THE IMPACT OF GENERATIVE ARTIFICIAL INTELLIGENCE ON THE BUSINESS PROCESSES OF SMALL AND MEDIUM-SIZED ENTERPRISES

Rudolf Petrušić[1], Nera Akrap[2]

[1] International university of Travnik; Faculty of Information technology
rudolf.petrusic@iu-travnik.com

[2] International university of Travnik; Faculty of Ecomomics
nera.akrap@iu-travnik.com

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Abstract

Generative artificial intelligence (GenAI) has spread into everyday business practice faster than any digital technology before it. For small and medium-sized enterprises (SMEs), which make up around 99% of all firms in the European Union, this development matters more than most: capabilities that once required specialist staff or expensive software are now available through low-cost subscriptions. This paper reviews academic literature and industry reports published between 2017 and 2026 to examine how GenAI affects core SME business processes marketing and sales, customer support, operations and administration, finance, and product development. The evidence so far points to the largest gains in content- and communication-heavy work; one field study, for instance, found that support agents using a GenAI assistant resolved about 15% more issues per hour. Adoption, however, is held back by skill shortages, concerns over output accuracy and data protection, and new obligations under the EU Artificial Intelligence Act. We conclude that GenAI substantially lowers the technological entry barrier for SMEs, but that capturing its value requires process redesign, employee training, and a risk-aware implementation strategy rather than tool purchases alone.

1. INTRODUCTION

1.1 Background and context

When tools built on large language models became publicly available in late 2022, they spread faster than any digital technology before them [1]. Within roughly three years, generative AI reached over half of the adult population in advanced economies a faster diffusion than either the personal computer or the internet [2]. Two things set this wave apart from earlier enterprise technology. First, there is nothing to install: a browser and a subscription are enough to use state-of-the-art models. Second, the interface is ordinary language, so no specialist training is needed to get started. Both properties matter most for the firms that have historically been least able to afford specialists small and medium-sized enterprises, which form the backbone of the European economy.

1.2 Problem statement

SMEs have long trailed large firms in adopting advanced digital technology, mainly because of tight budgets, little in-house IT expertise, and the absence of dedicated innovation roles [3]. Generative AI could change that dynamic: it is cheap, usable through plain language, and applicable to a wide range of routine knowledge work. What is not yet clear is where exactly SMEs can capture this value in practice, and what stops them from doing so.

1.3 Aim and research questions

The aim of this paper is to organize what is currently known about the impact of generative AI on SME business processes. Two questions guide the analysis:

RQ1: In which business processes can SMEs derive the greatest value from generative AI?

RQ2: What are the main barriers and risks affecting GenAI adoption in SMEs?

1.4 Methodology

We rely on a structured review of the literature: peer-reviewed publications, working papers, and reports by international organizations and consultancies published between 2017 and 2026. Sources were selected for relevance to two streams the technological foundations of generative AI on one side, and the economics of SME digitalization and process change on the other.

1.5 Paper structure

Section 2 introduces the technology. Section 3 sets out the economic framework: what SMEs are and which processes they run. Section 4, the core of the paper, analyzes the impact of GenAI on each process. Section 5 discusses opportunities, risks, and regulation, and Section 6 concludes.

2. GENERATIVE ARTIFICIAL INTELLIGENCE: TECHNOLOGICAL FOUNDATIONS

2.1 From traditional AI to generative AI

Most machine learning systems that companies have used over the past decade are discriminative: they assign inputs to categories or predict a value, as in fraud detection or demand forecasting [4]. Generative AI works differently. Instead of choosing among predefined outputs, it produces new content text, images, audio, or program code. That distinction sounds technical, but it explains why GenAI reached ordinary office work so quickly: most of what happens in an office is precisely the production of documents, messages, and other content, not numerical prediction.

2.2 Core concepts

Modern generative models rest on the transformer architecture introduced by Vaswani et al. [5], which made it practical to train very large neural networks on enormous text collections. When such models are trained at sufficient scale, they become what Bommasani et al. [6] call foundation models general-purpose systems that can be adapted to many different downstream tasks. Large language models such as GPT or Claude are foundation models specialized in natural language.

Three ways of adapting these models matter in practice. The simplest is prompting: the user instructs the model in plain language, with no technical setup at all. Fine-tuning goes further and retrains the model on domain-specific data. The third option, retrieval-augmented generation (RAG), connects the model to a company's own documents at the moment a question is asked, so that answers are grounded in internal knowledge rather than only in the model's general training [7]. For SMEs, RAG is arguably the most interesting of the three it delivers company-specific behavior without the cost of training a model.

2.3 Tools and platforms relevant to SMEs

From an SME perspective, GenAI arrives through three channels. General-purpose assistants such as ChatGPT, Claude, Microsoft Copilot, or Google Gemini cover writing, analysis, and coding tasks for a monthly subscription. A second, quieter channel is the software firms already use: office suites, CRM systems, design tools, and accounting platforms keep adding GenAI features, which removes the adoption decision almost entirely. Finally, APIs and open-source models let firms with even modest development capacity build custom solutions a website chatbot, say, or an automated document pipeline. The practical consequence is striking: the entry cost for an SME ranges from zero to a few hundred euros per month, a fraction of any earlier enterprise technology investment. And the underlying economics keep improving the cost of running a model at the level of the original ChatGPT fell roughly 280-fold between late 2022 and late 2024 [8].

3. SMES AND BUSINESS PROCESSES

3.1 Definition and Classification of SMEs (EU Criteria)

Small and medium-sized enterprises (SMEs) represent a distinct category of business entities defined within the European Union according to quantitative thresholds related to employment and financial performance. The European Commission Recommendation 2003/361/EC classifies enterprises into micro, small, and medium-sized categories based on the number of employees, annual turnover, and annual balance sheet total. Under this framework, micro-enterprises employ fewer than 10 persons and have an annual turnover or balance sheet total not exceeding EUR 2 million. Small enterprises employ fewer than 50 persons with an annual turnover or balance sheet total not exceeding EUR 10 million, while medium-sized enterprises employ fewer than 250 persons and have either an annual turnover not exceeding EUR 50 million or an annual balance sheet total not exceeding EUR 43 million [9].

The adoption of standardized SME criteria facilitates the implementation of European policies, access to financial support instruments, and comparability across Member States. It also provides a common basis for research and statistical monitoring of enterprise performance, innovation, and competitiveness within the European economy.

3.2 Economic Importance of SMEs

SMEs constitute the backbone of the European economy, accounting for the overwhelming majority of businesses and making substantial contributions to employment creation and economic value generation. According to Eurostat statistics [10], SMEs represent almost all enterprises operating within the non-financial business sector in the European Union and provide employment for a significant proportion of the workforce while generating more than half of the sector’s value added. Their prevalence demonstrates their central role in promoting entrepreneurship, regional development, and economic resilience.

Beyond their quantitative importance, SMEs play a crucial role in innovation and digital transformation. OECD analyses indicate that digital technologies create opportunities for productivity growth, market expansion, and improved customer engagement. However, many SMEs continue to face barriers such as limited financial resources, shortages of digital skills, inadequate technological infrastructure, and

organizational constraints that slow the adoption of advanced digital solutions. Public policies supporting digitalization, skills development, and innovation ecosystems therefore remain essential to strengthening SME competitiveness in increasingly technology-driven markets [3].

3.3 Overview of Core Business Processes

Business processes encompass coordinated activities through which organizations create value and achieve strategic objectives. In SMEs, core processes typically include marketing and sales, customer support, operations and production, finance and accounting, human resource management, and research and development (R&D). Increasing digitalization and the emergence of artificial intelligence (AI) are transforming each of these functional areas.

Marketing and sales activities increasingly rely on data analytics, customer segmentation, recommendation systems, and automated communication platforms that improve targeting and customer engagement. Customer support processes benefit from AI-powered chatbots and virtual assistants capable of handling routine inquiries while enabling human employees to focus on more complex interactions. Operational functions make use of predictive analytics, intelligent automation, and process optimization tools that enhance efficiency and reduce operational costs [4].

Financial management has also been influenced by digital technologies through automated bookkeeping, fraud detection, forecasting models, and intelligent decision-support systems. In human resource management, AI applications assist recruitment, talent screening, workforce planning, and employee development by processing large volumes of information more efficiently than traditional methods. Research and development activities increasingly employ generative AI technologies to accelerate idea generation, support product innovation, and facilitate knowledge creation.

Recent literature emphasizes that digital transformation extends beyond technological adoption and often requires modifications to organizational structures and business models. Digitalization enables SMEs to redesign value creation mechanisms, strengthen customer relationships, and improve strategic flexibility in rapidly changing markets [11], [12]. Moreover, emerging evidence suggests that larger firms generally adopt artificial intelligence more rapidly than SMEs due to greater resource availability, although targeted policy initiatives and accessible AI tools are gradually reducing this gap [13]. Generative AI, in particular, is increasingly viewed as a catalyst for business model innovation, supporting experimentation, process redesign, and new forms of value creation across organizations [14].

4. THE IMPACT OF GENERATIVE AI ON SME BUSINESS PROCESSES

4.1 Marketing and Sales

Generative artificial intelligence (GenAI) is significantly transforming marketing and sales activities within small and medium-sized enterprises (SMEs). By generating personalized content, automating campaign creation, analyzing customer preferences, and supporting market segmentation, GenAI enables SMEs to compete more effectively despite limited human and financial resources. Large language models and generative systems can produce advertising copy, social media posts, product descriptions, and email campaigns in a fraction of the time required by traditional methods.

McKinsey & Company [15] identifies marketing and sales among the business functions expected to capture the highest economic value from generative AI due to improvements in content creation, customer personalization, and lead generation. Similarly, Accenture [16] argues that generative AI democratizes advanced marketing capabilities by providing organizations of all sizes with access to sophisticated content production and data-driven decision-making. For SMEs, these technologies reduce operational costs while improving customer engagement and conversion rates.

4.2 Customer Support

Customer support has emerged as one of the most prominent areas for GenAI implementation. AI-powered conversational agents and virtual assistants can respond to customer inquiries continuously, provide multilingual assistance, summarize interactions, and recommend appropriate solutions based on historical data. Such capabilities improve service availability while reducing response times and operational costs.

Research by Davenport and Ronanki [4] demonstrates that practical AI applications often focus on automating repetitive customer interactions rather than replacing human expertise entirely. Recent global surveys further indicate that organizations increasingly deploy generative AI to enhance customer service quality, employee productivity, and knowledge management, with measurable gains in efficiency and user satisfaction [17]. These advantages are particularly valuable for SMEs that may lack dedicated customer service departments or extensive support staff.

4.3 Operations and Administration

Generative AI increasingly supports operational and administrative functions by automating documentation, drafting reports, summarizing meetings, managing internal communications, and assisting with workflow coordination. SMEs benefit from these capabilities because they often operate with lean organizational structures in which employees perform multiple responsibilities simultaneously.

The OECD [13] notes that AI adoption varies according to firm size, with larger organizations generally adopting advanced technologies more rapidly due to greater financial and technical resources. Nevertheless, the availability of cloud-based AI services and user-friendly generative applications is lowering adoption barriers for SMEs. Kanbach et al. [14] argue that generative AI should not merely be viewed as an efficiency tool but also as an enabler of business model innovation by reshaping organizational processes and knowledge-intensive activities.

4.4 Finance and Accounting

Within finance and accounting, generative AI contributes to increased efficiency through automated report generation, financial summarization, document analysis, anomaly detection, and forecasting support. AI-assisted systems can help accountants prepare narratives accompanying financial statements, review contracts, and identify irregular transactions requiring further examination.

PwC's Global AI Jobs Barometer [18] highlights that AI adoption is associated with productivity gains and changing skill requirements across professional occupations, including finance-related roles. Rather than eliminating jobs outright, AI is increasingly augmenting human expertise by reducing routine workloads and allowing professionals to concentrate on strategic analysis and decision-making. This capability is particularly important for SMEs, where finance departments are often relatively small and resource constrained.

4.5 Product and Software Development

Generative AI is also transforming product innovation and software development by accelerating idea generation, code production, documentation, testing, debugging, and prototype creation. Developers increasingly employ AI assistants to automate repetitive programming tasks and improve development speed while maintaining code quality.

According to BCG [19], organizations create business value from generative AI by combining automation with human creativity, enabling faster innovation cycles and improved decision-making. Bouwman et al. [11] similarly argue that digitalization reshapes SME business models by fostering new value creation mechanisms and enhancing organizational flexibility. Furthermore, Dwivedi et al. [1] emphasize that while generative AI offers substantial opportunities for innovation and productivity, organizations must also address challenges related to governance, transparency, ethics, intellectual property, and responsible implementation. Consequently, successful adoption requires both

technological capabilities and effective managerial oversight.

5. OPPORTUNITIES, RISKS AND IMPLEMENTATION CHALLENGES

5.1 Opportunities

The central opportunity is democratization. Tasks that used to require specialists or external agencies copywriting, translation, basic legal drafting, software prototyping, data analysis are now available through low-cost subscriptions. No previous technology wave has level the playing field between small and large firms to this degree [14]. Because GenAI is sold as a cloud service with per-user pricing, an SME can experiment for next to nothing and scale up only where value actually shows. The natural language interface matters too: it removes the dependency on scarce technical talent that the OECD [3] identifies as one of the main constraints on SME digitalization.

5.2 Risks and barriers

The risks fall into four groups. The first is reliability: generative models can produce fluent but factually wrong content the well-known hallucination problem which makes unverified use risky in customer-facing, legal, and financial contexts [6]. The second is data protection. Employees may paste personal or confidential data into external AI services without thinking twice, creating exposure under the General Data Protection Regulation [20]; few SMEs have a formal AI usage policy in place. Third comes dependency: relying on a handful of foreign model providers means vendor lock-in and exposure to sudden changes in pricing or service terms. Finally, skills. The World Economic Forum [21] expects around four in ten of today's core job skills to change by 2030, and employers themselves name the skills gap as the single biggest barrier to transformation a constraint that weighs heaviest on SMEs, which have less slack for systematic training than large enterprises. Eloundou et al. [22] likewise show that exposure to LLM-driven change cuts across almost all occupations, so workforce adaptation is not optional.

5.3 Regulatory context: the EU Artificial Intelligence Act

The EU Artificial Intelligence Act (Regulation (EU) 2024/1689), adopted in 2024, is the first comprehensive legal framework for AI and follows a risk-based logic [23]. For the typical SME uses discussed in this paper content creation, internal productivity, customer support the obligations are comparatively light and center on transparency: disclosing AI-generated content and telling users when they are interacting with a machine. Stricter requirements apply only to high-risk applications such as AI used in recruitment or credit decisions. The Act also contains SME-specific relief, including regulatory sandboxes and reduced documentation burdens. Even so, firms need to keep an eye on how the Act interacts with the GDPR whenever personal data flows through AI tools.

CONCLUSION

This paper asked where SMEs can capture value from generative AI and what stands in their way. On the first question (RQ1), the evidence points clearly to content and communication-intensive processes: marketing and sales, customer support, and administration, where double-digit productivity gains are already documented [24]. Finance benefits in an assistive role, and product development carries the largest strategic upside up to and including new business models. On the second question (RQ2), the binding constraints turn out to be organizational rather than technological: missing skills, absent usage policies, data protection concerns, and output reliability, with the EU AI Act adding a manageable compliance layer on top.

Three practical recommendations follow. Start with low-risk, high-frequency tasks drafting, summarizing, translating where mistakes are cheap to catch. Put a simple internal AI policy in place, covering data confidentiality and mandatory human review of anything customer-facing. And treat GenAI adoption as process redesign rather than a software purchase, because the gains appear where workflows are rebuilt around the technology. The main limitation of this

review is that it rests on early-stage literature in a fast-moving field; future research should track realized, rather than projected, GenAI value in SMEs over time.

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