STRATEGIC MANAGEMENT, Vol. 31 (2026), No. 2, pp. 005-018

DOI: 10.5937/StraMan2500010K

Received: June 30, 2025
Revised: July 11, 2025
September 04, 2025
Accepted: October 13, 2025
Published online: November 21, 2025

The use of artificial intelligence in marketing: a case study from the Czech Republic

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Abstract

Background: The rapid development of Artificial Intelligence (AI) brings new opportunities for marketing practice, particularly in cost optimisation and increasing campaign effectiveness. This paper responds to the need to explore the practical application of AI within a specific business environment.

Purpose: This paper aimed to investigate whether the use of AI for marketing content created by a selected South Bohemian digital agency leads to reduced costs, increased efficiency, and improved conversions.

Study design/methodology/approach: The research employed quantitative analysis of data from marketing campaigns conducted in 2023 (excluding AI) and 2024 (with AI implementation). Performance metrics, including cost-per-turnover (CPT), were compared, and Chi-square test and Effect size calculations were applied.

Findings/conclusions: AI had a positive impact on campaign performance, contributing to more efficient budget allocation and improved conversion results. The findings are particularly beneficial for SMEs seeking effective marketing solutions. For SME managers, this brings practical implications in the form of more efficient budget allocation, faster campaign optimization, and gaining a competitive advantage.

Limitations/future research: The study involved only one company and a limited number of campaigns, which limits the possibilities of generalisation. It is recommended that the research be extended to more companies and sectors in the future.

Keywords

artificial intelligence, marketing, campaign effectiveness, return on investment, digital marketing, SMEs

Introduction

The advent of artificial intelligence (AI) has fundamentally impacted business processes and transformed various sectors, including marketing. Its use has improved the functioning of organisations and brought several benefits. However, companies still need to continually monitor new trends and innovations to remain competitive (Kumar, et al., 2024; Talíř & Straková, 2023; Pártlová et al., 2020; Dorčák, et al., 2015). Owing to new technologies, there has been a major shift in content personalisation and decision-making (Bobro et al., 2024; Straková & Talíř, 2020). At present, trends in social media marketing are developing rapidly, and the emergence of AI,

such as ChatGPT, indicates their further development. Exploring these trends is therefore important to better understand how marketing functions and evolves across various platforms (Oklander et al., 2024; Pártlová, et al., 2022; Pollák & Markovič, 2021). Also, AI is significantly changing marketing communications and streamlining operations in both large and small companies. On social media, it assists in content creation, campaign planning and analysis, thereby increasing communication performance and effectiveness (Krajčovič, 2024; Pollák, et al., 2025). AI also brings new possibilities in customer support, especially through chatbots. In order to use it effectively, marketers need to understand its technical basis well, as their work intertwines business goals, creativity, and working with data (Jain & Kumar, 2024; Dušek, 2023). It can be argued that AI cuts across all components of the marketing mix, significantly impacting not only how value is delivered to customers but also the marketing management itself and the functioning of entire organisations (Jarek & Mazurek, 2019). Although there are some concerns, companies are enthusiastically embracing this new technology along with its various forms and tools (Wirth, 2018). Furthermore, the adoption of AI is transforming content distribution in digital marketing and enabling more effective strategies. AI tools help companies to generate personalised content in different formats such as texts, videos, or images (Amnoun et al., 2024). In addition, AI is reshaping the customer experience and changing the way businesses find, build, maintain, and manage interactive relationships within marketing (Peltier, Dahl & Schibrowsky, 2024). However, the automation of tasks through AI raises the question of whether marketers will accept it as a tool to relieve routine and focus on more creative tasks, or whether they will see it as a threat to their jobs (van Esch & Black, 2021). Still, AI technology plays a key role in intelligent systems that support decision-making (Gupta et al., 2022; Vavrová et al., 2025), with companies using it to streamline campaigns and improve user experience (Simion & Popescu, 2023). AI also provides a number of opportunities for companies to learn more about their customers, predict their needs, and actively engage them in communication (Campbell et al., 2020). Through machine learning and data analytics, it can automate tasks, personalise content, and improve customer understanding (Trgovac, Mandić & Marković, 2024). Advanced AI algorithms allow marketers to analyse data, forecast trends, and create personalised experiences based on customer behaviour. This increases user engagement and improves campaign results, while bringing ethical challenges that require attention (Zaharia et al., 2024).

The primary objective of this paper is to investigate the use of AI in marketing activities of a South Bohemian digital agency and to evaluate its impact on the effectiveness of presented campaigns. The agency deployed AI in 2020, mainly for content creation, ranging from articles, images, topics, and text suggestions to analytics and search engine optimization (SEO). The paper also explores how AI has been incorporated into the daily work of agency employees and what has contributed to its successful use.

To fulfil the objective, the following research questions (RQ1, RQ2, RQ3) are formulated:

RQ1: Does the use of AI-generated content in campaigns by the selected digital agency reduce the percentage of cost-per-turnover (CPT) when compared to non-AI campaigns?

RQ2. What is the impact of using AI on the effectiveness of marketing campaigns by the selected digital agency?

RQ3. Are AI-generated content campaigns able to achieve a comparable number of purchases at lower campaign costs than traditional campaigns?

1. Theoretical background

AI plays an important role in marketing due to its ability to learn and process large amounts of data efficiently. It enables rapid analysing as well as creating predictive models and personalised content, hence optimising campaigns and reducing costs.

An experiment was conducted on the Meta Ads platform comparing AI-set and manual campaigns. The two test groups differed in competency level and targeting, with their behaviour analysed using Kohonen maps. The results showed that AI can effectively influence user behaviour, increasing reach, clicks, and conversions. Thus, AI tools can improve sales and ROI (Turlakova & Shumilo, 2025; Kostiuk et al., 2021).

1.1. Automation of marketing processes

The introduction of AI is shaping the way companies engage with customers and manage marketing campaigns. Through automation, AI is taking over routine tasks such as emailing or social media management, which allows real-time adaptation of strategies based on customer behaviour analyses.

1.1.1. Automation tools

Modern technologies automate repetitive tasks to save time and increase communication accuracy. The most widely used tools include chatbots and automated campaigns. Chatbots are a key tool in marketing and customer service. Due to machine learning, they can respond to requests, modify communications, and serve large numbers of customers around the clock, reducing costs and improving the customer experience. Automated campaigns allow businesses to target customers with adapted messages at the right time. They utilise user behaviour data to accurately target and alter content, and also have the advantage of real-time performance tracking and quick adjustments to strategies. Linking chatbots, automated campaigns, and AI tools enables businesses to combine personalisation with more efficient processes. Additionally, chatbots ensure fast communication, data-driven campaign targeting, and their integration improves both performance and quality of the customer experience.

Ryoo et al. (2025) examined the effectiveness of AI chatbots in campaigns against marijuana-impaired driving, focusing on perceived hypocrisy, gender, and language style. Participants interacted with chatbots of different genders and speech styles. A female speaking informally and a male speaking formally had the greatest effect, which was related to increased feelings of guilt, as explained by Language Expectancy Theory (LET).

1.1.2. Improvement of efficiency and reduction of operating costs

AI and machine learning are no longer merely a research topic - nowadays, they are crucial to maintaining competitiveness. They can ensure more efficient processes, data analytics, accurate predictions, and automation, which is essential for market success (Kolbe et al., 2024). AI technologies allow customer experience adaptation and increase both satisfaction and loyalty (Konečný et al., 2025; Konečný et al., 2024). They also streamline the work of marketing teams that can react faster to changes.

On the other hand, the implementation of AI raises challenges that require specific skills and affect the organisational structure, where the need for training and effective realisation is pivotal. Collaboration between companies and universities can facilitate this process by combining expertise and practical experience (Kolbe et al., 2024). AI and machine learning also influence pricing, especially in B2B environments, where individual discounts are often negotiated. On the grounds of historical data and predictions of customer behaviour, AI helps optimise price offers, hence reducing negotiation costs and increasing deal success (Ning, 2021).

1.2. Personalisation and Customer Experience

One of the main benefits of AI is content personalisation based on the behaviour of customers. By analysing corresponding data, it can anticipate their needs and improve communication relevance and customer support.

Kim et al. (2025) investigated how virtual influencers (VI) can effectively spread socially responsible behaviour. In an experiment involving 320 participants, the influence of VI appearance (realistic vs. anime) and message style (narrative vs. non-narrative) on cyberbullying was tested. Realistic VI were perceived as more trustworthy, especially for the non-narrative style. The results show that the appearance and form of communication influence the effectiveness of prosocial messages.

1.2.1. The role of AI in personalised marketing campaigns

AI allows processing large amounts of data, which leads to creating relevant marketing campaigns. Predictive modelling can help reach the target audience and anticipate their needs.

Generative AI (GenAI) advances personalisation by automatically generating customised content related to customer purchases and preferences. Such content better appeals to emotions and increases the chance of conversion (Lăzăroiu & Rogalska, 2024).

Kapoor and Kumar (2025) examined the effectiveness of personalised video advertisements, or ads, made with GenAI in collaboration with a brand selling organic products. They undertook an experiment on the mobile app WhatsApp, where users were divided into three groups encompassing those with GenAI video ads, personalised image ads, and non-personalised video ads. The personalised ad content followed purchase history, with the results showing that GenAI video ads increased user engagement by 6-9 percentage points and delivered both cost savings and higher productivity.

AI also helps with building a stronger emotional connection with customers and increases conversion rates. Personalised content reduces the mental effort of decision-making,

speeds up the buying process, and delivers a more convenient experience by offering relevant products according to customer preferences (Chandra et al., 2022).

Besides, AI ensures accurate and effective interactions with customers by tailoring the shopping journey to their needs. It leverages technologies such as 3D experiences in the metaverse while decreasing the costs of analytics and content creation, freeing up space for strategic planning.

1.2.2. Impact on customer satisfaction and loyalty

As customer satisfaction is a key indicator of success, companies use effective tools to increase it. The implementation of AI assists in maintaining competitiveness and long-term market presence.

Zhang and Song (2022) explored how big data, artificial intelligence, and social media research affect the market orientation of firms. Their survey included 442 executives from four industries in the US. With the MARKOR scale and an assessment of using technology tools, three main areas were distinguished: AI for data analytics and personalisation, customer behaviour identification, and social media research. These factors help improve strategy, respond quickly to changes, and have a competitive advantage.

1.3. AI in predictive analytics and Big Data

Machine learning and big data analytics help companies identify trends and hidden patterns in customer behaviour. AI therefore allows more accurate campaign targeting, prediction of product directions, and efficient use of resources.

Moreover, the use of AI is changing the competitive landscape of marketing, particularly in the banking sector, where customer behaviour is specific. Zatonatska, et al., (2022) aimed to develop a marketing strategy to attract new clients by employing data science tools. This resulted in two econometric models for cash loans and credit cards that facilitate an efficient allocation of advertising budget. The models showed that data-driven campaigns increase the number of clients by 12% and achieve an ROI of 3.18. The findings confirm that data science improves marketing effectiveness and allows for more accurate planning of future campaigns.

1.3.1. Prediction of trends and analysis of customer behaviour

Predictive analytics, together with AI, aids businesses in understanding customers, recognising market trends, and gaining an advantage through more accurate predictions and targeted communications.

A hybrid model combining deep learning and optimisation algorithms can predict customer behaviour with 94% accuracy. It uses RBM for feature extraction and connects a dilated convolutional network with a weighted RNN, optimised with an upgraded cheetah algorithm. Validated on digital marketing data, the model outperformed traditional approaches such as LSTM or DTCN (Sakthi & Sundar, 2024).

Linking machine learning with marketing data makes it possible to process large-scale and unstructured data, overcoming the limits of traditional analytics methods. Although interpreting these models can be challenging, companies that meet this challenge acquire the ability to track customer buying behaviour and identify critical points in the buying process. As a result, they can optimise strategies and raise conversions. Hybrid models such as A-HDL allow for trend prediction, better market segmentation, and tailoring offers to customer preferences, which leads to higher satisfaction and loyalty (Ma & Sun, 2020).

1.3.2. Integration of data analytics into strategic decisions

In B2B marketing, it is important to leverage AI and data analytics at all stages of the customer lifecycle - from outreach to retention.

AI can improve communication and customer relationships, especially in conversion and retention. With predictive analytics, companies anticipate client needs, thereby increasing satisfaction and loyalty. AI also increases productivity, speeds up decision-making, and delivers higher ROI, although it brings challenges such as privacy issues (Moradi & Dass, 2022).

1.4. Ethics and responsibility in using AI

Implementing AI brings about ethical challenges, particularly in the areas of privacy and model bias. The solution lies in greater transparency of algorithms, control over data, and clear rules to ensure trustworthy and fair use of AI.

1.4.1. Ethical issues and algorithmic bias

Since AI is still a relatively new technology, there is a lack of set rules on ethics and data in marketing. This raises questions of algorithm impartiality and responsible use of AI, which

should be part of company strategic management (Ferrell & Ferrell, 2024).

Algorithmic bias arises when systems make decisions based on unbalanced data, possibly leading to discrimination related to gender, race, age, or socioeconomic status. Such bias threatens the fairness of decision-making and customer trust. Two approaches have been applied to address this issue: the a priori approach, which focuses on preventing bias during model development, and the post-hoc approach, which seeks to reduce bias after model deployment by analysing results and adjusting the model (Akter et al., 2021).

While using AI, it is crucial to adhere to transparency, accountability, and fairness. These principles should be incorporated into the development of algorithms and viewed as a tool not only for performance but also for positive social change.

Effective and ethical use of AI requires collaboration between managers and developers, an emphasis on equity, transparency, and control of algorithmic bias. Additionally, building trust through responsible data handling and risk management is significant as well (Grewal, et al., 2024).

1.4.2. Privacy and transparency

The introduction of AI into marketing processes has induced serious ethical issues, particularly in relation to privacy and transparency. Thus, it is important to strike a balance between technological advances and ethical principles in order to ensure the responsible and fair development of marketing tools.

Responsible handling of personal data is key to the ethical use of AI and data analytics. Although these technologies enable personalisation based on customer behaviour, they also give rise to privacy and data security concerns (Ahmad & Haque, 2024).

AI assistants enhance the customer experience with both practical and emotional support, increasing satisfaction and trust. Their learning from interactions leads to more empathetic communication, yet privacy is also important to prevent loss of trust (Gelbrich, et al., 2021).

Transparency plays a vital role in building trust between companies and their customers. Companies should communicate how they are using AI to personalise services, while comprehensibly explaining to customers how their data are collected and processed.

Ahmad and Haque (2024) highlight the importance of an ethical approach and the need for human oversight when implementing AI into marketing. To provide fairness and credibility, it is fundamental to establish clear rules that ensure AI serves the benefit of customers without violating their privacy.

Legal and ethical frameworks must keep pace with the rapid evolution of technology to secure compliance from the outset of deployment and prevent abuse. However, should abuse occur, it is essential to have mechanisms in place to deal with errors that may arise in customer data processing.

Large Language Models (LLM) increase the threat of phishing by allowing the creation of compelling, personalised emails without language errors. Until now, however, large-scale studies comparing their effectiveness with human-created emails have been lacking. Bethany et al. (2025) carried out an experiment within a university setting involving 9,000 employees. The results showed that LLM emails were as effective as those composed by professionals, pointing to their dangerous potential. Their study also analysed the vulnerability of different groups and the reasons why people succumbed, with the findings highlighting the need for better education and protection against AI-facilitated phishing.

1.5. AI in B2B Marketing

AI in B2B marketing increases efficiency in generating opportunities, personalisation, and predicting sales. In CRM systems, it evaluates potential customers and replaces mass marketing with a targeted approach.

Chatterjee et al. (2023) investigated how factors such as performance expectations, effort, compatibility, quality, and satisfaction with CRM affect employees' attitudes towards using AI in CRM systems. Data related to 315 users from Indian organisations were analysed with the PLS-SEM method. Questionnaires included 32 items on a five-point Likert scale distributed in cities such as Delhi, Bengaluru, and Mumbai. The results indicated that AI can improve customer relationships and increase efficiency, with a positive user experience being crucial. The research underlines the importance of technical compatibility and employee satisfaction in adopting AI technologies.

1.5.1. Specifics of AI use in the B2B sector

AI in B2B marketing also supports all stages of the customer lifecycle - from identifying potential

clients to maintaining relationships. It helps to target offers, predict success, and detect problems early (Moradi & Dass, 2022).

Han et al. (2021) divide the use of AI in B2B marketing into five main areas: personalisation, predictive analytics, customer experience improvement, automation, and strategic optimisation. This categorisation allows companies to comprehend the capabilities of AI and makes it easier to implement. However, despite its value recognition, some companies face challenges, mainly due to the variety of roles that AI can fill. A bibliometric analysis of 221 research articles from 1990 to 2021 confirmed these domains as a basis for assessing the current state and planning future strategies in digital marketing.

1.5.2. Automation of content and optimisation of campaigns

To optimise campaigns and automate content, a three-tiered AI framework - mechanical, thinking, and sentient - is applied. Mechanical AI automates routine tasks and data collection to increase efficiency. Thinking AI analyses data and assists in decision-making and selecting target segments. Sentient AI focuses on customer emotions and fosters relationship building and emotional connection with a particular brand. This framework can be employed in different areas of marketing through the 4P or 4C models (Huang & Rust, 2021).

1.6. Innovation in content creation and communication

Based on target group preferences, AI can create personalised content such as emails, blog posts, videos, or texts. Owing to natural language processing (NLP) technology, these materials can also be produced in multiple languages and a comprehensible form. At the same time, AI systems analyse user sentiment on social media and tailor marketing messages to better respond to current trends and market needs.

Rojas et al. (2024) introduced an AI model to generate marketing texts for medical clinics in Huancayo. The goal was to streamline content creation and better reach local audiences. The model uses NLP and machine learning to generate relevant texts that adapt to community needs. With feedback, the system continuously improves, saving time, increasing consistency, and helping clinics build a stronger digital presence.

1.6.1. Generative AI and its role in creative marketing

Generative AI combined with predictive algorithms and augmented reality is transforming the customer experience. It utilises data and sentiment analysis to create personalised content that increases conversions, builds loyalty, and effectively manages the entire customer cycle (Lăzăroiu & Rogalska, 2024).

Integrating innovation into chatbots is a competitive advantage for companies - assistants not only provide advice but also emotional support. Given AI advances, they can respond empathetically and adapt to customers in different situations.

Gelbrich, et al., (2021) illustrate that emotional support from digital assistants significantly increases customer satisfaction when using technology services. According to an analysis of more than 50 studies, they found that perceived warmth from digital assistants enhances customer experience and encourages repeated service use. Also, digital assistants can respond effectively to negative emotions, outperforming their human counterparts.

1.6.2. Benefits of creating texts, images, and multimedia content

AI is transforming content creation in the creative industries, advertising, and marketing. AI advertisements influence the perception of credibility and creativity, thereby increasing customer adoption and interest. When the parameters are set correctly, effective and attractive content is created (Gu et al., 2024).

AI's transition from text generation to image content creation is significant, yet it requires image authentication. Watermarks can indicate AI origin, though they can be easily removed. Thus, more robust methods need to be developed to authenticate digital content (Jiang, et al., 2023).

AI-generated content is mainly used in creative marketing, e.g. tourism and hospitality. Tools such as DALL-E 2 and GPT-3 save time and costs, making small companies more competitive in creating original campaigns (Tuomi, 2023).

1.7. Strategic frameworks and future development

The future of AI-enabled marketing is moving towards interfacing with machine learning, augmented reality, and predictive analytics. Companies will use it not only for automation but also for strategic decision-making, while investing

in innovation, and collaboration with humans will be crucial.

1.7.1. Long-term benefits of AI in marketing strategies

Although manual content still has its place, it cannot compete with the volume and quality of AI-generated output in the long run, which can lead to a decline in quality when trying to keep up manually.

MARK-GEN is a strategic framework with generative AI to create personalised and visually appealing content. It promotes creativity, flexibility, and helps companies gain a competitive advantage in a dynamic marketing environment (Islam et al., 2024). AI integration also helps companies respond to the market and optimise marketing. Assistants such as AIRA simplify customer decision-making, increase trust, and provide a research framework in digital marketing (Kim, 2020).

1.7.2. Future Trends and Challenges

Since the launch of ChatGPT in November 2022, services based on generative AI have experienced rapid growth. Despite the rising market and expanding opportunities, it remains unclear which platform is leading the way or what interface elements are influencing user preferences.

Yeon et al. (2024) examined which interface features of generative AI are preferred by users, applying a conjunctive analysis of five key elements: data type, generation style, output variations, reference style, and generation history. A survey of 500 users revealed that they most value access to the generation history (up to 10 backwards) and prefer footnotes as references. The creative style was less popular due to concerns about false information. In addition to user preferences, they also stress the importance of making generative AI models understandable and transparent. This is also confirmed by Ma and Sun (2020), who point out that although machine learning can efficiently process large volumes of unstructured data and achieve high predictive accuracy, its opacity can be a barrier to using it in marketing. Ma and Sun (2020) also call for the development of a clear framework to link algorithm outputs to human understanding and ensure ethical and effective use of AI in marketing practice. These findings suggest that understanding user needs and expectations is as important as the technology itself when implementing AI in marketing. Factors such as transparency, ease of access, and quality user experience play a crucial role in the successful and sustained employment of generative AI in practice.

1.8. AI as a catalyst for business transformation

In the era of Industry 4.0, physical and digital systems are interconnecting, transforming the way businesses operate (Straková & Kostiuk, 2023). AI enables both content creation and big data processing, creating an innovative and flexible digital ecosystem that considers ethics and security (Ji et al., 2024). It also enables precise targeting and content personalisation, which increases customer engagement. At the same time, it is important to develop companies' internal capabilities in digital transformation, strategic use of AI (Moradi & Dass, 2022; Reim, et al., 2020), and an ethical approach when working with customer data (Simion & Popescu, 2023).

Based on the above research questions, we selected methods appropriate for the available data. We used Chi-square test to compare strategies with and without using AI, with the relationship strength determined by Cramer's V. These approaches provide reliable results in line with quantitative standards.

2. Data and methods

To objectively evaluate the effects of AI in marketing, it was first necessary to identify data sources and select appropriate analytical methods. A quantitative approach allowed us to compare AI campaigns with conventional ones and to estimate not only the statistical significance but also the practical impact of the differences.

2.1. Data

As regards the research, internal data from marketing reports of a South Bohemian digital agency will be used. The agency handles campaigns for an anonymous company (XYZ), which operates in the South Bohemia Region as well, selling spare parts for cars of various brands.

The data concern XYZ's seasonal campaigns from the years 2023 and 2024. Six campaigns in three recurring categories will be analysed: Winter Tyres (October 10 – December 31), Cycling Accessories (June 20 – August 31), and Spring Accessories (April 15 - June 30).

All campaigns were of the same length, allowing for a comparison of results, which focused on whether related textual content was

created with or without the use of AI. In 2023, the content was made without AI. However, ChatGPT (the GPT-3.5 and GPT-4 models) was applied in the following year (2024).

2.1.1. Analysed data and indicators

The analysis will include these specific indicators: costs of the campaigns (adjusted by a coefficient to compare the performance), number of purchases, the total value of sales, and CPT (cost-per-turnover) as an indicator of effectiveness, where a lower value means a higher effectiveness of a particular campaign.

2.2. Methods

Differences in campaign budgets will be eliminated by a coefficient to compare effectiveness independently of the capital invested. The objective of the research is to confirm one of the proposed hypotheses (H0, H1):

H0: There is no statistically significant difference in the number of purchases between individual campaigns in 2023 and 2024.

H1: There is a statistically significant difference in the number of purchases between individual campaigns in 2023 and 2024.

Chi-square test will compare the observed and expected numbers of purchases in both sets of campaigns to find whether the differences are statistically significant. The calculation formula for the Chi-square test (Pearson, 2009) is as follows:

$$\chi 2 = \Sigma \frac{(O - E)^2}{E} \quad (1)$$

Where:

- O is the observed fraction for the given category,
- E is the expected frequency for the given category.

Effect size will show the magnitude of the difference in purchases between the campaigns. In the research, Cramer's V will be employed to measure the effect between category data, which can be small (0.1), medium (0.3), or large (0.5). Cramer's V formula (Cramer, 1946) for the Effect size is as follows:

$$V = \sqrt{\frac{\chi 2}{n \times (k - 1)}} \quad (2)$$

Where:

- $\chi 2$ is the Chi-square test value,
- n is the total number of observations,
- k is the smaller of the number of rows and columns in a contingency table.

3. Results

Data from the 2023 and 2024 campaigns were provided by the digital agency´s marketing department. Costs were adjusted by the aforementioned coefficient so that different budgets do not affect the research results.

The data were analysed with the Chi-square test to determine the statistical significance of differences in the number of purchases. Cramer's V was then applied to define the Effect size. The research focuses on testing the two hypotheses above (H0, H1) and the effect of AI on campaign effectiveness.

3.1. Analysis of differences between campaigns by type

Campaign prices were converted to the corresponding coefficient to assess their effectiveness independent of costs (see Table 1).

Table 1 Comparison of campaigns

Campaign	Price (CZK)	Number of purchases
Winter Tyres 2023	450 701.96	2 563
Winter Tyres 2024	454 893.68	3 563
Cycling Accessories 2023	29 521.35	17
Cycling Accessories 2024	25 989.00	30
Spring Accessories 2023	18 646.02	10
Spring Accessories 2024	9 861.00	46

Source: the authors

3.1.1. Winter Tyres

The Winter Tyres campaign was analysed over the same period in the years 2023 and 2024 (October 10 - December 31). When excluding AI in 2023, the costs reached CZK 450,701.96 and generated 2,563 purchases. With the inclusion of AI in 2024, the costs amounted to CZK 454,893.68, bringing the number of purchases to 3,563.

CPT dropped from 3.6% in 2023 to 2.47% in 2024, indicating a cost efficiency improvement of approximately 31%. Simultaneously, the number of purchases increased by 1,000, or 39% (see Table 2).

Table 2 Results of the Winter Tyres campaign

Year	2023	2024
Spending (CZK)	450 701.96	454 893.68
Number of purchases	2 563	3 563
Value of purchases (CZK)	12 476 876.48	18 386 888.00
CPT (%)	3.60 %	2.47 %

Source: the authors

The value of $\chi^2 = 163.26$ exceeds the critical threshold of 3.84 at $p = 0.05$, confirming a statistically significant difference between 2023 and 2024. Cramer's V = 0.163 signals a small to medium effect (see Table 3).

Table 3 Chi-square test and Effect size for the Winter Tyres campaign

	Value
Chi-square (χ^2)	163.26
Critical threshold (p =0.05)	3.84
Conclusion for Chi-square (χ^2)	The difference is statistically significant ($\chi^2 > 3.84$)
Effect size (V)	0.163
Interpretation	Small to medium effect

Source: the authors

The above indicators confirm lower costs relative to turnover and more purchases in 2024. The campaign using AI was therefore more effective than the 2023 campaign without AI.

3.1.2. Cycling Accessories

This campaign saw a reduction in costs of CZK 3,532.35 compared to 2023, along with an increase in purchases from 17 to 30. CPT fell from 98.55% to 18.5%, denoting an improvement in efficiency of over 81% and an increase in purchases of 76% (see Table 4).

Table 4 Results of the Cycling Accessories campaign

Year	2023	2024
Spending (CZK)	29 521.35	25 989.00
Number of purchases	17	30
Value of purchases (CZK)	29 954.51	140 398.00
CPT (%)	98.55 %	18.50 %

Source: the authors

The value of $\chi^2 = 4.07$ exceeds the critical threshold of 3.84 at $p = 0.05$, pointing to a statistically significant difference. Effect size of 0.29 corresponds to a medium effect, proving a measurable impact of AI on campaign performance (see Table 5).

Table 5 Chi-square test and Effect size for the Cycling Accessories campaign

	Value
Chi-square (χ^2)	4.07
Critical threshold (p =0.05)	3.84
Conclusion for Chi-square (χ^2)	The difference is statistically significant ($\chi^2 > 3.84$)
Effect size (V)	0.29
Interpretation	Medium effect

Source: the authors

Based on the reduction in costs and the increase in purchases, it can be verified that the 2024 campaign with AI texts made marketing more effective. Better resource utilisation and higher campaign performance illustrate that AI had a positive impact on the effectiveness and management of marketing activities.

3.1.3. Spring Accessories

The Spring Accessories campaign recorded the biggest decrease in costs, i.e. by CZK 8,785.02. Despite that, the number of purchases increased from 10 to 46. CPT decreased from 51.67% to 7.24%, which is a reduction of over 86%. The 360% increase in purchases at lower costs confirms the higher efficiency after AI deployment (see Table 6).

Table 6 Results of the Spring Accessories campaign

Year	2023	2024
Spending (CZK)	18 646.02	9 861.00
Number of purchases	10	46
Value of purchases (CZK)	36 089.82	136 125.24
CPT (%)	51.67	7.24

Source: the authors

The value of $\chi^2 = 24.32$ exceeds the critical threshold of 3.84, evidencing a statistically significant difference. Cramer's V = 0.65 (a large effect) represents the strongest impact among the campaigns analysed (see Table 7).

Table 7 Chi-square test and Effect-size for the Spring Accessories campaign

	Value
Chi-square (χ^2)	24.32
Critical threshold (p =0.05)	3.84
Conclusion for Chi-square (χ^2)	The difference is statistically significant ($\chi^2 < 3,84$)
Effect size (V)	0.65
Interpretation	Large effect

Source: the authors

The 2024 campaign using AI was more effective than the 2023 campaign without AI. The number of purchases increased by 360%, whereas the costs decreased by 47.12%.

3.2. Comparison of the AI impact across campaign types

The research demonstrated that the use of AI had a positive impact on all campaigns across the product categories. After the AI implementation, CPT decreased, and purchases increased, although the intensity of improvement varied between individual campaigns.

Relating to the Winter Tyres campaign, CPT fell from 3.6% to 2.47% (a 31% decrease), while the number of purchases rose from 2,563 to 3,563 (a 39% increase). Even at similar costs, this signifies an improvement in efficiency, which supports the use of AI in marketing.

In the Cycling Accessories campaign, CPT dropped from 98.55% to 18.5% (a decrease by 81%), yet the number of purchases increased from 17 to 30 (by 76%). The results show a significant streamlining of the campaign and a positive impact of AI on spending optimisation and conversion.

The Spring Accessories campaign made the biggest difference, with spending down by 47.1% (from CZK 18,646.02 to 9,861), but the number of purchases went up by 360% (from 10 to 46). This combination documents the most significant AI benefit of all the campaigns analysed.

The statistical tests confirm that AI substantially impacted the effectiveness of the campaigns. The chi-square test showed statistically significant differences: Winter Tyres $\chi^2 = 163.26$, Cycling Accessories $\chi^2 = 4.07$, and Spring Accessories $\chi^2 = 24.32$ - all above the threshold of 3.84 at $p = 0.05$.

The magnitude of the effect according to Cramer's V varied: Winter Tyres - moderate to medium ($V = 0.163$), Cycling Accessories - medium ($V = 0,29$), and Spring Accessories - large ($V = 0,65$). These results support the positive impact of AI on the campaigns.

3.3. Evaluation of hypotheses

The analysis enabled the research questions and hypotheses to be evaluated. The first research question (RQ1) focused on whether AI reduces CPT in the campaigns. In all three cases, there was a significant decrease in the CPT rates after AI deployment, proving greater financial efficiency. H1 was therefore confirmed.

The second research question (RQ2) investigated the impact of AI on campaign effectiveness. In addition to financial metrics, the number of purchases was also reviewed. After the introduction of AI-generated content, all campaigns experienced a significant increase in conversions. The statistical tests revealed that the differences were significant, hence confirming H1.

The third research question (RQ3) examined whether AI-enabled campaigns achieve the same number of purchases at lower costs. In particular, this was verified for the Cycling Accessories and Spring Accessories campaigns, where increased purchases occurred at lower costs. The Winter Tyres campaign evinced higher costs, yet more purchases and lower CPT, which also resulted in higher efficiency. Thus, H1 was confirmed.

4. Discussion

RQ1: Does the use of AI-generated content in campaigns by the selected digital agency reduce the percentage of cost-per-turnover (CPT) when compared to non-AI campaigns?

The analysis showed a reduction in CPT in all three campaigns after AI deployment. The largest decrease was observed in the Spring Accessories campaign (from 51.67% to 7.24%), followed by the Cycling Accessories campaign (from 98.55% to 18.5%), and the Winter Tyres campaign (from 3.6% to 2.47%). These results vindicate that AI reduces real costs relative to turnover. H0 was therefore refuted.

Kolbe et al. (2024) emphasise the benefits of AI in reducing costs and responding quickly to the market, as verified by the results of this paper. While they focus on the wider impacts, this work demonstrates the benefits of AI specifically on the CPT indicator based on data from the 2023 and 2024 campaigns.

It was possible to quantify efficiencies in line with the agency practice, while the introduction of AI delivered both process simplification and measurable financial savings.

RQ2: What is the impact of using AI on the effectiveness of marketing campaigns by the selected digital agency?

In all the campaigns studied, there was an increase in the number of purchases. Winter Tyres saw an increase of 1,000 purchases, Cycling Accessories 76%, and Spring Accessories 360%. These results confirm the positive impact of AI on conversions.

The chi-square test corroborated the statistical significance of the differences, with all campaigns

exceeding the critical threshold (3.84). The Spring Accessories (χ^2 = 24.32) and Winter Tyres (χ^2 = 163.26) campaigns achieved the highest values. The results support the conclusions of Trgovac, et al., (2024) and Huang and Rust (2021) on the benefits of AI for precision targeting. As a result, H1 was confirmed, whereas H0 was refuted.

RQ3: Are AI-generated content campaigns able to achieve a comparable number of purchases at lower campaign costs than traditional campaigns?

The third research question (RQ3) explored the relationship between costs and campaign performance. Campaigns with AI were more effective than those without AI. For instance, Spring Accessories reduced costs by 47.1% and the number of purchases more than quadrupled. As for Cycling Accessories, the costs dropped, yet purchases increased by 76%. Thus, H1 was confirmed, but H0 was disproved.

The findings of this paper align with the findings of Ma and Sun (2020), suggesting that AI can predict buying behaviour and target communication more effectively. Predictive models based on historical data increase conversions and reduce acquisition costs.

This paper also builds on previous research (Ning, 2021; Kapoor & Kumar, 2025) on returns and cost optimisation. The results indicate that AI has a direct impact on reducing costs while maintaining or improving performance.

A limitation of the research is that it does not consider long-term and secondary benefits, such as improved brand awareness or customer satisfaction, which can be significant according to Gelbrich, et al., (2021).

Conclusion

The main contribution of this paper lies in the finding that the use of artificial intelligence in campaign text creation reduces advertising cost-to-revenue ratio (PNO), increases conversions, and improves budget allocation. The results are based on campaign data from 2023 and 2024, showing that AI-supported campaigns (2024) outperformed those without AI (2023). PNO decreased, the number of purchases increased, and return on investment improved. Thus, AI contributed to lower costs, higher conversion rates, and greater customer satisfaction. Answering the above research questions confirmed statistically significant differences between 2023 and 2024, demonstrating that AI delivers better results at lower costs, which can be leveraged not only by large companies but also by SMEs.

The study connects theory on AI in marketing with practice through the example of a South Bohemian digital agency, where theoretical concepts were tested on real data, enabling their validation. The company can apply these insights in further development of digital marketing, strategic planning, and implementation of new tools such as intelligent chatbots in customer support or AI sentiment analysis systems, which allow quicker responses to feedback. Generative AI may also support graphic content creation, increasing efficiency and reducing employee workload. The obtained data can serve as a basis for new campaigns and contribute to more effective marketing.

The study follows methodological and logical principles of scientific research - from clearly defined questions, through suitable methodology, to interpretation of results. It also acknowledges research limitations, as it was conducted within a single company and focused on three campaigns for a specific client, which restricts generalization. Another limitation can be seen in market variability and consumer behaviour. Nevertheless, the findings provide a relevant perspective on the practical use of AI, offer applicable conclusions, and lay the groundwork for further research.

There is potential for extending the research, particularly in the field of generative AI and visual models, which open new opportunities for graphic design and marketing automation. Future research may focus on personalization of offers based on customer behaviour, further increasing campaign efficiency, saving time, and reducing costs of content creation and distribution.

The target audience of this study includes marketing professionals, digital agency staff, SME managers, as well as marketing and IT students. This paper can also serve as inspiration and insight into the practical application of AI tools and their impact on campaign efficiency and budgets, while simultaneously providing a theoretical foundation for further academic work.

Practical implications for SME managers comprise more efficient allocation of marketing budgets based on data-driven indicators (e.g., cost-per-turnover), faster evaluation and comparison of campaign performance using unified metrics, identification and optimization or reallocation of underperforming campaigns, use of AI in customer segmentation and content personalization (enhancing conversion and customer loyalty), easier decision-making on digital marketing investments based on statistically supported

findings, and gaining a competitive advantage through better understanding of customer behaviour and more effective communication.

Declarations

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Funding

This article is one of the partial outputs of the currently solved research project IVSUPS2305.

Acknowledgements

Not applicable.

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