How Generative Artificial Intelligence is Redefining Innovation in Business, according to MIT

The emergence and mass adoption of Generative Artificial Intelligence (GAI), popularized by tools such as ChatGPT and large language models (LLMs), marks a historic turning point in how companies conceive and execute innovation. Reports such as “The Great Acceleration: CIO Perspectives on Generative AI” (MIT Technology Review Insights, 2023) position this moment as a watershed comparable to the impact of the personal computer, the internet, and the smartphone. More than just incremental technology, GAI presents itself as a new infrastructure for creativity and organizational efficiency, capable of redefining processes, products, and business models.

The economic data is revealing: studies by institutions such as McKinsey and Goldman Sachs project that IAG could add between US$ 2.6 and 4.4 trillion annually to the global economy. This potential stems from its ability to automate cognitive and creative tasks previously considered exclusive to the human domain, such as writing, information synthesis, code generation, and image design. However, the most profound impact goes beyond automation; it is a structural redefinition of work. AI acts as a strategic “copilot,” augmenting human capabilities by freeing professionals from repetitive tasks, allowing them to focus their efforts on high-level analysis, strategic creativity, complex decision-making, and true value innovation.

The demand for AI integration is no longer an initiative exclusive to Information Technology (IT) departments. Today, it emerges organically from business areas themselves from marketing and sales to R&D and operations which recognize its potential to solve concrete problems. Sectors such as healthcare, manufacturing, energy, finance, and media are already applying AI in transformative use cases: predictive asset maintenance, analysis of large volumes of data for personalized insights, supply chain optimization, hyper-personalized content creation, and accelerated new product development.

The viability of these innovative applications depends on a solid foundation. The dominant trend among leading companies is the adoption of robust data architectures, such as the data lakehouse model, which combines the governance and reliability of data warehouses with the flexibility and scale of data lakes. This approach democratizes access to quality data, allowing different areas of the company to explore AI without relying exclusively on centralized technical teams. A prime example is Shell, which processes 20 billion data points from global sensors daily to optimize operations and perform predictive maintenance in near real time, a practical application of data-driven innovation.

Given this scenario, companies face a crucial strategic dilemma: should they purchase ready-made solutions or develop internal capabilities? The use of closed third-party models can generate risks related to intellectual property, sensitive data leaks, and lack of customization. In response, there is a growing movement toward open-source models and the training of specialized, smaller models, tailored to specific business knowledge. Examples such as Dolly (from Databricks), trained for less than US$ 30, and domain models such as BioBERT (biomedicine) or LegalBERT (law), illustrate this transition from a paradigm of “one giant model for all” to “multiple specialized and deep models,” aligned with each company's strategic secrets.

This acceleration, however, is not without critical challenges for responsible innovation. Risks such as privacy violations, algorithmic biases, copyright issues, and the lack of explain ability of models require robust and ethical governance. Visionary companies are already adopting audit frameworks, “model cards” for transparency, and principles such as “Constitutional Artificial Intelligence” (advocated by the startup Anthropic), which embeds ethical values and guidelines directly into the design of systems.

In conclusion, we are at the beginning of a Great Acceleration of business innovation mediated by AGI. Just as organizations that dominated the internet in the 1990s reaped lasting competitive advantages, companies that integrate AGI strategically, responsibly, and creatively today will be shaping the markets of tomorrow. The choice is no longer about whether to adopt it, but how to do so

in order to amplify human capacity and build truly transformative and sustainable innovation.

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Further reading

• KOHLI, R.; MELVILLE, N. P. Generative AI and the Future of Work: A Framework for Value Creation and Capture. Journal of Information Technology, v. 39, n. 2, p. 123-145, 2024.

• DWIVEDI, Y. K. et al. Generative Artificial Intelligence in Organizations: A Review and Research Agenda for Innovation and Process Transformation. Journal of Business Research, v. 178, n. 114598, 2024.