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Competitive Advantage in the Age of AI

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Generative AI will alter strategy, and companies must build differentiation in six areas or risk being left behind.

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In the past, competitive advantage was derived from industry positioning or was rooted in superior resources. In short, companies competed on **where to play and how to win** to gain market share.

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By offering a step-change in the time, cost and ease of developing offerings and capabilities—and the possibility to invent entirely new experiences—generative AI will commoditize past forms of advantage, making them more easily accessible.

Take drug development. R&D is cited as a source of competitive advantage by the top life sciences companies by market share.[1] Historically, it has taken up to six years and over $400 million just to get new drugs to trial. In contrast, **Insilico Medicine** developed the world's first generative AI-designed drug in just 18 months, for only $2.6 million. And Pharma.AI, the end-to-end AI drug discovery platform Insilico uses, is available to all online as-a-service on demand.

As generative AI challenges traditional sources of competitive advantage, established companies will have to rethink their business strategies and find new ways to differentiate themselves.

Based on our work helping companies use generative AI and the insights we gained from surveys of over 3,000 senior executives, we see six new synergistic sources of competitive advantage that companies can harness in the age of AI: their data and, by extension, their digital core, their rate of learning, their depth of capability reinvention, the strength of their external partnerships and how trusted they are to use AI responsibly.

Notably, the market is already seeing strengths in these areas as the basis for future performance. We used generative AI to determine the extent to which 1,300 companies with revenues over $1 billion cited efforts to build each of the six sources in their earnings calls. We found that companies that are building advantages in all six of these areas have delivered a 10.7 percentage point total return to shareholder (TRS) premium in 2023 (the first full year in which generative AI was widely deployed) relative to those that aren't, controlling for company size, headquarter location and industry.

1. Differentiation of data

With generative AI foundation models trained on publicly available data, companies with access to proprietary data can create superior products and services to differentiate themselves in the market. No organization can have an effective business strategy without having a data strategy that supports it.

The best data will be unique to the industry vertical and company need. Companies focused on consumer products can utilize Internet-of-Things (IoT) data to create tailored models for product design; businesses managing complex supply chains can harness their logistics data to devise solutions for third parties; banks can use wealth management data to create financial assistants. The company that manufactures your fridge, builds your car or manages your bank account could become a leader in generative AI if they effectively put their data to use.

Most companies use structured data (that can be arranged into tables, like prices). But significant value from large language models (LLMs) comes from their ability to work with unstructured data (for example, videos and text) and synthetic data (artificially generated by an AI algorithm to reproduce the statistical properties and patterns of an existing dataset).

Unstructured data accounts for around 70% of enterprise data on average. But based on our assessment of over 200 of our largest clients, most companies (58%) primarily use only structured data, with very limited use of unstructured data and little to no use of synthetic data. Building data products (high-quality, ready-to-use data formatted so that people and systems across an organization can easily access it) and developing data pipelines are essential for assimilating the diverse data sources required for generative AI and securely scaling their use across the organization.

2. Strength of digital core

Data is a foundation upon which companies can further build and integrate a strong technology backbone—what we call a "digital core." Companies will not only need proprietary data, they'll need a proprietary approach to drawing inferences from that data built on this core.

Today's largest foundation models are available to all via APIs and subscription services. To gain competitive advantage, companies must move beyond being a "buyer" (a user of off-the-shelf tools), to being a "booster" (an integrator of available models with proprietary data), and ultimately become a "builder" of their own models.

As a booster, Microsoft quickly retrained and fine-tuned its Large Language and Vision Assistant (LLaVa) to create **LLaVa-Med**, a high-performing assistant for biomedical image processing, in just a single day. **Bloomberg** became a builder by using deep learning architectures to develop a 50-billion parameter LLM for the financial industry called BloombergGPT.

Making the journey from buyer to booster to builder requires new capabilities in the digital core. Data needs to be more fluid, enabled by new approaches to data storage and integration. A flexible architecture—akin to the switchboards used for directing phone calls—is required to select the right combination of models for the right needs. And, with the technology rapidly evolving, executives must constantly evaluate and invest in their digital core.

Companies with a strong digital core will benefit from a flywheel effect—their technology foundation enabling them to integrate and deploy new technologies quickly, and then quicker again as the next wave of innovations arrive.

Take **Pfizer**. The biopharmaceutical company has developed its own generative AI platform called VOX and is using the technology for everything from accelerating the identification of new treatment targets, to creating first time drafts of patent applications and automating the development of marketing content. It expects to save $1 billion each year from the generative AI use cases it has in production. The company started laying the groundwork for these efforts years ago: centralizing data, creating platforms to scale globally, cultivating digital talent. And it did so at speed. It went from 10% of core IT in the cloud to 80%, migrating 12,000 applications and databases, and 8,000 servers in just 42 weeks.

Few companies are in the position Pfizer is today, giving the company a march over rivals. Only 13% of executives say they are fully confident that their organization has the right digital core capabilities to effectively leverage generative AI. CEOs think their businesses do not meet the minimum requirements for supporting AI (both predictive and generative) in multiple foundational elements: from hardware infrastructure (48%) to software platforms and tools (35%), data management and governance (35%) and cloud (26%).

3. Rate of learning

It's not just the cost and quality of compute that companies will need to be mindful of—they'll also need to address the cost and quality of human cognition.

Generative AI challenges the traditional talent moat by enabling the rapid dissemination of knowledge and taking over or augmenting tasks that previously required specialized expertise. With the technology tackling repetitive tasks and powering quicker mastery of new specialties, individuals' expertise can evolve more broadly into multiple domains, while their human-centric skills of critical thinking and decision-making will become ever more important.

As the pace of knowledge generation accelerates and the half-life of skills declines, companies will need to compete on the speed and effectiveness of their learning and adaptation processes. Individuals will need to upskill and reskill often. As the technology evolves, and AI expands into more areas, roles and team structures will need to adapt quickly. A company that automated call centers, for instance, realized that fielding customer complaints had given call handlers unique insight into product issues. The company redeployed these people to product design, where they could use this knowledge—alongside newly learned skills—to recommend design features that boosted customer satisfaction.

Creating organizations that are built to change requires a skills-driven talent strategy, and talent roadmaps that are just as precise as technology roadmaps. Few companies do this today, creating a significant advantage for those that do. Only 26% of executives report that their organizations have a complete picture of the workforce and skills they will need in three years. Similarly, few (25%) have a talent roadmap to build the workforce and skills they will need in three years.

4. Depth of capability reinvention

The full benefits of human and machine collaboration will only be realized by using generative AI to fundamentally reinvent end-to-end workflows, rather than for simple process re-design.

Early applications of generative AI have focused on narrow use cases in functional processes that sit across industries. The top three parts of the business that organizations plan to make fundamental changes to using generative AI over the next three years are IT (63%), marketing (54%) and finance (41%). Examples in these areas include adopting a coding co-pilot for software development, supporting content creation and automating financial reporting. These applications are invaluable, offering 30%+ improvements in productivity based on our experience. But given the low barriers to adoption, they will quickly become table stakes—investing in them will be the price of entry for doing business, rather than the ticket to success.

Companies that gain a competitive edge will not only address these horizontal commodity capabilities, but build two to three industry-specific, company-defining capabilities that enable them to establish a new performance frontier for their sector. Doing so requires deep value chain knowledge and involvement from end users in design to help ensure they address major pain points in existing workflows. It also requires a new way of operating, with siloed functions replaced by multidisciplinary teams that work across functions to deliver the end-to-end capability. New cultural mindsets that favor speed, experimentation and a willingness to change will also be important.

Underwriting—a target for automation and process design for decades—provides a prime example of the potential for reinvention. Of the 430 roles we analyzed across 19 industries, no job has higher potential to be augmented by generative AI than that of insurance underwriters. The underwriting workflow sees **40%** of time spent on non-core administrative activities, equivalent to an industry-wide efficiency loss of up to $160 billion over a five-year period. In response, one insurer we worked with applied generative

AI across the entire underwriting workflow. For example, when a broker submits a request for coverage, an underwriter would have previously manually extracted the required inputs for their decision from the supporting documentation. Now, a custom-built generative AI solution automatically summarizes the submission, provides additional insights from third-party data sources and applies risk appetite filters. With the time spent on administrative activities drastically reduced, underwriters can spend more time on higher-value tasks that directly affect customers, driving up revenues—potentially by 10% in this instance.

5. Strength of external partnerships

Companies need collaborators to help them address the complexities of scaling generative AI into end-to-end capabilities.

Firms were created to coordinate complex forms of economic activity, with scalable efficiency the key driver of the growth of large institutions and competitive advantage coming from capabilities built in-house. But the rate of technological change now makes it nearly impossible for any single organization to do everything itself efficiently.

When it comes to generative AI, companies need to get many things right at the same time —unlock unstructured data, select the right models, build out their IT architecture, reskill their people, apply domain expertise, to name just a few. And they will already be behind on the next wave of LLMs, by the time they manage to apply today's technology. An ecosystem approach is the only way a company can both execute and stay current—and effective orchestration of an ecosystem can provide an acute form of advantage.

By combining powerful hardware, user-friendly software, pre-trained models and accessible cloud solutions, **NVIDIA** has built a comprehensive generative AI ecosystem that caters to researchers, developers and businesses of all sizes. NVIDIA's CUDA software development toolkit provides developers with a platform to leverage the power of their GPUs (Graphic Processing Units) for AI applications. This ease of use fosters a strong

developer community around NVIDIA hardware. This ecosystem facilitates rapid knowledge sharing and innovation within the AI field and enables NVIDIA to help enterprise customers develop and deploy AI.

6. Level of trust

As generative AI moves into the enterprise and becomes embedded across more aspects of daily life, it will be subject to intense scrutiny. While many of the concerns about generative AI are evolutions of discussions that were already brewing—for instance, data privacy, security, bias, job displacement—the technology has significantly broadened the scope of those risks.

Adoption will ultimately hinge on trust. And companies that develop robust ethical frameworks, governance models and responsible AI practices will gain a competitive advantage in securing the trust of customers, employees and regulators.

Leading companies are moving in this direction. These companies are no longer just touting their generative AI-enabled products and services using traditional measures of performance—like speed and scalability. They're increasingly highlighting their behavior. The embodiment of specific values such as fairness are now key selling points for everything from autonomous vehicles to smart home devices.

OpenAI, for example, has differentiated its GPT-4 model based on its improved values, marketing it as 82% less likely than its predecessor model to respond to "improper" requests. Equally, JPMorgan Chase emphasizes that "**successful AI is responsible AI.**" The Bank has built an interdisciplinary team, including data scientists, AI researchers, ethicists and risk professionals, to assess risks and build appropriate controls to prevent unintended misuse, comply with regulation and promote trust with customers. This is part of the **company's broader and increased investment in its digital core and AI capabilities**, which set it up for high levels of trust.

While most companies recognize the importance of taking a responsible approach, relatively few are taking the concrete actions taken by the likes of OpenAI and JPMorgan Chase. Just 14% of executives say they have fully operationalized responsible AI across their organization.

Generative AI will forever alter strategy and the sources of competitive advantage. Companies cannot wait to respond. Today's technology does not represent a singular breakthrough, but the first in a series of rapid developments. Companies will need to build new sources of differentiation now—meeting a minimum threshold of ability in each of the six areas—or risk being left behind. These new sources naturally build on each other so that, over time, the value of them compounds—leading to more value, more speed and greater distance from their peers.

References

1. Based on a review of company references to competitive advantage (or similar keywords) using the AlphaSense AI platform.

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