

INTEGRATING ARTIFICIAL INTELLIGENCE INTO THE MARKETING ACTIVITIES OF SMALL AND MEDIUM-SIZED ENTERPRISES

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Abstract. *This article examines the ways in which artificial intelligence (AI) is being utilized, implemented in the marketing strategies of small and medium-sized enterprises (SMEs). Based on 14 peer-reviewed studies, six official sources (statistics, regulations and analyses) and a comparative study of Eurostat data from 2021 to 2025, the study delivers key findings. By 2025, 19.95% of EU enterprises with 10 or more employees used at least one AI technology, with 17.0% of small and 30.36% of medium-sized enterprises adopting AI. An OECD survey indicates that only 29% of SMEs using generative AI incorporate it within their core activities. The paper identifies five key areas of AI use in SME marketing, summarizes benefits and challenges, and proposes a preliminary three-level framework to evaluate AI integration—instrumental, process and strategic. This framework is provisional and needs empirical confirmation.*

Keywords: *artificial intelligence, digital marketing, small and medium-sized enterprises, generative AI, personalization, marketing communications, digital transformation.*

Problem statement. Small and medium-sized enterprises make up 99.8% of all businesses within the European Union's economy [18] and are important for employment and value generation. However, their ability to implement advanced marketing technologies is often limited by budget constraints, lack of dedicated analytics teams, employees carrying multiple roles, and shortages of data and specialized expertise [2; 8–10].

The adoption of generative AI somewhat reduces the barriers to entry: natural-language interfaces make it easier to create text and visuals, perform translations, retrieve information and manage routine inquiries. However, merely accessing a particular service does not mean it is successfully incorporated into marketing workflows. Such integration demands high-quality data, clearly defined rules for verifying outputs, responsible personnel, and metrics to measure its impact [2; 4; 8; 9].

The data confirms both the rising adoption of AI and the persistent gap between organizations of different sizes. According to the Eurostat survey, by 2025, at least one AI technology will have been adopted by 19.95% of EU companies with 10 or more employees. Among small businesses, the adoption rate is 17.0%, while medium-sized enterprises report 30.36%, and large enterprises lead with 55.03% [1]. An OECD survey further highlights that only 29% of SMEs using generative AI are leveraging it for their core activities, most use the technology for peripheral tasks [2].

Therefore, the research issue focuses not just on SMEs' access to technology but also on how deeply it is embedded in marketing processes and decision-making. To support managerial and educational suggestions, it is essential to identify key AI application areas,

outline their benefits and limitations, and differentiate between sporadic tool use and full process integration.

Analysis of recent research and publications. AI's role in marketing started gaining attention as a specialized research area in the late 2010s. A bibliometric review by S. Verma, R. Sharma, S. Deb and D. Maitra [3], analyzing publications from 1982 to 2020, notes a significant rise in research after 2016. It highlights key focus areas like machine learning for predicting consumer behavior, chatbots for customer support, and algorithmic pricing.

The study by D. Grewal, C. B. Saturnino, T. Davenport and A. Guha [4] systematizes the impact of generative AI on marketing over the coming decade, distinguishing analytical AI from generative AI by their objectives, algorithm types, and the nature of their outputs.

Ukrainian scholarship explores this issue through various perspectives. I. Ponomarenko [5] discusses integrating AI algorithms into digital marketing to improve interactions between companies and their target audiences. H. Zaiachkovska [6] investigates AI-driven marketing opportunities, highlighting gains in efficiency, personalization and decision-making quality. V. Haliapa [7] evaluates both the advantages and limitations of AI tools for business marketing. A common aspect of these studies is their focus on the enterprise as a whole, without distinguishing by organization size.

Research also examines AI adoption in SMEs. J. Schwaewe et al. [8] describe the current situation as the “new normal,” highlighting a shift from occasional experiments to regular use. E. Sánchez et al. [9], applying the TOE framework with diffusion of innovations theory, pinpoint ten main challenges to adoption, including data access, skill shortages, cultural resistance and weak data governance. S. Badghish and Y. A. Soomro [10] empirically show that factors such as relative advantage, compatibility, human capital, market demand, and government support significantly affect AI adoption in SMEs, with firm size acting as a moderating factor.

A study involving 250 Jordanian SMEs by I. K. Magableh, M. H. Mahrouq, M. A. Ta'Amna, and H. A. Riyadh [11] reveals that marketing AI impacts financial performance indirectly, primarily through mediators such as customer engagement, satisfaction, and data-driven decision-making. M. Aljabari et al. [12] emphasize AI's mediating role between digital marketing strategies and SME innovation. Additionally, C. Reed, M. Wynn, and R. Bown [13] propose an analytical framework aimed at identifying and reducing AI bias in digital marketing, with particular attention to data privacy, algorithmic bias and risks associated with the opacity of models.

Despite extensive research, the marketing aspect of AI integration in SMEs is still underdeveloped. Some reviews overlook differences based on enterprise size, and studies that examine AI adoption in SMEs often group marketing with other functions. As a result, recommendations designed for large enterprises may not consider SME-specific limitations such as data availability, financial resources, expertise and process formalization [2; 8–10]. Additionally, it is important to clarify the difference between occasional use of accessible services and the ongoing, structured integration of AI into marketing decisions.

Purpose of the article. The article aims to identify the current status, key areas, advantages, and limitations of using artificial intelligence in the marketing efforts of small and medium-sized enterprises, based on an analysis of academic sources and statistical data from Eurostat and the OECD.

To accomplish this, the objectives include categorizing AI applications in SME marketing, summarizing its benefits and limitations, analyzing the current AI adoption and structure among EU companies, qualitatively comparing the potential transformative

impacts on marketing functions and developing an initial framework for evaluating the extent of AI integration.

Scientific novelty of the study. The scientific novelty lies in organizing the features that reflect how deeply AI is integrated into SME marketing processes. These features are presented as a preliminary three-level analytical framework, comprising instrumental, process and managerial levels. The levels are differentiated by four diagnostic traits: the AI user, the presence of internal rules, the method for evaluating results and the data's nature. This framework is not yet validated and needs empirical testing.

Presentation of the main research material. The study combines a detailed review of academic literature with a structural and dynamic comparison of official statistical data. The evidence base includes 20 sources: 14 peer-reviewed publications from 2015–2025 [3–14; 16; 17] and six official materials from Eurostat, the OECD and EU institutions [1; 2; 15; 18–20]. Academic sources were chosen for their relevance to AI in marketing or AI adoption in SMEs, their full-text availability and the presence of a DOI. The statistical analysis compared Eurostat data for 2021, 2023, 2024, and 2025, along with OECD data on how SMEs use generative AI. The classifications of application areas and qualitative assessments in Tables 1, 3 and 4 are the author's synthesis of the sources, not the result of a survey.

The reviewed examples of AI applications were grouped into five functional areas that differ in their typical tasks, data requirements, and indicative competence thresholds (Table 1).

Table 1

Areas of artificial intelligence application in SME marketing activities

Area	Typical tools and tasks	Indicative competence threshold
1. Content and creative generation	Writing copy for websites, newsletters and social media, creating visuals and videos, localisation and translation, adapting one message for different channels	Low
2. Personalisation and recommender systems	Product recommendations in online shops, dynamic email content, segmentation based on behavioural clusters	Medium
3. Automation of customer communication	Chatbots and virtual assistants, automated replies in messaging apps, lead qualification, handling routine enquiries	Low / medium
4. Predictive analytics and pricing	Demand and customer-churn forecasting, lead scoring, dynamic pricing, customer lifetime value assessment	High
5. Media-buying optimisation	Algorithmic management of advertising bids, automated audience selection, creative testing	Medium

Source: compiled by the author on the basis of [3–13; 16; 17].

Academic research on AI in marketing mainly focuses on content creation, personalization and communication automation [3–8; 16; 17]. However, the diversity in samples and methods across these studies makes it impossible to quantitatively rank the five areas by their popularity. Eurostat's data showing that 34.70% of enterprises using AI applied it to marketing or sales in 2025 highlights the significance of marketing, though it does not specify the proportion for each individual area [1].

Applying predictive analytics, assessing customer lifetime value and employing

dynamic pricing usually demand extensive historical data, robust digital infrastructure and skilled model interpretation. For some SMEs, these requirements may be more challenging to adopt than tasks like content creation or managing routine inquiries [2; 8–10].

To assess the scale and structure of AI use, the available Eurostat indicators for 2021–2025 were analyzed (Table 2).

Table 2

Dynamics and structure of artificial intelligence use by European Union enterprises, 2021–2025

Indicator	Period / breakdown	Value, %
Share of EU enterprises using at least one AI technology	2021	7.7
	2023	8.1
	2024	13.5
	2025	19.95
Including by enterprise size, 2025	small (10–49 persons employed)	17.0
	medium-sized (50–249 persons employed)	30.36
	large (250 or more persons employed)	55.03
Share of enterprises using AI that apply it to marketing and sales, 2025	EU overall	34.70
Share of enterprises not yet using AI but considering its use, 2025	small	12.65
	medium-sized	22.26
	large	36.54

Source: compiled by the author on the basis of Eurostat data [1; 19].

Note. The data cover enterprises with at least 10 employees and are not representative of microenterprises. No comparable 2022 indicator is presented in the table. When interpreting the trend, changes to the Eurostat questionnaire in 2025 should be taken into account, including the addition of a separate category for image, video and audio generation, as well as the recorded break in the time series for the Netherlands [1].

The data presented support three conclusions.

The adoption of AI by enterprises has rapidly accelerated: from 2021 to 2023, the percentage of businesses using AI grew by 0.4 points, from 2023 to 2024 by 5.4 points and from 2024 to 2025 by roughly 6.47 points [1; 19]. This timeline aligns with the broader adoption of generative tools, however, the overall data does not definitively attribute the growth exclusively to generative AI.

Secondly, marketing and sales were the main reasons for AI adoption among EU companies already using the technology: by 2025, this accounted for 34.70% [1]. This figure highlights the practical importance of the topic but does not reflect how deeply AI is integrated or specify which marketing processes are most affected.

Third, the gap by enterprise size is evident both in actual use and at the stage of considering the technology. Among enterprises that had not yet used AI, 12.65% of small, 22.26% of medium-sized and 36.54% of large enterprises had considered its use [1]. This gap may be associated with differences in awareness, resources, digital readiness, or the

technology's expected usefulness. The predominant cause cannot be determined from this indicator alone.

Based on the analysis of the sources, the benefits and constraints of using AI in SME marketing were grouped into four dimensions: economic, competence-related, organizational, and ethical and juridical (Table 3).

Table 3

Benefits and constraints of AI adoption in SME marketing by analytical dimension

Dimension	Benefits	Constraints and risks
Economic	Shorter content- and campaign-preparation times, support for customer engagement and data-driven decision-making [4; 11]	Costs of integration, training and subscriptions, difficulty measuring returns, limited access to finance [2; 8–10]
Competence-related	A lower barrier to entry owing to natural-language interfaces, expanded capabilities for small teams [2; 4; 5; 7]	Shortages of skills in output verification, data handling and responsible AI use [2; 8–10]
Organisational	Faster hypothesis testing, a shorter idea–test–conclusion cycle, flexibility of small structures [8; 14]	Fragmented use, weak process formalisation, cultural resistance, difficulties integrating with existing systems [2; 8–10; 14]
Ethical and legal	The opportunity to formalise rules for data handling, human review and accountability as an element of trust [13; 15; 20]	Risks relating to privacy, algorithmic bias and opacity, specific labelling and disclosure obligations, potential loss of authenticity in communication [13; 15–17; 20]

Source: compiled by the author on the basis of [2; 4; 8–17; 20].

The potential risk of depersonalising communication warrants particular attention. Research on digital marketing in SMEs emphasizes the importance of direct customer interaction and the difficulty of creating content under resource restrictions [16; 17]. It can therefore be hypothesized that large-scale use of homogeneous generative content may weaken the distinctiveness of a brand's voice. This is an analytical proposition rather than an empirically established regularity and thus requires separate testing. In practice, SMEs should combine automation with human editing and clear requirements for communication methods.

To compare the impact of AI on different elements of marketing activity, marketing was divided into six functional blocks. For each block, the nature of the changes described in the literature was qualitatively synthesized (Table 4).

Table 4

Indicative depth of transformation of SME marketing functions under the influence of artificial intelligence

Marketing function	Nature of change	Indicative depth of transformation
Content and creative production	A shift from manual creation to editing generated material, a change in the marketer's role from producer to editor and curator	Radical
Customer communication and service	Round-the-clock handling of routine enquiries, a hybrid bot-plus-human model	High

Marketing function	Nature of change	Indicative depth of transformation
Segmentation and targeting	A shift from demographic to behavioural and predictive segments	High
Marketing research	Automated analysis of reviews, social media and the competitive environment; synthesis of qualitative data	Moderate
Pricing	Dynamic models responsive to demand and competitor actions	Moderate (constrained by data availability)
Strategic positioning and branding	Analytical support while preserving the leading role of human judgement	Low

Source: author's qualitative synthesis based on [3–17].

The depth of transformation was assessed using a four-point ordinal scale: low, moderate, high and radical. A low rating indicates primarily analytical support without changing the leading role of humans, moderate indicates the automation of individual operations, high indicates a substantial change in the process and in the marketer's role, and radical indicates a change in the principal way the function is performed. The ratings are the result of a qualitative synthesis rather than quantitative measurement.

The comparison supports the proposition that the depth of transformation decreases as the function of strategic human judgment increases. Repetitive operational processes, especially content creation and initial adaptation, are most likely to change. At the same time, this assessment depends on the industry, data quality, process organization and the manner in which the tool is used; it therefore cannot be regarded as a universal regularity.

Formulating the value proposition, selecting market targeting and building brand identity remain primarily managerial tasks. AI can broaden the information base and generate alternatives, but responsibility for strategic choices and their coordination with the enterprise context remains with humans [4; 13].

Based on the synthesis, a preliminary analytical framework is developed to assess the depth of AI embedding in SME marketing activities. It aims to distinguish episodic use of individual services from the incorporation of AI into formalized processes and marketing decisions. The framework is a working analytical tool rather than a validated model, the boundaries between levels and their relationship to performance require empirical testing.

The levels are distinguished by four diagnostic characteristics: (1) whether the user of AI is an individual employee or a formalized process; (2) whether rules, quality standards and an allocation of responsibility exist; (3) whether the outcome of application is measured; and (4) the data on which decisions are based.

The instrumental level is marked by episodic use of accessible services by individual employees. For example, an owner or marketer may use generative AI to prepare posts, newsletters or images, while quality criteria, data-handling rules, and responsibility for output verification remain informal. The effect is generally assessed subjectively and is not compared with conversion, customer-acquisition cost, or other indicators. The predominantly peripheral nature of generative AI use described by the OECD is consistent with this level's characteristics but does not allow the actual share of SMEs at this level to be determined [2].

The process level involves allocating AI to specific marketing tasks previously outlined. The enterprise specifies the stage for technology deployment, assigns

responsibility for verification, defines data categories, sets quality standards and determines outcome metrics. It includes the use of prompt templates, examples of acceptable outputs, editorial control rules, and regular comparisons of key indicators before and after implementation. Progression to this level may be limited by organizational readiness, skill shortages, and restricted access to funding, data, and infrastructure; existing sources do not identify a single universal barrier [2; 8–10].

The strategic level includes the systematic use of data and models to support marketing decisions. Demand forecasting and the assessment of churn, customer lifetime value or channel effectiveness become regular procedures, and the results are incorporated into planning. This requires an integrated data environment, a sufficiently long observation period, expertise in model interpretation and mechanisms for human monitoring. The strategic level does not entail transferring ultimate responsibility to an algorithm.

Movement between levels is neither automatic nor irreversible. Simply adding more services doesn't necessarily mean there is deeper integration. The real value of the framework comes from focusing on the quality of processes, data, oversight and outcome measurement rather than just the tools.

One trend in further development is the transition from individual generative services to agentic workflows. In this study, agentic systems are understood as methods capable of planning and coordinating a series of actions and performing multi-stage tasks with a defined degree of autonomy. The OECD classifies such solutions as more advanced forms of AI use that generally require a stronger data base, computing resources, skills and organizational coordination [2]. For SMEs, this increases rather than eliminates the importance of process formalization and human monitoring.

The regulatory environment is a key consideration. Since 2 August 2026, Article 50 of Regulation (EU) 2024/1689 has been in effect, imposing different obligations depending on the actor's role. Providers of generative systems must ensure machine-readable marking of synthetic content, while deployers must disclose deepfakes and specific texts published to inform the public on matters of public interest. As a result, visible labeling requirements are not uniformly applied to all marketing content. For SMEs, practical priorities include identifying their role, ensuring human review of materials, documenting processes and establishing rules for handling data.

The study is analytical in nature. Academic publications were selected through a targeted rather than systematic process, and the selection therefore does not guarantee coverage of all studies on the topic. The studies used differ in country, industry, sample and interpretation of AI, limiting the possibility of directly comparing their results.

Eurostat statistics cover enterprises with at least 10 employees and exclude microenterprises, which constitute a substantial share of the SME sector. Changes to the 2025 questionnaire also require careful interpretation of trends. The proposed competence thresholds, assessments of functional transformation and the three-level framework are the author's qualitative synthesis and cannot be used as a diagnostic scale until empirical testing is complete.

Conclusions. The study supports the formulation of conclusions in accordance with the stated objectives.

The analysis of the sources identified five areas of AI use in SME marketing: content and creative generation, personalization, communication automation, predictive analytics and pricing, and media-buying optimization. The literature most frequently describes the first three areas, but available data do not permit quantification of their shares. Eurostat's finding that 34.70% of enterprises using AI applied it to marketing and sales confirms the

overall importance of the function but not its internal structure.

The benefits of adoption include time savings, support for small teams, faster hypothesis testing, and data use. The constraints concern finance, skills, data quality, integration, accountability and moral risks. The potential loss of authenticity in communication is identified as a practically important proposition for SMEs, but requires separate empirical testing.

The qualitative review of marketing functions shows that repetitive operational tasks are more suitable for automation, while positioning and branding need more human input. This conclusion is based on literature synthesis rather than quantitative data.

The statistical analysis showed that the share of EU enterprises using AI increased from 7.7% in 2021 to 19.95% in 2025. The gap between small, medium-sized and large enterprises persists across both actual use and the stage of considering the technology. The causes of the acceleration in 2024–2025 cannot be established unambiguously from aggregate data.

The proposed three-level framework—instrumental, process and strategic-level—helps structure the characteristics indicating the depth of AI integration. At this stage, it is a preliminary analytical tool rather than a validated model.

The practical significance of the results lies in guiding SMEs toward phased adoption by defining a specific process, an accountable employee, permitted data, quality criteria and effect indicators. Entrepreneurship-support programmes should combine training in tool use with the development of skills in process description, outcome evaluation and responsible AI use. Because barriers vary between enterprises, recommendations should take their digital maturity, resources and objectives into account [2].

Prospects for further research relate to empirical testing of the framework among Ukrainian SMEs. A survey or organized interviews with 150–200 enterprises may provisionally be envisaged, with the final sample size determined through the statistical power analysis and evaluation of industry structure. The level of integration should be compared with marketing performance indicators, including conversion, customer-acquisition cost and the share of revenue attributed to marketing. A separate avenue could examine differences among the pre-war, wartime and post-war periods in the development of Ukrainian SMEs.

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Declaration on the use of artificial intelligence. *During the revision of the article, generative artificial intelligence tools were used for language editing, structuring the material, developing alternative versions of selected passages, and checking the internal consistency of citations and statistical statements. The final selection of sources, their critical evaluation, data interpretation, scientific conclusions and responsibility for the content rest with the author.*

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