more valuable data assets. To do so, they need to satisfy the increasing scrutiny of and criticism from their stakeholders by ensuring that the collection and use of data and the AI-based predictions based on that data comply with today's ethical demands, which are much stricter than when these firms first grew into global powerhouses. They must proactively mitigate risks related to regulation and reputation while also continuing to ensure access to top talent to satisfy their growing AI development ambitions. Microsoft, for instance, has launched an AI accelerator program for startups working on environmental sustainability, thus signaling to the market that its intentions in implementing AI will also benefit society. Finally, digital tycoons should avoid complacency, bloated budgets and complex organizational structures and instead continuously improve how they use data, algorithms and execution, with a focus on outperforming other established and emerging companies in the AI ecosystem.

Niche carver strategy: find a distinctive position and scale up

Niche carvers have placed advanced AI technology at the core of their products and services right from the foundation of the firm. Their business is to develop AI technology and use it as part of software products and services or sell the technology as a tool for other firms to use.

The data advantage of niche carvers typically comes from focusing on a particular domain or type of data, such as medical or security imaging, speech recognition and text analysis.

Such data generally comes from customers. Aiforia, a publicly listed medical imaging company, trains its algorithms based on customers' data sets to improve diagnostic services like identifying cancerous tumors. Further, LastBot uses customer-specific data to train its generative AI-based chatbots so that they can operate as "artificial employees" in the client's (human) teams and as part of workflows. In other instances, the data advantage is built on publicly available data sets. For example, OpenAI, the developer of ChatGPT, began as a startup project that initially harnessed large data sets containing diverse text from the internet, books, articles and other sources. Upright Project's AI-powered platform maps different dimensions of the impact of companies and products based on criteria sourced from more than 200 million scientific publications. HeadAI curates data from public sources and news items to develop tailor-made language models.

The algorithmic advantage of niche players stems from their intensive research-oriented data science capabilities. A unique algorithm that outperforms other, more generic AI solutions in a specific field is often the very reason why a given niche carver company exists. For some companies, this advantage is deeply rooted in their identity and even their names, as with MarshallAI, which develops AI related to security imaging, and Ultimate.ai, which provides generative AI-enabled customer support automation. These and many other deep tech AI firms seek to stand out from the crowd by communicating their value propositions with domain-specific AI concepts, such as natural language processing, image recognition and voice recognition; alternatively, they talk about the business benefits of AI *per se* instead of as an underlying technology.

The execution advantage of niche carvers is realized through superior industry and technology experience in a highly specialized domain. Utopia Analytics, for instance, has found its niche in machine learning-assisted content moderation in customers' online operations, while Speechly provides its customers with intuitive and easy-to-use interfaces that harness voice recognition. These types of deep-tech examples demonstrate the high added value available by concentrating on and mastering a highly specific AI domain, making it difficult for other companies to replicate.

The key bottlenecks, especially for market entrants and other smaller players, typically have nothing to do with AI itself. Instead, the challenge is to bring and scale AI-based solutions into the mainstream, expand the addressable target market, demonstrate the added value of AI technology and improve product delivery and distribution. HeadAI, a technology leader in cognitive text analytics, is building better commercial skills such as marketing, communications, customer onboarding and packaging AI technologies. The AI-powered pathology image analysis development company Aiforia, meanwhile, is developing sales processes and methodologies that support efficient commercialization of its AI technology. Recent success stories of generative AI startups suggest that niche players have significant opportunities to become influential participants in the global AI ecosystem, provided they can achieve success with their commercially focused endeavors.

Given that many companies are now successfully developing AI solutions, including established firms and their AI transformation and large global firms providing advanced AI capabilities from the cloud, just "doing AI" may no longer suffice. The execution advantage of niche carver firms is doing things better than the rest of the AI ecosystem and then scaling up operations to challenge the digital tycoons in specialized AI fields.

Asset augments strategy: Turn legacy assets into an AI advantage

The asset augments strategy is suitable for the large number of firms that do not operate in the digital realm, unlike the companies in the first two categories. These companies inhabit traditional sectors such as machinery, grocery and retail and heavy industry. Asset augments were not initially "built" for AI but typically aim for gradual AI implementation, in which they first develop (or buy) specific AI solutions for different firm operations before trying to find a more

holistic approach to AI and gradually scaling up until AI capability is present across the organization. Examples of impactful implementation of specific AI use cases include predictive maintenance of products (e.g. KONE elevators and escalators), factory automation (e.g. Siemens electronic components), speeding up product design cycles (e.g. GE engines and turbines) and autonomously operating machines (e.g. Caterpillar mining equipment). To satisfy the evolving needs of their customers, these firms must create new bundles of hardware, connectivity, data, intelligent operations, ecosystems and services – and the role of AI is to augment and complement the capabilities of physical products and services.

The data advantage of asset augmenters relates to their physical assets: the physical products and operations involve ubiquitous sensors and other data collection interfaces. Therefore, there are major opportunities to collect valuable data from both company and customer operations. What is more, this sensor and process data is often captured in real time rather than in discrete and historical chunks, allowing the data to be used while a given product or service is used ([Subramaniam, 2022](#)). Similarly, the algorithmic advantage of asset augmenters is tied to the physical environments that they typically know very well. For instance, developing algorithms for smart connected products like KONE elevators provides a great opportunity to experiment with different ways in which AI can augment the efficiency, utility and functionalities of such products. Orica, an Australian company that provides commercial explosives and blasting systems to the mining, quarrying and construction industries, uses AI on blasting data to deliver a range of consulting services, improving its customers' efficiency and productivity in blasting operations. The latest generative AI technology has the potential to empower asset augments firms, enabling them to leverage their data and algorithmic advantage even further. This may also include the incorporation of new business functions such as sales, marketing, customer service and research and development (R&D). The car manufacturer Hyundai is a good example of the latter: it uses Autodesk's "Fusion 360" generative product design solution to drive improvements in industrial raw material usage in car prototypes ([Karlsson, 2020](#)), improving one of the core processes of the industry: new vehicle development.

The execution advantage of asset augmenters is not in implementing standard AI algorithms that their peers may also be using. Instead, they must often go beyond industry norms and deploy AI in smarter ways. This typically means bespoke and company-specific technology development and reinventing traditional industrial business models. John Deere, for instance, uses AI to increase crop yields through precision agriculture at farms and has refashioned industrial business models from "selling machines" into "improving outcomes." In this new model, John Deere provides the entire system – equipment, data and algorithms – that farmers need to deliver tailored care at scale to the crops in their fields ([Leano, 2021](#)). Orangetheory Fitness is using AI to provide more personalized user experiences for customers in group gymnastics classes, based on proprietary algorithms that predict optimal heart rate zones ([Marcellin, 2022](#)), transforming the largely traditional fitness industry. The sensory data is available from heart rate monitors connected to OrangeTheory Fitness's customers and provided to fitness instructors so they can tailor their suggestions for workouts.

The strategic bottleneck of the asset augments strategy is tied to their traditional strength because they have honed their capabilities and processes toward excellence for years and usually decades. Excellence, however, can create hindrances in the adoption and scaling up of AI and make it difficult to put AI at the forefront of strategic agendas. These companies' core products are typically inherently physical or are services bound to the physical world, and AI is used to enhance and complement the business proposition that is already in place. Asset augmenters encounter several practical challenges in experimenting with and implementing AI, such as incompatible legacy systems, strict functional silos, the need to unlearn old ways of working and fear of and resistance to AI among employees. Due to these challenges, progress in AI implementation among asset augmenters has thus far typically been incremental and gradual at best.

To summarize, given that at least some tangible assets will remain an important part of the product–service mix for most asset augmenters, an AI-first strategy will necessarily be built within the interface between the physical and digital worlds. But executives must challenge themselves to consider how their firms could radically renew and reposition themselves by implementing AI, given the huge potential of the technology and also the latest advancements in the field of generative AI. The examples discussed here demonstrate how AI algorithms are starting to redefine products and services, improve user experiences and help automate core business decisions. We believe that much of this potential remains untapped and provides a major opportunity for asset augmenters since they are partially reliant on the two other types of companies in the AI ecosystem. First, they often use digital platforms and general AI capabilities offered by digital tycoons; second, they may buy specialized AI solutions from niche carvers rather than developing their own from scratch. Building a unique AI advantage should be focused on a firm's access to specific assets and sensors and the data collected from them, while the AI capabilities and tools may be sourced from elsewhere.

Conclusion: is an AI-first strategy right for you in the future?

As AI technologies mature, so will companies' opportunities to make them pervasive strategic elements in their products, services and operations. While we have not yet seen the broad proliferation of truly AI-first companies, our examples show that AI is being adopted strategically by forerunner companies of all shapes and sizes.

Digital tycoons with AI in their DNA and unparalleled access to broad data sets will likely continue to lead the pack. Some niche carvers may eventually enter the global league if they succeed in scaling their deep-tech AI offerings. Recent successes of generative AI companies (in particular, Open AI arising as the main player in large language models, and later teaming up with Microsoft) are evidence of this. An AI-first strategy will also emerge as a gradual paradigm shift for incumbent firms that focus on augmenting their legacy assets with AI and developing AI-based services such as predictive maintenance, supply and demand prediction and conversational AI interfaces for their customers, employees and stakeholders.

Managers who want to up their game and stay on top of technology should consider an AI-first strategy that, in terms of ambition, puts them on a par with the leading global digital firms. Adopting an AI-first mindset with a focus on data, algorithms and execution becomes a plausible next step for many types of companies.

We should also be critical of what being AI-first means. Does it mean that other strategic priorities no longer matter? For instance, one might ask, "Does the customer still come first?" or "Isn't the purpose of all businesses to satisfy customer needs and generate revenue?" If so, is not putting AI, a technology and a tool, first a bit like putting the cart before the horse; that is, the customer who eventually pays the bill? The answer, bluntly, is yes, so we clearly face a difficult balancing act. Our interpretation is that while companies may put AI at the core of their *product and competence development agenda*, they may still wish to have customers at the core of their *business agenda*. Amazon's mission, for instance, is "to be the Earth's most customer-centric company," even as it is widely known as a leader in AI technology development. Similarly, Aiforia, the AI-powered pathology image analysis firm, has tried to complement its strong and long-standing tech capability with an increased emphasis on customer needs and process analyses, along with the co-creation of future AI solutions with customers.

To conclude, AI-first is a useful mindset or concept for creating strategic momentum at those firms that find it useful to prioritize AI. However, such a priority may not be the right choice for all firms. In this article we have provided a framework and illustrated the potential of AI for those companies who decide to take on the challenge.

Keywords:
Artificial intelligence,
Algorithms,
Data,
Strategy,
Competitive advantage,
Generative AI

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