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DEVELOPMENT OF AI SYSTEMS IN GLOBAL DIGITAL MARKETING

Abstract We have entered an active period in the current stage of using AI in digital marketing as an important tool to understand and respond to individual needs and behavior of customers, especially in the areas of personalization of content and customer experience. One of the main and effective AI use cases in content personalization (which is important given today's multi-channel consumer habits) is the analysis and structuring of past consumer interactions with a channel in order to deliver contextual and consistent messages to each consumer based on seamless channel integration. According to McKinsey estimates, the AI potential in digital marketing and sales is estimated at 1.4-2.6 trillion. dollars [1], which testifies how AI is revolutionizing digital marketing and increasing the companies’ efficiency. That is, AI significantly contributes to the expansion and improvement of business efficiency in addition to improving the customer experience, the ability to analyze large data volumes, and understand consumer behavior. The future of AI-based digital marketing lies in connecting with consumers and satisfying their specific requests and preferences with the help of even more creative and pragmatic approaches, and therefore, further introduction of digital marketing technologies into activities of modern Industry 4.0 business structures.

Keywords: artificial intelligence, digitalization, digital marketing, AI system, AI tool, AI analytics, content marketing, hyperpersonalization.

Analysis of the Latest Research and Publications Analysis of the latest research A significant contribution to the development of modern concepts of AI and digital marketing was made by recent publications of the following authors: Herberger T.A., Dötsch J.J. [2], Fornes G., Altamira M. [3], Rana N.P., Slade E.L., Sahu G.P. [4], Das S. [5]. However, despite the significant volume of scientific and practical research in this area, there are still no holistic views and unified approaches to the content and features of using AI systems in digital and Internet marketing.

The Purpose of the Article: analysis of modern trends in development of AI systems in digital marketing and their adaptation to the strategic and tactical needs of companies.
Presentation of the Main Material  The effectiveness of innovative marketing tools depends on the effectiveness and quality of primary marketing research, including various forms of market data analysis: search, collection and organization of information. Therefore, taking into account the study of the specifics of marketing strategies of companies, a proper analysis of the collected data allows, firstly, to identify changes in their basic concepts and practices, especially in the part of direct interaction with consumers. Secondly, to determine both the key areas of work with customers and predict the results of using various marketing tools, as well as evolution of consumer purchasing preferences (including personal emotions and views of consumers as carriers of positive or negative information about the company). That is, the constant genesis of innovative digital marketing tools and platforms today allows companies to effectively promote their products and services, communicate with their audience and adapt their strategies to the dynamically changing market conditions of Industry 4.0.

As evidenced by the analysis of numerous case studies carried out in the field of effectiveness of the influence of AI tools, the customer experience and personalization of content are growing rapidly. For example, one of the world's largest investment companies Vanguard uses an AI language platform to personalize its advertising, resulting in a 15% increase in conversion rates. TomorrowSleep, a startup specializing in the development of sleep systems, uses AI tools in its content strategy to increase web traffic (indicators are measured by hundreds of percent growth). The American Marketing Association is using AI to significantly increase reader engagement, personalize mailings, and drive traffic to its site. And Adobe has increased customer engagement on its website by more than $10 million thanks to its AI chatbots and content strategy. According to the existing statistics, currently most innovations are built on AI-personalization. For example, the supermarket chain Kroger (USA) tracks customers' purchase history and sends them personalized discount coupons (as a result, the company reports coupon returns of up to 70%, although the market average is only 3.7%). British online clothing retailer ASOS leverages AI personalization functionality by allowing users to personally sort their favorite products into separate categories called dashboards. This has helped the company to structure customer needs in the possible way and understand which products users like the most, and provide more relevant content [6].

When analyzing the role of AI in implementing digital marketing technologies in modern business activities of Industry 4.0, it is necessary to separate content creation and intelligent content management. The point is that while AI cannot create blog posts on recommendations based on industry best-practice or a political column of its own, there is already AI-powered content that is effective and useful in driving traffic to a company's website. So, for example, the Wordsmith system can create logical texts from the received or available data, process quarterly income reports, and this automatic content generation significantly saves time for
marketers. In addition, this AI-generated content is a useful component of a corporate content marketing strategy, especially if the field of business activity related to financial services. As for readers, most of them are not able to tell the difference between a machine-written or human-written text, and according to Gartner, as of 2018, technology has created 20% of content. To improve communication with companies’ visitors and create more relevant content, intelligent content management technologies are becoming increasingly important in creating interesting to users personalized recommendations. So, for example, today the following technologies are in the greatest demand from companies:

- **Olapic** technology not only analyzes user habits, and preferences and selects content that may interest them, but also helps users to find useful product photos in advertisements and on websites in real time;
- **Phototorank** technology evaluates a large amount of information to accurately predict engagement and conversion for each image/video;
- **Curalate** technology can find good photos and get permission to use them using Infinigraph’s hashtag-based rights management system, thus helping to choose the best thumbnails for video covers;
- **Somatic** technology can view images, create short descriptions in different styles, and subtitles in the style of a certain celebrity;
- **USA Today** technology uses AI to read news stories, share new facts and story material, including regular updates to existing stories, create video scripts, edit videos and photos, and edit synthesized voiceovers.

With the development of AI-personalization and the use of AI in digital marketing, the development of targeted advertising has received a special acceleration – recommendation lists, voice assistants and chatbots based on AI are gaining more and more importance in customer service and support. Chatbots processing natural language provide customers with round-the-clock automated support, quick and simple assistance, and consistent interaction. They act as first-line support tools, connecting customers with live agents when needed. Furthermore, data analytics (AI-based algorithms and machine learning methods), which has fundamentally changed the entire marketing industry, is revolutionizing for marketers all the processes of analyzing and processing data sets. Unlike traditional analytical methods, AI analytics processes and sorts through large volumes of data in real-time, uncovering complex patterns and correlations that reveal important relationships and trends. This feature allows marketers, on the one hand, to better track attribution modeling, performance statistics, and customer statistics. At the same time, it helps to make more informed, data-based decisions that optimize marketing strategies to increase ROI and efficiency [7].

AI is currently having a significant impact on customer experience, as well as growth and effectiveness of marketing analytics. For example, it enables the delivery
of highly specialized content and services based on each customer's unique behaviors, personalities, and purchase history. This enhanced personalization through the in-depth study of customer data increases targeted sales and is critical for audience targeting and segmentation. This has become possible because AI can comb through large swaths of data to find distinct audience characteristics and create customized content to reach them at scale. In doing so, companies are adapting to this shift in marketing strategy by creating large, aggregated data sets to train AI models that can be applied to commercial systems to optimize workflows. In addition to optimizing marketing strategies, this revolution in data processing and interpretation is also changing the roles and responsibilities of data analysts, positioning them as key players in bridging the gap between raw data and strategic business intelligence.

At the same time, AI has completely changed the very paradigm of marketing data analysis. Vast AI opportunities for data analysis empower personnel, but do not replace their participation in the value creation process, making the management and analysis of large-scale data more effective and faster. At the same time, by automating repetitive tasks, analysts can focus on more strategic and creative aspects of problem solving. By providing AI-powered insights, streamlining the reporting process, and enabling forecasting based on retrospective data, AI improves decision-making. Its adaptive learning capability also transforms traditional forecasting methods, which are often limited in complex and volatile markets, to provide more accurate forecasts. The use of AI in data analysis means that the priorities of data analysts are shifting from labor-intensive tasks to more thoughtful and strategic ones. The position of a data analyst has turned from a purely technical one into a hybrid one that combines technical skills with communication and strategic thinking skills [8].

The global market for AI in digital marketing is expected to grow from $15.84 billion in 2021 to $107.5 billion by 2028, which indicates a paradigm shift in creation and use of content in marketing. AI is widely used in production, not only for finding ideas and inspiration, but also for creating full-fledged marketing materials. For example, filmmakers and photographers use AI tools like Kive.ai to automate the process of extracting the right frames from a video, which saves a lot of time when creating moodboards to improve routine work on projects. Similarly, AI systems such as HubSpot's Content Assistant create lists of potential blog posts and summarize articles on specific topics. AI tools are also quite effective when writing texts for marketing materials. Programs like ChatGPT help automate marketing copywriting tasks, allowing writers to create SEO-friendly content for blogs, social media posts, and press releases, saving them the time they would normally spend on it. Marketing experts generally agree that these tools not only make it easier to create more content than manually, but also do it better, faster, and more efficiently [9]. AI-powered decision-making and creative, personalized content powered by AI not
only has the potential to dramatically increase sales, but also enables companies to combine content based on customer experience insights to automate and personalize communication. Currently, most managers of leading companies in various industries recognize the potential of AI in personalization and use AI-based technologies to communicate with customers and involve them in joint work within the framework of the development of corporate business projects.

Media buying and planning, as a key component of successful marketing, is an area where AI is fundamental game-changer in the context of increased profitability, more effective audience targeting, and providing real-time optimization opportunities. Production processes are simplified and repetitive time-consuming tasks in media buying and planning, such as data entry, reporting and reconciliation of accounts are automated. This allows marketers to focus on more strategic and creative tasks (for example, platforms such as Salesforce Sales Cloud Einstein use sales forecasting to optimize advertising activities and provide information on customer segmentation and conversion rates). Standalone AI-powered media buying and scheduling apps like GumGum’s Verity and Market Muse enable content optimization without compromising brand safety. In contrast, integrated programs analyze data from various sources, including customer interaction data, website analytics, and social media engagement, and use machine learning algorithms to optimize sales programs (including advertising campaigns) in real-time. Indeed, there are numerous benefits of using AI for media buying and planning, including more accurate targeting, increased efficiency, significant cost savings, real-time optimization, and improved performance tracking. To make informed choices about business processes, AI technology analyzes large volumes of data, including consumer demographics and online behavior patterns, enabling more efficient spending and a higher return on marketing spend.

Using automation systems for digital marketing and delivering customized messages at the right time, automated email marketing improves customer engagement and increases business efficiency by eliminating manual mailings [10]. This strategy helps companies not only to optimize email marketing tactics, providing opportunities for continuous improvement and comprehensive reporting of results, but also to save time and focus on more important business strategy tasks. In addition, email automation within email marketing, firstly, uses individual interests as a basis for personalization and creates more interesting and relevant content, which ensures professional and consistent advertising campaigns and ensures that the company brand is always in the field of view of potential customers. Secondly, automated workflows, reducing the number of errors that often occur in manual processing of emails, together with segmentation, allow creating customized messages for specific audience segments based on their interactions and characteristics, thus leading to increased trust in the brand and increased sales volumes.
An important business management tool is sales forecasting, which has many benefits for strategic planning, decision making, and improving overall operational efficiency. Forecasting future sales figures not only helps companies predict expected sales for different periods, such as the next month, quarter, or year. Effective decision-making, allocation of resources between different functional areas and strategic planning (launch of new products, entry into new markets, inventory management, recruitment and hiring of additional employees, etc.) depend on these forecasts. In turn, forecasting demand and future revenues, companies, on the one hand, plan marketing initiatives in the context of budget allocation. On the other hand, they define more achievable goals and optimize the process of developing future expansion strategies, investment selection and risk control. Setting clear, reasonable and measurable goals not only further motivates the sales force to ensure the company growth, but also serves as a ‘road map’ that defines direction and reduces uncertainty. Accurate sales forecasting leads to success in achieving sales targets, and sales teams can use it to identify early warning signals in the business process and make the necessary adjustments to increase revenue and gain competitive advantage.

In addition, in today's environment, sales forecasts can be used to better understand customers, as they facilitate the implementation of cross-selling and up-selling tactics that are more cost-effective than searching for new customers. In fact, sales forecasts: a) provide information about customer behavior that can aid in product development, advertising, and pricing; b) reflect general operating rhythm of the business; c) contribute to adoption of the best tactical decisions in the short term to ensure the success of the company in the long term; d) stimulate more accurate budgeting and planning of external business operations. This means that a company's annual strategy is based on sales forecasts, which affect everything from new product lines and marketing campaigns to staffing and inventory [11].

Currently, the most well-known AI and machine learning tool is trend modeling, where machine learning algorithms use large amounts of data to build (theoretical) predictive models that help to make accurate predictions. Trend modeling in predictive analytics (predictive analysis) is used in various fields today to predict customer behavior (for example, to predict the probability that a certain customer will convert or which customers will make repeat purchases). Indeed, AI is enabling better customer understanding through machine learning and big data analysis, and companies are not only hyper-personalizing customer interactions, but also predicting future customer behavior based on the data collected. However, it should be noted that predictive models are highly dependent on the quality of the data used to build them. So, if the data contain errors or a high level of randomness, they will not be able to provide accurate predictions. In turn, predictive models created with the help of machine learning evaluate potential customers according to certain criteria, which allows the company's sales department to determine: a) how
promising the potential customer is and whether are worth spending time on; b) what the client will most likely need for the conversion; c) where discounts and special offers will be most effective, thanks to understanding the buying habits of potential customers. This is also facilitated by dynamic pricing and evaluation of leads (relevance of leads), which allows providing special offers only to those potential consumers who have the highest probability of conversion, which means that sales can be increased and profits can be maximized without reducing the margin [12]. In addition, machine learning algorithms can process large amounts of data to determine which ads are most relevant, to which people and at what stage of the purchase process (cookies, previous requests, customer interests and environment are analyzed), and machine learning is used to continuously optimize thousands of variables for more effective placement of advertising and content. Provided a brand influences its target audience with AI, further analysis and removal of ‘one-size-fits-all’ advertising will provide insight into consumer preferences (most relevant to that customer product benefits).

Today, machine learning is being replaced by deep learning as a branch of AI that analyzes large volumes of data and uses multi-layered neural networks to predict consumer behavior. Compared to traditional machine learning, this approach is more efficient because it requires less human pre-processing of the data, but still requires large amounts of data and computing power. For example, deep learning systems developed at the Computer Science and AI Laboratory of the Massachusetts Institute of Technology (MIT) predict human behavior in videos more accurately than existing algorithms. Similarly, Brains4Cars, a joint project between Cornell and Stanford Universities, uses deep learning to predict driver behavior seconds before a potential collision. When used in digital marketing, these capabilities allow processing large amounts of data collected through various channels (deep learning becomes especially important with the development of the Internet of Things, when various devices provide more data about consumer behavior). Second, identify patterns in data structure, taking into account both transaction history and customer intent (more accurately predict customer needs and behaviors, preferences in different groups based on work environment or hobbies). That is, advances in AI and analytics will usher in an era of ‘social forecasting’, when social data and customer sentiment analysis will predict consumer behavior months in advance.

Search engine optimization (SEO) has undergone significant changes thanks to the impact of AI on the hidden ranking capabilities of content areas. It is deep understanding of keywords and link building opportunities provided by AI SEO tools that is essential to developing successful content strategies. Using these tools can help a company's competitive 'breakthrough' to higher positions in the search results, helping to find opportunities that existing real competitors are not taking advantage of. AI-powered searches of web content for specific keywords and identifying gaps in content, popular topics and the ideal number of chapters to
include in a potential article in a relevant field are used to create personalized content that matches user intent and is suitable for each stage of marketing ‘funnels’. We are talking about AI as a content creation tool that guarantees interesting and informative material for the user, and about its use in the field of voice search optimization. So, there are the following AI tools in this area [13]:

a) *Frase* which answers questions and helps users to create content optimizing voice search;

b) *NLP* (natural language processing) is conversational content using AI principles which is based on optimization of voice search and currently achieves a high ranking in search engines;

c) *IVR* is an interactive voice response system for effective prioritization of initial and repeat voice calls.

Currently, voice search as an AI-based technology is used in digital marketing by large companies (*Google, Amazon, Apple*) because they use the effect of scale (ensuring smooth operation of voice interfaces, voice interaction and interpretation of user requests based on AI analytics). According to the analysis, voice search will change further *SEO* strategies in the near future, and brands that use voice search technology in their strategies will significantly increase organic traffic. In addition, modern advanced AI technologies used by large companies allow tracking the movement of human eyes – a special device installed on a computer records how a person's eyes move when interacting with the site, which allows detecting: a) the success of choosing a place for an advertising banner; b) elements of the site page that are neglected and successfully implemented in successful pages; c) emotion for an advertisement – for this, the eyetracker analyzes the pupil diameter in dynamics.

In addition to improving the customer experience, conversational AI also benefits the company's internal employees. For the company's IT and customer service departments, these solutions provide self-service, reduce the number of questions and free up operator time for more important tasks. The HR departments use conversational AI to automate selecting and hiring employees. For internal corporate management structures, conversational AI-powered virtual assistants respond to employees' questions and queries in the same way they interact with customers, helping them find information, solve problems and create their own solutions.

Over the last decade, global digital marketing spans more and more channels, and companies use increasingly sophisticated technology innovations based on various tools in their business practices, and AI is no exception. Today, big data, chatbots, targeted and contextual advertising are just some of the elements of AI which are actively used in modern digital marketing to improve the quality of customer service. It is about the importance of recognizing and understanding the needs and expectations of their customers regarding their own products and services: with the help of AI, marketers: 1) process large volumes of data without spending
significant time, 2) collect data from photo and video materials, identifying potential consumers based on their behavior in social networks, 3) carry out individual sales that meet customer expectations. Moreover, insights about customers and their requirements obtained in a short time can help to quickly improve campaign performance and return on investment (ROI). AI is currently used wherever the problem of inaccurate algorithmic predictions needs to be solved. Since customer engagement is the driver of competitive growth in case of success and the greatest source of risk in case of failure, it is necessary to permanently investigate how AI is used in digital marketing according to its division into stages of application in the customer life cycle [14; 15].

In general, today's chatbots using AI are changing the way companies interact with customers almost every day. Imitating human intelligence, they: a) process and interpret standard/non-standard consumer requests and fulfill various orders; b) as programmed ‘virtual agents’ provide a high degree of personalization on web and mobile platforms; c) group for marketers original answers generated in real time based on interaction with customers, capture the context of the conversation, provide offers and direct customers to relevant links. Both types of intelligent AI-based chatbots (constrained and self-developing) are ‘artificial neural networks’ that can understand patterns and detect problems, teach themselves during interaction with the customer, ‘learn’ the user, ‘predict’ his intentions and suggest further actions [16]. Thanks to their dynamic capabilities, modern interactive AI technologies are replacing traditional methods (such as manual A/B testing) with real-time data analysis to make more informed marketing decisions within the framework of modern corporate strategies and consumer behavior. Such data-driven strategies enable personalized marketing campaigns that increase customer satisfaction and loyalty. Data-driven AI capabilities are changing the era of generic, ‘one-size-fits-all’ approaches and paving the way for more personalized and nuanced methods. The speed at which AI technologies are evolving is giving marketers access to powerful tools to improve overall business success.

The introduction of modern AI technologies to enhance personalization in digital marketing is not only technological progress, but also a tactical necessity for navigating an unpredictable and changing market environment. It is the paradigm shift that is redefining the fundamentals of digital marketing in the age of digital technologies that is generating a growing level of personalization that allows marketers to:

- create personalized offers, recommendations and advertising messages that attract a wider range of customers (especially in the field of individually tailored customer experience);
- maximize the success of marketing campaigns, analyze the results of previous campaigns with the help of machine learning algorithms (determination of winning tactics);
• recognize trends of success and identify less successful strategies in the context of continuous evolution of marketing strategies to optimize business activities of companies;
• use intelligent automation systems to distribute responsibility for content creation, free oneself from monotonous and repetitive tasks, using more time to focus on more complex and creative tasks;
• make informed decisions and optimize one’s strategies for future campaigns (more effective and resource-saving in the context of results, saving time, resources and effort).

Modern development of company marketing strategies going beyond general audience messaging requires clear understanding of the customer journey. AI's ability to easily combine and interpret disparate consumer data is currently at the heart of transforming the entire marketing paradigm, which includes the ability to gain a previously unattainable level of understanding of the complex preferences, behaviors and goals of individual consumers. Accurate data insights make it easier to create offers and content that appeal to individual customers and help them feel more relevant and connected. Therefore, unlike ‘classic’ advertising, hyper-personalized interaction ensures that marketing messages are not only perceived, but also really connect with the target audience (proactive and preventive interaction with customers). In this regard, using predictive analytics to customize offers and recommendations in real-time allows companies to personalize offers, recommendations and content, increase long-term brand loyalty, and make customers feel understood and valued. That is, consumers cease to be passive recipients of marketing messages and become active participants in personalized and dynamic relationships with the brand.

The ability of AI to predict and improve corporate strategies revolutionizes Industry 4.0 industries and causes a change in the approaches of marketers to the evolution and use of algorithms for analyzing trends, identifying winning tactics (pointing to the inefficiency of their individual elements). On the one hand, this fast analytical ability not only accelerates decision-making, but also allows for a more thoughtful and planned approach to digital marketing campaigns based on ‘roadmaps’ for future projects. On the other hand, it transforms the role of marketers, turning them from reactive to proactive architects of success, motivates them to work ahead of the curve, using AI models to predict trends and customer behavior, identify new patterns and preferences based on predictive AI capabilities and retrospective data. In addition, the ability to adjust strategies in real time allows marketers, firstly, to focus their efforts and resources where they will have the greatest impact, to develop more effective and result-oriented strategies. Secondly, to maximally automate routine processes with intelligent algorithms, which frees marketers from time-consuming manual tasks and allows them to focus on more creative and strategic aspects. Thirdly, to ensure that campaigns are not only relevant (optimizing
marketing initiatives based on current analytics), but also responsive to ever-changing market dynamics (adapting to future results). Thus, the combination of human creativity and AI optimization is a powerful recipe for commercial profitability in the highly competitive field of marketing in the medium and long-term.

Indeed, today standard marketing tasks and procedures (planning, transmission of advertising messages and content creation) are easily delegated to intelligent automation systems in the context of digital marketing. This not only speeds them up, but also ensures accuracy and consistency that are difficult to achieve manually; creates reserves of time and cognitive capacity to focus on more complex, creative and sophisticated tasks (creativity, strategic thinking, building deeper relationships with target audiences). As for consumers, AI allows them to browse customized versions of dynamic websites showing different products and personalized layouts, use behavioral signals and history of previews and purchases, customize their own truly original and innovative content using popular topics, common searches and their own location. Harmonization of effective digital technologies and human creativity ultimately creates a favorable environment for productivity, data analytics and customized campaigns, which at the level of international digital marketing, are related to the peculiarities of global trade, ethical issues, initial implementation costs and dynamics of technological development.

At the same time, the implementation of AI in global digital marketing leads to mixed results. On the one hand, new professions are emerging (data analysts, content curators, etc.). On the other hand, there is a reduction in jobs, as AI systems replace work that was previously performed by people. This leads to dispersion of workforce and requires reassessment of workforce dynamics in global business. 7% of US jobs are predicted to be lost by 2025 as a result of automation, robotics, machine learning, and AI [17]. In addition, the use of AI also raises ethical issues, especially regarding data security and privacy: large volumes of data processed and interpreted by AI algorithms put consumers’ privacy at risk, increasing the risk of misuse of sensitive data and unauthorized access to them.

It is expected that in the process of their further development, AI-systems in digital marketing, firstly, will play a growing role in increasing efficiency of companies’ activities thanks to automated business processes, data analysis and model forecasting. Secondly, they will expand the possibilities of hyper-personalization and increase the effectiveness of various types of marketing activities, which will contribute to the deeper AI integration into marketing strategies, providing significant advantages in terms of efficiency and effectiveness. Thirdly, despite the rapid development of ‘smart’ content based on generation of ideas, automation and robotization of business processes, the need for human creativity will be vital in the foreseeable future. Marketers would have to change their skills to succeed in more creative and conceptual professions where people have an advantage over machines.
Conclusions The implementation of AI in the digital marketing strategy is characterised by its ability to hyper-personalize, that is, the process of adapting products, services and content to specific users based on their preferences and available information. At the same time, if a level of personalization is necessary to provide the best possible customer experience, hyper-personalization thanks to AI can scale without overwhelming or alienating the user, remain flexible and adapt to changing preferences, tastes and habits. Using the functions of AI systems, companies have the opportunity to evaluate information about past purchases and customer reviews, maximizing personalized experience, increasing productivity, freeing staff from making complex decisions and reducing the ‘emotional’ component of their intelligence.

References:

