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ECONOMIC EFFICIENCY OF GENERATIVE AI IMPLEMENTATION IN COMPANIES

***Abstract:** this study examines the economic efficiency of generative artificial intelligence in the context of its widespread adoption in business. Based on an analysis of international studies and corporate case studies, it has been found that generative AI increases productivity and the quality of work. However, the outcome depends on the type of tasks, employee qualifications and the degree of integration into business processes. It has been established that the key effectiveness factor is the extent of the technology's integration into the company's operational activities.*

***Keywords:** generative artificial intelligence, cost-effectiveness, labour productivity, companies, business processes.*

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ЭКОНОМИЧЕСКАЯ ЭФФЕКТИВНОСТЬ ВНЕДРЕНИЯ ГЕНЕРАТИВНОГО ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА ПРЕДПРИЯТИЯХ

Аннотация: в исследовании рассматривается экономическая эффективность генеративного искусственного интеллекта в контексте его широкого внедрения в бизнес. На основе анализа международных исследований и корпоративных кейсов было установлено, что генеративный ИИ повышает производительность и качество работы. Однако результат зависит от типа задач, квалификации сотрудников и степени интеграции в бизнес-процессы. Было установлено, что ключевым фактором эффективности является степень интеграции технологии в операционную деятельность компании.

Ключевые слова: генеративный искусственный интеллект, экономическая эффективность, производительность труда, компании, бизнес-процессы.

In recent years, generative artificial intelligence has evolved from an experimental technology into a practical business tool. According to McKinsey, 63 corporate use cases for generative AI across 16 business functions have the potential to generate between \$2.6 trillion and \$4.4 trillion in annual economic value globally [3]. The same study shows that around 75% of this potential is concentrated in four functional areas:

- customer operations;
- marketing and sales;
- software development;
- research and development.

The cost-effectiveness of implementing generative AI is the ratio between the results achieved and the company's costs for acquiring, adapting, integrating and maintaining such solutions. Formally, the cost-effectiveness of implementing generative AI can be expressed as follows:

$$E = \frac{B-C}{C}, (1)$$

where E is economic efficiency, B is the total benefits of implementation (cost reduction, revenue growth, productivity improvement), and C is the total costs of developing, implementing and maintaining generative AI-based solutions.

Accordingly, economic benefits include not only direct cost reductions but also revenue growth, faster operations, improved product quality, and the reallocation of

employee time to higher-value activities. The structure of economic benefits generated by AI implementation can be represented by the components shown in Figure 1.

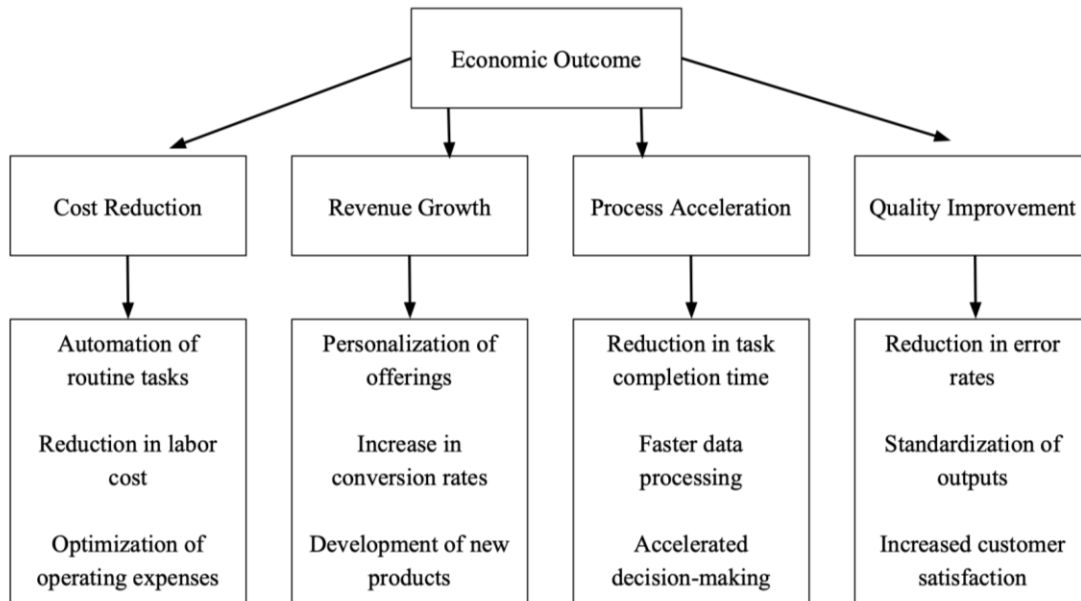


Fig. 1. Structure of the economic outcome of implementing generative AI

As shown in Figure 1, the economic impact of implementing generative AI is multifaceted and is not limited solely to cost reductions. Indirect effects linked to revenue growth, the acceleration of business processes, and improvements in the quality of products and services play a significant role.

Generative AI is spreading rapidly across the business world. According to McKinsey, by 2025, 71% of the companies surveyed were regularly using generative AI in at least one business process [8]. Companies most frequently applied it in marketing and sales, product and service development, service operations, software engineering and IT. However, over 80% of respondents reported that they did not see a tangible impact of generative AI on company revenue, and only 17% indicated that at least 5% of revenue over the past 12 months could be attributed to the use of generative AI. Thus, in practice, there is a noticeable gap between the actual implementation of the technology and a sustained economic impact.

The strongest empirical evidence on the economic effects of generative AI comes from field and experimental studies. For instance, a study by American researchers

based on data from 5,179 customer support staff showed that access to generative AI increased productivity (measured by the number of queries resolved per hour) by an average of 14% [2]. For less experienced and lower-skilled employees, the effect was even more pronounced, reaching 34%. The results suggest that the technology disseminated the best practices of stronger performers to weaker ones, thereby reducing performance disparities within teams.

Key quantitative estimates of the economic impact of generative AI across various application areas are presented in Table 1.

Table 1

Empirical Evidence on the Economic Effects of Generative AI [2–6]

Source	Scope of application	Type of empirical evidence	Key finding
Noy, Zhang (2023)	Professional writing tasks	Experimental study	-0.8 σ in completion time, +0.4 σ in quality
Brynjolfsson et al. (2023)	Customer support	Field study	+14% productivity, up to +34% for less experienced staff
GitHub (2023)	Software development	Corporate data	+55% task completion speed

As can be seen from the data presented in Table 1, generative AI demonstrates a consistent positive impact across various types of intellectual work. The largest productivity gains are observed in tasks involving a high proportion of routine or formalised operations, as well as among lower-skilled employees.

In Russia, the economic impact of generative artificial intelligence is not yet commonly assessed separately. According to a study by the Higher School of Economics [1], around half of the 15,000 companies surveyed that use AI reported an improvement in the quality and efficiency of their business and production processes. However, high costs remained the main barrier, cited by 58% of respondents. Among Russian corporate case studies, Sberbank's example stands out as the most notable. According to the company, by 2025 the total economic benefit from the implementation of AI amounted to over 450 billion roubles, of which approximately 50 billion roubles were generated by generative AI technologies [7]. These findings suggest that maximum

economic benefits are achieved when generative AI is embedded into the company's operating model.

To sum up, generative AI is already capable of delivering significant economic benefits to businesses. However, these benefits cannot be taken for granted. The most sustainable results are achieved in areas where the technology reduces task completion times and boosts average employee productivity. Consequently, the effectiveness of generative AI should be assessed by the extent to which the technology is integrated into a specific business process, allows the time freed up by employees to be reallocated to more valuable activities, and does not create disproportionately high monitoring costs.

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