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TECHNOLOGICAL INNOVATIONS IN DIGITAL MARKETING – A CONTENT ANALYSIS

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ABSTRACT

With the development of technologies contributing to the fourth industrial revolution, companies increasingly rely on implementing these technologies to maintain a competitive advantage. Technologies such as artificial intelligence, big data analytics, Internet of Things, augmented and virtual reality, and voice search optimization enable marketing experts to plan and adapt creative strategies more effectively. These technologies support companies to identify, attract, and reach target audiences across multiple digital channels and deliver marketing-relevant content in distinctive formats. Therefore, the integration of new technologies into creative marketing strategies can be considered as innovation in digital marketing. Implementing such innovations not only enhances marketing strategies but can also lead to the transformation of business models. In that way, the implementation of technological personalization tools in attracting new and retaining existing users, which, from a marketing perspective, can represent a key element of business digitalization. This paper focuses on identifying various technological innovations in digital marketing by analysing secondary data. A content analysis was conducted on scientific papers exploring the application of diverse technological concepts in value creation, with particular attention to their role in digital marketing strategy, specifically in shaping marketing objectives driven by technological innovation initiatives.

Keywords: digital marketing, digital technologies, technological innovations, content analysis

1. INTRODUCTION

The evolution of digital technologies is reshaping the way companies generate value (Paschen *et al.*, 2020), influencing the decision-making process on whether to retain the existing business model or to adopt a new, technology-driven one. In most industries, survival in the market depends on modernization, which implies technological changes in business processes. These changes can vary in scale and scope, enabling the development of digital components for new products and services, thereby adding value to the company (Saad and Alnuaimi, 2022). Such adoption of digital technologies often requires the transformation of business models, especially in the context of adapting the business model to users, increasing acquisition rates, and retaining users (Strategic Direction, 2023), (Loebbecke and Picot, 2015). Technological innovations ultimately aim to create new value for users, fostering their satisfaction and achieving a competitive advantage (Ku, 2024). More precisely, innovations based on digital technologies enable the creation of a transformational effect that manifests through the company's marketing strategies, shaping user behaviours before, during, and after purchase (Varadarajan *et al.*, 2022). The paper explores which technologies are utilized in digital marketing strategies and for what purposes, as well as the objectives behind various technological innovation initiatives. To address this research questions, a content analysis was conducted and presented in this paper, showing the results of an initial classification of technological innovations and marketing goals towards innovations that they are directed to.

2. CONCEPTUAL DEFINITION OF INNOVATIONS IN DIGITAL MARKETING

The concept of innovation represents a creative process of developing and implementing new ideas, products, methods, or solutions to enhance an existing system in terms of meeting user needs (Jung and Shegai, 2023). Previous research indicates that innovations positively impact business performance by increasing user satisfaction (which leads to increased sales) and production rate (which helps reduce production costs) (Jung and Shegai, 2023), (Mashal, 2017). In digital marketing, innovation begins with designing a creative strategy to identify and attract target audiences through multiple channels and using various digital technologies, ultimately aiming to enhance user experience and increase value for users (Ku, 2024), (Varadarajan *et al.*, 2022). The implementation of innovations then becomes an evolutionary effort in which only viable strategies and activities can be considered feasible. Over time, these strategies are carried out and evaluated in terms of achieving operational efficiency and additional value for the company (Erhan *et al.*, 2024), (Wengler *et al.*, 2020), (Frank *et al.*, 2019). The outcome of innovation is evaluated in profit-oriented companies by increasing the achieved economic value for the company. Innovations in digital marketing are closely linked to the broader digital business transformation paradigm, which is inherently user-centric, focusing on creating personalized offers that enhance the overall and personalized user experience (Youssofi *et al.*, 2024), (Ku, 2024). These innovations in digital marketing serve as a response to evolving social, economic, and technological changes in user habits and behaviour, aiming to effectively reach the target audience, establish initial contact, collect

valuable data, and ultimately gain a competitive advantage (Ku, 2024), (Jung and Shegai, 2023). This fosters mutual benefits for both companies and users.

The significance of innovations in digital marketing became particularly evident during the COVID-19 pandemic. Companies faced unprecedented challenges including legal barriers and social distancing measures which required the adaptation and transformation of overall business processes and business models (Erhan *et al.*, 2024), (Strategic Direction, 2023), (Gregurec *et al.*, 2021a), (Gregurec *et al.*, 2021b). The transformation of business models included innovations using various digital technologies to automate processes and improve traditional business paradigms (Erhan *et al.*, 2024), (Loebbecke and Picot, 2015). During the pandemic companies faced numerous unexpected challenges that increased the uncertainty and complexity in decision-making. However, the ability to perform timely and rapid decision-making supported by data-driven insights gathered through various digital technologies supports the increase of digital awareness and positively influences business success (Caputa *et al.*, 2025), (Erhan *et al.*, 2024), (Jung and Shegai, 2023). The shift from traditional to digital marketing became a logical and neutral response to changing lifestyle conditions during the COVID-19 pandemic (Erhan *et al.*, 2024), (Strategic Direction, 2023). Due to the distancing measures users developed new digital habits, spending more time on digital platforms, browsing websites for products and services, and generally moving their daily activities to a digital environment. In response, numerous digital innovations emerged, allowing users to quickly and efficiently find and purchase desired products from the comfort of their homes (Jung and Shegai, 2023), (Strategic Direction, 2023). Additionally, some companies enabled their employees to work from home, making the digital environment the new standard from 2020 onward (Strategic Direction, 2023), (Gregurec *et al.*, 2021a).

The lifecycle of innovations in digital marketing consists of three key elements: marketing capabilities (identifying opportunities for appropriate technological integration), absorptive capabilities (ensuring the successful implementation of innovations in digital marketing), and disruptive innovations (introducing new products with different performance characteristics compared to existing products) (Sun and Zhou, 2024), (Syed *et al.*, 2024). The concept of marketing capabilities encompasses a combination of human and financial resources, technologies, and various strategies that determine a company's ability to integrate digital marketing innovations successfully (Syed *et al.*, 2024), (Jung and Shegai, 2023). Simultaneously, innovation does not guarantee success, since without adequate marketing capabilities, companies may struggle to establish a desired market presence. Well-designed, timely strategies are essential for attracting new and retaining existing users and ultimately generating revenue and gaining a competitive advantage (Jung and Shegai, 2023), (Revilla-Camacho *et al.*, 2020). Furthermore, marketing capabilities act as a mediator between innovation and business performance by effectively communicating the value of innovations to users (Jung and Shegai, 2023). One of the main challenges within the innovation lifecycle is the process of implementing innovations in digital marketing and into existing processes and systems. Beyond financial and infrastructural resource limitations, the lack of human resources and skills necessary for effectively conducting marketing campaigns is highlighted,

especially for small businesses (Rosário and Dias, 2024), (Jung and Shegai, 2023). The process of implementing innovations in digital marketing activities requires strategic change by introducing a series of new tools and technologies (Rosário and Dias, 2024), (Semenda *et al.*, 2024). However, considering the overall effect, it is concluded that the implementation of digital innovations, i.e., new technologies into the overall digital marketing strategy, offers a positive potential on the business performance of the company (Jung and Shegai, 2023), (Mehralian and Khazae, 2022). For example, new technologies can improve user experience by increasing brand awareness, which creates a greater likelihood of purchase decision and boosts sales (Jung and Shegai, 2023), (Varadarajan *et al.*, 2022). Additionally, companies that prioritize investments in digital innovations and sustainability will achieve higher financial efficiency (Dumitriu *et al.*, 2019). In this context, sustainability involves promoting socially responsible behaviour among users by increasing awareness and demand for sustainable products through digital platforms, highlighting the significant role of innovations in digital marketing (Fauzan and Jaroenwanit, 2024). However, it is important to emphasize that company size and marketing capability determine the level of complexity of the relationship between innovations in digital marketing and the success of the company (Jung and Shegai, 2023), (Sinha *et al.*, 2021). Namely, small businesses often struggle with limited resources, whereas medium and large companies face challenges related to integrating new technologies into their operations (Jung and Shegai, 2023), (Rosário and Dias, 2024).

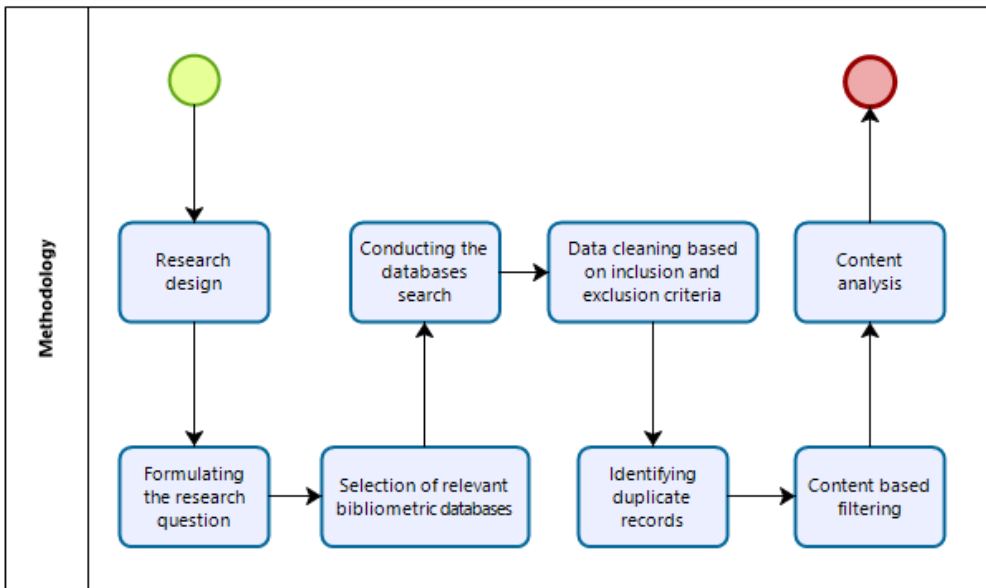
3. METHODOLOGY

The main aim of this paper is to explore technological innovations in digital marketing, as well as the objectives behind the technological innovation initiatives by analysing relevant scientific papers published between 2021 and 2024. To achieve this aim, desk research was conducted in January 2025, by reviewing scientific papers. Specifically, a content analysis was performed on the secondary data collected from the Scopus database and the WoS platform to summarize the existing literature. A graphical representation of the methodology is shown in Figure 1.

According to Figure 1, the process of content analysis research consisted of the following phases:

- a) Research design: given the interdisciplinary nature of the topic, of combining digital technologies and digital marketing into technological innovations, the research assumes an empirical and evidence gap that content analysis can address effectively.
- b) Formulating the research question: a research question was formulated towards covering the contribution of digital technologies to achieving marketing goals as part of digital marketing strategies, with a focus on digital technologies used for technology innovations.
- c) Selection of relevant bibliometric databases: based on the research design and formulated research question, the two most relevant bibliometric databases/platforms were selected: Scopus and Web of Science.

Figure 1. Graphical representation of applied research methodology



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- d) Conducting the database search: defining the search strategy - a search strategy was established using the following query: “Digital Marketing Innovation*” OR “Innovation* in Digital Marketing”. Based on the defined search query, the initial filtering of data by title, abstract, and/or keywords resulted in a total of 28 papers in the Scopus database and 15 papers on the WoS platform.
- e) Data cleaning based on inclusion and exclusion criteria: the initial papers were subjected to advanced filtering options, i.e., inclusion criteria: English language, publication timeframe of only four years: 2021, 2022, 2023, and 2024, and research areas of Business, Management and Accounting; Economics, Econometrics and Finance; and Social Sciences. This resulted in 18 papers in Scopus, while the research area of Business Economics within the WoS platform resulted in 6 papers. Using these three inclusion criteria (language, publication year, and research areas), the search identified a total of 24 distinct papers across both databases. These 24 initial papers, after being analysed in more detail, served as the data source for further search of papers in Scopus and WoS. Specific types of digital technologies, mentioned as keywords within the initial set of 24 papers, were used as new search queries, and each query was combined with the word AND “Innovation” to filter only those papers containing some innovation components. Ultimately, 7 different search queries were entered into the Scopus database and the WoS platform:

(1) "Artificial intelligence" OR "AI" OR "Chatbot*" AND "Innovation*"; (2) "Robot*" AND "Innovation*"; (3) "Blockchain technolog*" AND "Innovation*"; (4) "Big data" OR "Internet of Things" OR "IoT" AND "Innovation*"; (5) "Virtual reality" OR "Augmented reality" AND "Innovation*"; (6) "Voice search optimization" AND "Innovation*"; (7) "Social networks" AND "Innovation*". The results of the additional paper searches pointed to a large number of papers, so only the top three papers with the highest number of citations for a specific type of digital technology were considered (advanced data filtering option - Cited by (highest)), with the only inclusion criterion being English as the language of publication. The appearance of digital technologies in initial papers highlighted some technologies as relevant, and these literature sources led to the additional cited papers, which were included in consideration for extending our base for the content analysis. It was determined that a total of 38 additional papers (in Scopus and WoS, excluding 4 duplicate records in different databases) needed to be included to comprehensively cover the characteristics of certain types of digital technologies. Finally, the base for the content analysis included 62 papers (24 based on the initially defined primary query and 38 based on seven newly created research queries in both databases without duplicate records, focused on specific types of technology).

- f) Identifying duplicate records from merged search strategies: during the initial review of titles, abstracts, and keywords in all 62 selected papers, a total of 6 duplicates were identified (between initial and advanced search), meaning the same paper appeared in both searches. After the removal of duplicates, 56 unique papers remained.
- g) Content based filtering: based on the scope of 56 papers, only 32 papers explicitly contained the necessary data for content analysis. The content analysis process began with reading the key sections of each paper, including the title, abstract, keywords, research findings, and conclusion. After this screening, 24 papers were excluded from detailed analysis, because the authors of this paper determined that their content was not relevant enough to be included in the further elaboration within this research topic. For example, the mere presence of the term innovation (in digital marketing) combined with a specific type of technology in the paper's title does not necessarily imply that the paper's content addresses the integration of new technologies into creative marketing strategies.
- h) Content Analysis: the papers that met the content filtering criteria (32 papers) were thoroughly analysed, considering the research objectives. The detailed content analysis involved a precise analysis of each paper, extracting the importance of each paper according to the research objective, which was followed by manually coding the main elements of each paper (a matrix was created taking into account technologies, and their usage for value creation as well as for achieving digital marketing strategy goals). For each paper, the coded matrix clearly captured the primary research objective, the type of research conducted, and the sample used,

characteristics of the research, the type of technology the paper focused on, the advantages and disadvantages of implementing that specific technology, research results, and the general conclusions drawn by the authors. The next step was summarizing these elements by defining a set of key terms that best described each analysed paper. Every paper included a component related to the process of creating added value through the use of a particular technology aimed at achieving digital marketing goals through a defined marketing strategy. In order to distinguish the technologically dependent value creation component from the goals defined by the digital marketing strategy, and taking into account the manual coding of all papers, Table 1 shows the classification of key elements from both perspectives, considering each of the observed technologies. Table 1 served as the foundation for developing a model for the initial classification of four technological innovations and eleven innovation-driven marketing goals presented in Table 2.

4. APPLICATION OF DIGITAL TECHNOLOGIES IN PRACTICE

Enhancing user satisfaction in contemporary highly competitive digital markets relies on developing adaptable and efficient marketing campaigns tailored to specific user profiles (Kumari and Jha, 2024), (Semenda *et al.*, 2024). The development of digital technologies has significantly changed user behaviour. With that change, numerous new challenges for companies arose, primarily related to the process of implementing digital technologies into their business operations. At the same time, digital technologies offer various opportunities for marketing professionals to present ideas and strategies in a new, innovative way, creating the conditions for growth and increased user satisfaction (Semenda *et al.*, 2024). The fourth industrial revolution has created the necessary environment for the use of technologies and tools such as artificial intelligence, blockchain technology, big data, Internet of Things, augmented and virtual reality, voice search optimization (Blut *et al.*, 2024), (Jane, 2024), (Behera *et al.*, 2022) (Bansal *et al.*, 2021). Those technologies were appearing in content analysis of 32 scientific papers, reporting on the appearance of technological concepts that enable technology-based value creation and innovative digital marketing strategy design. Table 1 summarizes the findings from the content analysis listing the appearing technology in the first left column, harvested description on technology-based value creation in the second, and digital marketing strategy goals that can be achieved by the technology innovation in the third column.

Table 1. Content analysis results

Technology	Technology-based value creation	Digital marketing strategy goals
Artificial intelligence (AI)	AI can create diverse services through various approaches (Han <i>et al.</i> , 2021) and act as a major driver of marketing innovations (An <i>et al.</i> , 2024).	Creating new marketing innovations (Han <i>et al.</i> , 2021), (An <i>et al.</i> , 2024).
	AI role as: (1) AI-driven user support, (2) AI prediction of B2B sales, (3) AI for value co-creation, and (4) internal process tools for managing business activities (Blut <i>et al.</i> , 2024); (Han <i>et al.</i> , 2021).	According to its new role, AI aims to: (1) improve user relationship management (CRM), (2) enable prediction of marketing strategy outcomes, (3) enhance stakeholder engagement in the co-creation process, and (4) support managing internal processes and activities (Blut <i>et al.</i> , 2024), (Han <i>et al.</i> , 2021).
	AI as a tool for creating virtual agents, digital entities like virtual assistants and chatbots (for user interactions in the sales process), providing information timely and efficiently, analysing data, and responding to user inquiries 24/7 (Blut <i>et al.</i> , 2024), (Schanke <i>et al.</i> , 2021), (Patil, 2024), (Bouras <i>et al.</i> , 2023), (Sun <i>et al.</i> , 2023), (Ruan and Mezei, 2022).	Managing user relationships using digital entities that replace human agents during interactions (Blut <i>et al.</i> , 2024), (Schapnke, Burtch and Ray, 2021). Since the availability of AI-based digital entities is not limited to a specific time or place, continuous support and interaction with users is enabled 24/7 (Patil, 2024), (Bouras <i>et al.</i> , 2023), (Sun <i>et al.</i> , 2023), (Ruan and Mezei, 2022).
	Speeding up response times and solving specific user problems, as well as increasing work productivity (Patil, 2024), (Brynjolfsson <i>et al.</i> , 2023).	Changing the way of interacting with users by increasing the number of satisfied and loyal users and improving work productivity (Patil, 2024), (Brynjolfsson <i>et al.</i> , 2023).
Robotization	Implementation of robots adjusted to working conditions or anthropomorphized robots in hospitality and catering (Cao <i>et al.</i> , 2025), (Cesário <i>et al.</i> , 2025), (Zhu <i>et al.</i> , 2025), (Ku, 2024).	Robotic innovation as a communication tool about the organization's technological commitment (Cao <i>et al.</i> , 2025), (Cesário <i>et al.</i> , 2025), (Zhu <i>et al.</i> , 2025), (Ku, 2024).
	Service robots represent a form of business process automation, facilitating the performance of everyday tasks requiring human effort (Zhu <i>et al.</i> , 2025), (Ku, 2024).	Service robots as means for facilitating work conditions of employees, enhancing performance of everyday routine tasks requiring human effort (Zhu <i>et al.</i> , 2025), (Ku, 2024).
	Robotization innovations are perceived in relation to purchase and implementation costs (Cao <i>et al.</i> , 2025), combined with process efficiency (Ku, 2024).	Users perceive the benefits of robotization innovations through the interaction of robots and employees in the context of greater process efficiency (Ku, 2024).

Blockchain	<p>The inability to alter data records by using decentralized technologies, as well as privacy regulations, present challenges for data collection (Bansal <i>et al.</i>, 2021). The useful implementation of blockchain as a technology of trust, can affect users' perception of security and control over their data (Bansal <i>et al.</i>, 2021), (Hader <i>et al.</i>, 2020).</p>	<p>Changes in users' attitudes toward the value of their data or their business relationships, especially in the context of sharing and selling information to advertisers, affect their loyalty (Bansal <i>et al.</i>, 2021), (Hader <i>et al.</i>, 2020).</p>
Big Data and Internet of Things (IoT)	<p>Functionalities enabled by big data for predictive analytics (Jamarani <i>et al.</i>, 2024). The data sources for such analytics are IoT technology and devices (Flores-Martin <i>et al.</i>, 2024).</p>	<p>Using big data enables content personalization (Jamarani <i>et al.</i>, 2024), enhancing user experience. By relying on IoT technologies (Flores-Martin <i>et al.</i>, 2024) marketing professionals have new ways to interact with users, as well as the ability to predict user behaviour and lifestyle (Priya <i>et al.</i>, 2022).</p>
	<p>Besides IoT, data collection is performed through various communication channels, from direct emails to social media and search engine marketing, creating the foundation for improved performance and better-targeted services within digital marketing (Aldouri, 2023), (Priya <i>et al.</i>, 2022).</p>	<p>The data collection process relies on various elements of the digital marketing promotional mix, allowing better targeting of specific groups within digital marketing (Aldouri, 2023), (Priya <i>et al.</i>, 2022).</p>
	<p>In the retail industry, companies aim to simplify operations by introducing smart devices – e.g., smart shelves and RFID tags that allow employees to monitor inventory levels in real-time, achieving greater efficiency in sales processes (Adhicandra <i>et al.</i>, 2024), (Choudhary, 2024).</p>	<p>In the retail industry, companies aim to improve user experience by simplifying processes and introducing smart devices. Personalized marketing approaches are based on previously observed user preferences and past behaviour (Adhicandra <i>et al.</i>, 2024), (Choudhary, 2024).</p>
Virtualization Technologies	<p>The application of virtual and augmented reality enables product demonstrations, virtual product try-ons, virtual product displays in real spaces, virtual tours of physical stores, or interactive advertising campaigns (Dvorak <i>et al.</i>, 2024), (Rosário and Dias, 2024), (Xu <i>et al.</i>, 2024) with or without the enhancement of services using generative AI tools.</p>	<p>Creating additional value through virtual and augmented reality provides 3D product displays, virtual product try-ons (e.g., clothing, glasses), and other forms of interactive advertising campaigns that illustrate product potential in the desired context of use (Dvorak <i>et al.</i>, 2024), (Rosário and Dias, 2024), (Xu <i>et al.</i>, 2024).</p>

Voice Search Optimization	Voice search optimization using query words such as: who, what, when, how, why, where, and is (Saeed <i>et al.</i> , 2024) increases the search accuracy of search engines (Rajendran, 2023), (Jain <i>et al.</i> , 2022).	New user habits imply new ways of expressing search queries, e.g. via voice recognition (Saeed <i>et al.</i> , 2024). Search accuracy on search engines is a key tool for increasing the visibility of companies, products, and services by understanding how people behave when searching websites (Rajendran, 2023), (Jain <i>et al.</i> , 2022).
	The technological challenge of voice search optimization is the response time (Lambrecht and Peter, 2022), affecting perceived efficiency.	One of the main benefits of voice search is the time required to define a query, as a voice search query is spoken four times faster than the same query that needs to be typed (Lambrecht and Peter, 2022).
	Voice search functionality is available on various devices, from mobile devices to smart speakers, such as TVs and cars (Saeed <i>et al.</i> , 2024).	Changes in user behavior and the greater integration of digital mobile or smart devices like TVs and cars into daily routines (Saeed <i>et al.</i> , 2024) require technologically advanced services that follow routine changes. Over time, this has resulted in a decreasing presence of traditional communication and advertising channels (Shafi <i>et al.</i> , 2022).
Social Networks	Managing social networks requires new competencies and processes in implementing marketing activities with the potential for financial benefits (Shah <i>et al.</i> , 2024). Social networks, combined with other technologies (such as AI or big data), enable technological innovations related to more efficient differentiation (Ku, 2024), (Jung and Shegai, 2023) (Yunis <i>et al.</i> , 2018).	The contribution of social networks can result in an improved financial outlook for companies (Shah <i>et al.</i> , 2024), company success, competitive and profitable market position with a high degree of product differentiation leading to increased consumption (Ku, 2024), (Jung and Shegai, 2023) (Yunis <i>et al.</i> , 2018).
	Social networks enable the establishment of tools for targeted delivery of differentiation messages through brand representatives, or influencers – influencing the reach and monitoring user reactions (Rajendran, 2023).	The communication of a clear differentiation message is entrusted to influencers who, through methods of influence and identification with brands, aim to increase reach and user engagement, compared to traditional advertising channels (Rajendran, 2023).
	Social network innovations, combined with other technologies, enable personalized content delivery (Shah <i>et al.</i> , 2024), (Jung and Shegai, 2023).	By developing new and innovative communication channels, a more personalized way of communicating with users is enabled (Shah <i>et al.</i> , 2024), (Jung and Shegai, 2023), thereby improving the user experience (Shah <i>et al.</i> , 2024).

Source: Authors

Based on the content analysis results, a model was created to illustrate the initial classification of technological innovations and the marketing goals towards which the innovations are directed. The model consists of four categories of technological innovations and 11 marketing strategy goals, which were synthesized from Table 1 and presented in Table 2. The model presented in Table 2 serves two main purposes. First, based on scientific papers, it provides insights into how companies can implement a specific technology in terms of technological innovation, based on secondary data. For example, virtualization technologies can enhance marketing processes, impacting goals such as improving user experience, accepting innovations, creating new value, and new channels/modes of interaction with users. This is marked in the model by an "X" mark in the columns of technological innovations and marketing goals. The second purpose of the model is to provide companies with information on how to design a new technological innovation by highlighting which technology has not been used for creating new value in a technological context and which marketing goal can be targeted.

In the presented model, such information and opportunities for companies can be recognized by the absence of an "X" mark in the columns of technological innovations and marketing goals. An example of this approach is using voice search technology to develop an application focused on business sustainability, targeting goals such as improving brand management, increasing user loyalty, enhancing privacy, and building trust.

Another example, for the practical use of the initial classification model presented in Table 2, the following can be considered: a company has set the goal to implement innovations into their communication operations with better targeting and more personalized content distribution while keeping the cost level at an acceptable level. The goal fits the „Technological innovations in communication channels“, as well as „Technological innovations aimed to achieve business sustainability“ and „Technological innovations in products or services“, and at the same time, it aims at the marketing goal of „Greater perceived personalization of offerings. Based on the marks in Table 2, the respective appropriate technologies for supporting this goal would be AI, Big Data and IoT.

Table 2. The model of initial classification of technological innovations and innovation-driven marketing goals

Technologies	AI	Robotization	Blockchain	Big Data and IoT	Virtualization Technologies	Voice Search Optimization	Social Networks
Technological innovations							
Technological innovations in communication channels	X		X	X		X	X
Technological innovations in marketing processes	X			X	X	X	X
Technological innovations aimed to achieve business sustainability	X	X		X			
Technological innovations in products or services	X	X	X		X		X
Marketing goals							
Enhancement of user experience	X			X	X	X	X
Greater perceived personalization of offerings	X			X			
Brand management	X						X
Acceptance of innovations and creation of new value	X				X		
Increase in user loyalty	X		X				X
New channels/modes of interaction with users	X				X	X	X
Conveying attitudes about the technological commitment of the organization		X					
Respect for or improvement of privacy			X				
Sustainability in the context of resource consumption by providers		X		X			
Increase in trust			X				
Perceived speed of communication						X	X

Source: Authors

The model's application can take place at different stages of a company's lifecycle. A company that is introducing or already using a specific technology first needs to identify which types of technological innovations are not being supported by some technologies (meaning that the competitors have not yet implemented the technology for that specific purpose). That is a gap that companies can identify as a strategic opportunity to do something in a technologically new way. This can be seen in Table 2 through the absence of "x" marks, e.g., there are no reports about Virtualization Technologies being used for Technological innovations aimed to achieve business sustainability – so this is an opportunity for a company to address this gap and offer Innovation in that specific niche. Similarly, Virtualization Technologies didn't appear as relevant for marketing goals related to Respect for or improvement of privacy or Increase in trust, so that can also be seen as a gap for implementing Innovations by designing new marketing initiatives.

5. CONCLUSION

This paper aimed to explore which technologies and for what purpose are applied in digital marketing strategies, as well as what marketing goals were aimed, or can be achieved by various technological innovation initiatives. The conducted content analysis has shown that technological innovations in digital marketing enhance user experience by enabling faster, simpler, and more efficient ways to reach a targeted audience. These innovations aim to engage users with technologically advanced products and services, to create new ways of interacting with users, while simultaneously collecting and analysing data necessary for making marketing decisions. The analysis also illustrates that secondary data can be of value for supporting decisions on technological innovations and how those can play a key role in acquiring and retaining users, fostering loyalty, and building brand awareness, which ultimately leads to increased sales and business growth.

According to the conducted research and the given model and conclusions, the importance of this paper lies in the fact that previous research has mainly focused on one technology, highlighting its characteristics such as advantages, disadvantages, and practical applications within specific industries. This research summarizes the key features of each paper, aiming to generalize the model and extend its application across various industries by combining different categories of technological innovations to achieve marketing goals. While some technologies are predominantly used in specific sectors, the model itself is adaptable and applicable across different industries, allowing adjustments to marketing goals.

Additionally, it is important to highlight that the analysis also shows how the introduction of technological innovations focused on sustainability is a valuable approach for both companies and users. While this paper acknowledges the significance of technological innovations in digital marketing, it also suggests that their full potential remains to be exploited and recognized. However, with the development of technologies and further social changes that impact users and their behaviours, it can be assumed that this will change in the future and that this field has great research potential. Based on the conducted analysis, technological innovations in digital marketing can impact the sustainable, competitive, and profitable

position of companies in the market, positively contributing to business success. The results of this analysis also show that the adoption of innovations in digital marketing benefits users themselves, fulfilling their expectations in terms of user experience, trust, and delivered value, but also that there are alternative innovations and marketing opportunities to be addressed.

6. RESEARCH LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The concept of innovation in digital marketing plays an indescribably important role in today's era of modernization, as highlighted by the content analysis. Going through all the stages of the research process, as outlined in the methodology section, the analysed papers emphasize the importance of technological innovations in digital marketing. However, despite the importance of this field and the potential implications and possibilities of technological innovations in both positive and negative terms, there is still need for further in-depth research. In this context, this research also has certain limitations. First, the search queries and the combination of inclusion criteria at each stage of the research may have led to the exclusion of papers that are relevant to the topic, meaning that this research cannot be considered fully comprehensive. The second limitation concerns the classification elements, which arise from the types of technological innovations that appeared in the content analysis, making it possible to recognize additional categories of technological innovations or marketing goals.

Future research could expand the scope by considering a broader range of technology types, allowing the model itself to be enhanced with additional categories of technological innovations in order to achieve greater value for both customers and companies. The classification of marketing goals is also open to revision, including the potential to add new relevant marketing goals, depending on the environment in which the marketing strategy is developed and implemented, or to refine the current set based on insights from the newest scientific papers. Also, an interesting idea for future studies could involve applying the existing model in practice, either within several companies in one industry or across companies from different industries. Implementing the model across multiple industries opens up the possibility to conduct comparative analyses that highlight similarities and differences in how various technologies impact distinct industrial sectors and their marketing goals. Although the current model is two-dimensional, it has the flexibility to be expanded in the future. Nevertheless, the authors believe that the research results provide valuable insights for the initial classification of technological innovations and marketing goals they aim to address.

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TEHNOLOŠKE INOVACIJE U DIGITALNOM MARKETINGU – ANALIZA SADRŽAJA

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SAŽETAK

S razvojem tehnologija koje doprinose četvrtoj industrijskoj revoluciji, poduzeća se sve više oslanjaju na njihovu implementaciju kako bi održale konkurentsku prednost. Tehnologije poput umjetne inteligencije, analize velikih podataka, interneta stvari, proširene i virtualne stvarnosti te optimizacije glasovnog pretraživanja omogućuju marketinškim stručnjacima učinkovitije planiranje i prilagodbu kreativnih strategija. Ove tehnologije pomažu poduzećima u identificiranju, privlačenju i dosezanju ciljane publike putem različitih digitalnih kanala te u isporuci relevantnog marketinškog sadržaja u prepoznatljivim formatima. Stoga se integracija novih tehnologija u kreativne marketinške strategije može smatrati inovacijom u digitalnom marketingu. Implementacija takvih inovacija ne samo da poboljšava marketinške strategije, već može dovesti i do transformacije poslovnih modela. Na taj način tehnološki alati za personalizaciju igraju ključnu ulogu u privlačenju novih i zadržavanju postojećih korisnika, što iz marketinške perspektive može predstavljati ključni element digitalizacije poslovanja. Ovaj rad fokusira se na identifikaciju različitih tehnoloških inovacija u digitalnom marketingu putem analize sekundarnih podataka. Provedena je analiza sadržaja znanstvenih radova koji istražuju primjenu različitih tehnoloških koncepata u stvaranju vrijednosti i njihovoj svrsi u digitalnim marketinškim strategijama, odnosno u definiranju marketinških ciljeva pokretanih inicijativama tehnoloških inovacija.

Ključne riječi: digitalni marketing, digitalne tehnologije, tehnološke inovacije, analiza sadržaja

