

**Managing the modification of digital marketing and logistics under the influence of artificial intelligence**

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<https://doi.org/10.22306/al.v11i3.529>

Received: 23 Jan. 2024; Revised: 26 July 2024; Accepted: 06 Sep. 2024

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**Abstract:** The purpose of the study is to develop a methodology for determining the modification of digital marketing and logistics and the peculiarities of their management under the influence of artificial intelligence. A theoretical and methodological analysis of existing research was carried out, relevance and purposefulness of the study is substantiated on the basis of scientific generalization. It has been proven that the functioning of modern business is inextricably linked with transformations, which characterized by the intense influence of artificial intelligence. Development trends have been identified and a classification of the main artificial intelligence technologies has developed, which necessitate the need for effective management of modifications in digital marketing and logistics of modern companies. Structured indicators of the dynamics of development of digital marketing and logistics pressure the influence of artificial intelligence. It is substantiated that the penetration of artificial intelligence into the management of digital marketing and logistics of modern companies leads to their modification, which is due to the automation and optimization of business processes. An economic and statistical analysis of the interdependence of trends in the development of digital marketing and trends in the contract logistics market for the Gulf Cooperation Council was carried out. The interdependence is determined and the main prospects for the development of digital marketing and logistics are argued in the context of the impact of artificial intelligence. The results have practical value and can be used to formulate a methodology for managing modifications in digital marketing and logistics of modern companies.

**1 Introduction**

The intensity of the processes of internationalization of the world economy is characterized by the gradual creation of a single ecosystem of interaction and business development, which is inextricably linked with the introduction of artificial intelligence technologies. Active penetration of artificial intelligence technologies into various sectors of the economy determines their transformation and improvement of business processes due to maximum automation. There is an urgent need to justify the modification of marketing and logistics under the influence of artificial intelligence technologies, which is the focus of the study. It is important to note that previously

artificial intelligence technologies were available to very large companies and holdings, but thanks to intuitive and accessible tools, every business segment has access to them. The introduction of artificial intelligence directly determines the modification of industries and entire companies, not excluding the marketing and logistics management system, which requires detailed research. The introduction of artificial intelligence technologies into the business processes of modern companies significantly simplifies and optimizes activities, modifying them in accordance with technological characteristics. From streamlining companies' operations and business processes to personalizing experiences, AI technologies are already

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impacting businesses around the world, offering new opportunities for growth, efficiency, and innovation.

The fulfilment of artificial intelligence technologies in the management of marketing and logistics significantly modifies, which confirms the relevance and necessity of this research. It is important to note that the intensity of implementation of artificial intelligence technologies in all business segments and directions in the world causes many questions and modifications of these industries, which requires detailed research and determination of key aspects. Given that a modern business cannot be presented without an effective marketing and logistics system, the introduction of these technologies generates many directions and activities that should be controlled to ensure effective management of the company as a whole. The modification of marketing and the appearance of its new forms and tools directly affects the logistics processes by improving them based on the fulfilment of artificial intelligence. Artificial intelligence creates many innovative tools for organizing marketing efficiency from communications to sales; helps improve logistics processes, inventory management, and delivery. All this significantly improves competitive positions in the global market and allows one to surpass the competition in a particular niche, which determines the enormous demand and interest in the introduction of artificial intelligence technologies, which radically modify the activities of companies.

The growth of investments in technologies, their implementation and implementation in the most complex areas of marketing and logistics of modern companies are due to the need to improve management efficiency, optimize costs, minimize operational risks and increase profitability. In this regard, artificial intelligence offers many tools for improving, developing and optimizing routine processes in achieving business tasks and goals, which determines the demand and relevance of these technologies in business segments. Based on the above, there is an urgent need to identify key aspects and changes in marketing and logistics management within the framework of the implementation of artificial intelligence, which determines the conceptual need and relevance of research in this area. The study is aimed at identifying trends in the modification of digital marketing and logistics under the influence of artificial intelligence.

**1.1 Theory of development of marketing and logistics as a unified management concept**

The functioning of modern business and its effectiveness largely depends on the management strategy, which should be based on marketing and logistics as a single management concept, but this was not always the case. Therefore, long-term development of modern companies directly depends on the marketing and logistics management strategy, which determine the key competitive areas in global markets. Based on this, it is

worth paying special attention to the concept of marketing and logistics management of companies as a single concept that ensures the achievement of business goals and strategic objectives. To argue the main aspects of the functioning of marketing and logistics as a unified management concept, the author conducted a critical analysis of the scientific literature in this area and argued the main scientific approaches and their specifics.

The relationship and importance of the marketing logistics strategy and the formalization of basic support methods and its implementation are emphasized in study [1]. This approach justifies the consideration of the company's strategy as a single whole of marketing and logistics with the interaction that achieves the set goals. Basic support methods and steps for implementing this strategy are identified, but aspects of modification of marketing and logistics management under the influence of artificial intelligence are not disclosed, which requires improvement and expansion of the research area. The identification of key directions and prospects in the development of marketing and logistics is considered in scientific research [2]. Marketing and logistics formalize the state, the state and prospects for development are determined. This approach reveals the essence of the concept of a unified approach to marketing and logistics management, reveals its relevance and prospects, but the modification of marketing and logistics management, which is caused by the introduction of artificial intelligence technologies, is not stated, which requires detailed study.

The scientific approach [3] deserves attention, which emphasizes the role of marketing and logistics as a factor in the key strategic development of business structures. This approach determines the need and relevance in modern realities for the formation of a strategic approach to managing marketing and logistics as a single goal, a concept with the help of which competitiveness and efficiency are ensured. Therefore, this approach is classical in the formalization of the marketing and logistics system, but does not reveal the features of its modification under the influence of artificial intelligence, which requires detailed study. The relationship and importance of using marketing and logistics as a single whole concept of management in socio-economic systems is revealed in study [4]. The main aspects of the organization of marketing and logistics are argued to ensure the efficiency and optimality of business processes in socio-economic systems, which is quite relevant and in demand in modern conditions. However, this approach does not consider the specifics and main aspects of modification of marketing and logistics under the influence of various factors, including artificial intelligence, which determines the relevance and need for further research. Attention should be paid to study [5], which argues for the role of marketing and logistics in a modern company strategy. The key aspects of the formation of a marketing and logistics management strategy in the context of digitalization and its penetration into all business areas are argued. This

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approach reveals the essence of the influence of digital technologies and tools on the marketing and logistics management system of modern companies, but no attention is paid to the influence of artificial intelligence technologies and the modifications that it generates, which requires improvement and further development of this direction. Having stated what has been presented, it should be noted that there are many scientific approaches and studies that determine and bring to light the need for an integrated approach to managing marketing and logistics as a single system. This confirms the theoretical premises formed by the author and requires a detailed study of the features of modification of marketing and logistics under the influence of the processes of introducing artificial intelligence.

**1.2 Theoretical aspects of marketing and logistics management under the influence of artificial intelligence**

Optimization and the need to automate existing business processes of companies is due to the growing role and penetration of artificial intelligence technologies into all areas of activity. The efficiency of marketing and logistics ensures competitive positions and business scaling opportunities, which are ensured by the introduction of innovations, technologies and tools that are based on artificial intelligence. Arguing the above, it is necessary to analyse the literature and research in the field of introducing artificial intelligence into the marketing and logistics management system of companies, to highlight the main directions, prospects and issues.

A systematic review of the literature regarding the implementation of artificial intelligence in marketing, stated by a group of scientists [6]. This approach argues for the main directions of scientific approaches and methods in terms of studying the introduction of artificial intelligence in marketing. Attention is focused on the main directions of marketing activities of companies that are subject to transformations under the influence of artificial intelligence. The need for the introduction of artificial intelligence technologies with the argumentation of key tools has been identified, but a comprehensive approach to studying not only the features of implementing these technologies in marketing, but also its modification, which requires management and selection of mechanisms to ensure efficiency, has not been disclosed, which requires improvement and detailed study. The role and influence of information technologies on electronic marketing is argued in study [7]. The importance and necessity of introduction information technologies and their innovative tools in the electronic marketing strategy, as its key component, is determined. This approach argues for the role of innovation and information technology in marketing strategy, which is important in modern conditions, especially when forming a company's development strategy, but does not reveal the features of the influence of artificial intelligence

technologies on marketing and its interrelated element of the strategy - logistics, which requires detailed research.

The features of the management of logistics centers and their key business opportunities based on the intercalation of digital technologies are argued in study [8]. The key aspects of an effective supply chain in maritime transport are identified, with an emphasis on the role of technology and the digital component. The role of technology in optimizing logistics business processes and ensuring their efficiency is highlighted, which is relevant and in demand in modern conditions. However, it is important to note that this approach does not consider logistics in connection with marketing based on the introduction of technologies based on artificial intelligence, which requires improvement and improved research. The functioning and main aspects of organizing marketing and logistics under the restrictions caused by pandemics are disclosed in scientific sub-section [9]. The vision of this approach is that it states the facts that, despite the restrictions and many obstacles, such sectors of the global economy as marketing and logistics they did not stop developing, but rather transformed and grew through scaling, which is provided by technologies, including artificial intelligence. It is important to note that the features of these transformations of marketing and logistics under the influence of artificial intelligence in terms of strategic management are not taken into account, which requires further research. Non-standard approach [10,11], which highlights the mode of logistics distribution of e-commerce in the context of big data. The results of this study highlight the role of logistics in e-commerce, which is based on technology and ensures the effectiveness of company marketing. These aspects of the study are aimed at formalizing the process of logistics distribution, but do not reveal the main aspects associated with artificial intelligence technologies, which require detail and development.

Having stated the above, it should be noted that the intensity of technology development and its penetration into all sectors of human life raises the need to revise existing management techniques, which should take into account many factors. The intercalation of artificial intelligence technologies in the process of marketing and logistics requires their modification and requires operational management, taking into account the fulfillment of business goals and the achievement of strategic objectives. Based on the results of a critical analysis of scientific approaches, it should be noted that there is no single view and approach to the study of artificial intelligence and the characteristics of its influence on the management process. In contemporary conditions, there is an urgent need to formalize the main aspects of marketing and logistics management of companies under the influence of artificial intelligence technologies, which determines the relevance and purpose of this research.

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## 2 Methodology

### 2.1 Peer review process

The intensity of development of innovative technologies, tools and techniques that are based on artificial intelligence have a tremendous inspiration on the business processes of companies and requires detailed research and formalization of management methodologies. Taking into account the presented information, the key goal of the study is to extension a methodology for determining the modification of digital marketing and logistics and the features of their management under the influence of artificial intelligence. To determine existing approaches in the literature, theoretical and methodological analysis was applied, on the basis of which the demand and necessity of this study was determined. A classification of the main technologies of artificial intelligence has been developed in the context of its implementation in the marketing and logistics processes of companies, which helped highlight development trends. In order to fulfill the assigned tasks, the study used a tool for economic and statistical analysis of the interdependence of digital marketing development trends and contract logistics market trends for the Gulf Cooperation Council. It is important to state that the analysis and synthesis of the dynamics of statistical data on the development trends of digital marketing and the contract logistics market of the Gulf Cooperation Council (GCC). Represents the final stage of statistical research, which allows us to determine conceptual conclusions and justification of the put forward theoretical hypotheses and prerequisites for further practical recommendations for patterns of the studied phenomena in marketing and logistics of companies.

The parsing is a method of scientific research into trends in the development of digital marketing and logistics under the influence of artificial intelligence. Economic-statistical analysis and its implementation is characterized by the fact that it ensures the development of a methodology that is based on the widespread use of traditional statistical and mathematical-statistical methods in order to control the adequate reflection of the studied processes of implementation of artificial intelligence in the marketing and logistics of companies.

The objectives of the analysis are to determine and evaluate the specifics of modification and management features of digital marketing and logistics trends under the influence of artificial intelligence, by studying their dynamics, structure and determining relationships and patterns, trends in development. Determining tendency in the evolution of digital marketing and logistics, their modification is inextricably linked with data analysis, qualitative analysis of the essence of trends, structuring the basic directions of development and introduction of artificial intelligence technologies, determining relationships and dynamics.

The key stage of conducting statistical research on the information base on the development of digital architecture

and logistics under the influence of artificial intelligence is a critical assessment of the source data in terms of their reliability and scientific validity, which in statistical modeling is implemented by methods of a priori analysis, including: 1) identification economically justified and significant cause-and-effect relationships between the elements under study in this case, marketing and logistics; 2) assessment of the homogeneity of the study population; 3) analysis of the nature of the distribution of the population according to the characteristics being studied. One of the fundamental prerequisites for conducting scientifically based statistical analysis, which adequately reflects cause-and-effect relationships and dependencies, trends in the development of digital marketing and logistics and their modification under the pressure of artificial intelligence in dynamics, is the homogeneity of the statistical population. An important prerequisite for obtaining scientifically based results of statistical analysis and modeling is testing the hypothesis that the distribution of empirical data is close to the normal law (1):

$$\bar{X} \approx M_0 \approx M_e \quad (1)$$

One of the disadvantages of this approach to assessing the nature of the distribution is the presence of subjectivity in the analysis of the sufficiency of the deviation value  $\bar{X}$  from  $M_0$  and  $M_e$  in this case, modification of the management of digital marketing and logistics under the pressure of artificial intelligence. Any population under study, along with the values of features formed under the pressure of indicators directly characteristic of the object being analyzed, may also contain the values of factors obtained under the influence of other factors not characteristic of the object being studied, the so-called anomalous observations. When analyzing dynamic information (trends in modification of digital marketing and logistics under the pressure of artificial intelligence), the most widely used method for identifying anomalous observations, based on the definition of  $q$  - statistics, proposed in the work of Khan G. and Shapiro S. [11,12] (2):

$$g_t = \frac{Y_t - \bar{Y}}{\sigma_y} \quad (2)$$

Where,  $Y_t$  – individual levels of the series;  $\bar{Y}$  - average level of the row;  $\sigma_y$  is the standard deviation of the empirical values of the series levels from their average level. To analyze the dynamics and trends in the development of digital marketing and logistics under the influence of artificial intelligence, as time series, a method based on the definition of  $\lambda$  statistics was used to identify anomalous observations (3):

$$\lambda_i = \frac{|Y_t - Y_{t-1}|}{e_y} \quad (3)$$

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If the calculated value exceeds the critical level (with a given level of accuracy and number of observations), then the calculated value is considered anomalous. The proposed methods and approaches for designation tendency in the introduction of digital marketing and logistics under the pressure of artificial intelligence will allow us to argue for key trends in development and will allow us to determine their modification.

**3 Result and discussion**

The introduction of artificial intelligence and its key technologies and tools in contemporary conditions significantly facilitates companies in the process of studying their consumers, determining their demand, values and behavior. One way this is particularly useful in digital marketing and logistics is through customer recommendation systems, which can include automated and personalized logistics service options, as well as digital marketing efforts such as targeted newsletters and advertisements. The global rise in the use of digital marketing, coupled with the adoption of machine learning techniques in logistics, is significantly influencing several industries. Advanced technologies using artificial intelligence are part of Industry 4.0 and play an important

role in driving this growth. There are many benefits of artificial intelligence in digital marketing and logistics, some of which include: the ability to automate processes, effectively manage customer relationships, and continuously improve operational strategies [12]. Taking into account the above, it should be noted that the strategy of modern companies is complex and multifaceted, as it includes many areas, tools, features and specifics of activity, which should be directed as a single system to achieve business goals and objectives. Based on this, the introduction of artificial intelligence technologies into the strategic management of digital marketing and logistics cannot be ignored, as it ensures promising growth and an increase in the level of competition and business scalability. Taking into account what has been presented, it is necessary to consider in detail the main technological aspects of the introduction of artificial intelligence into digital marketing and logistics of companies and the main modifications that they introduce [13,14]. Artificial intelligence plays an important role in the activities of contemporary companies, regardless of the segment and specifics of the activity. Based on this, the author consolidated information regarding the importance of artificial intelligence in the strategic management of modern companies, which is presented in Figure 1.

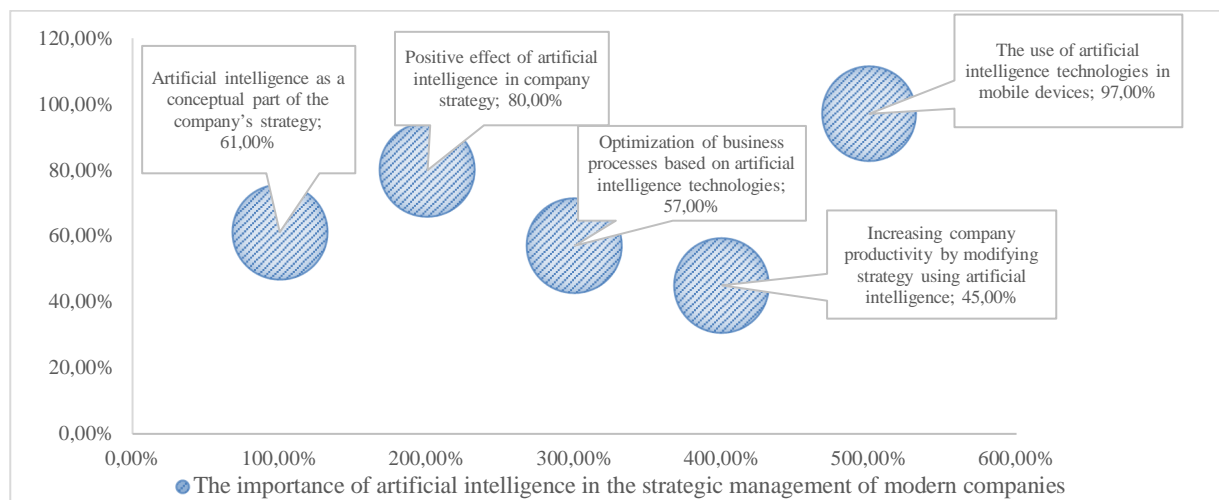


Figure 1 The importance of artificial intelligence in the strategic management of contemporary companies

Based on what has been presented, it is important to state that artificial intelligence technologies are becoming more accessible every day and are being used in every sector of the global economy. The information presented confirms that technologies are reflected in all business processes of companies and lead to their modernization and modification, thereby ensuring economic growth, efficiency and profitability. Based on this, to determine the features of modernizing the management of trends in digital marketing and logistics of companies, it is necessary to consider the classification of the main technologies of artificial intelligence and their introduction in the strategic management of marketing and logistics of contemporary

companies. Based on what has been presented, it is important to state that artificial intelligence technologies are becoming more accessible every day and are being used in every sector of the global economy. The information presented confirms that technologies are reflected in all business processes of companies and lead to their modernization and modification, thereby ensuring economic growth, efficiency and profitability. To justify the demand and relevance of the introduction of artificial intelligence technologies, the author has structured the key advantages of these technologies for contemporary business, which are presented in Figure 2.

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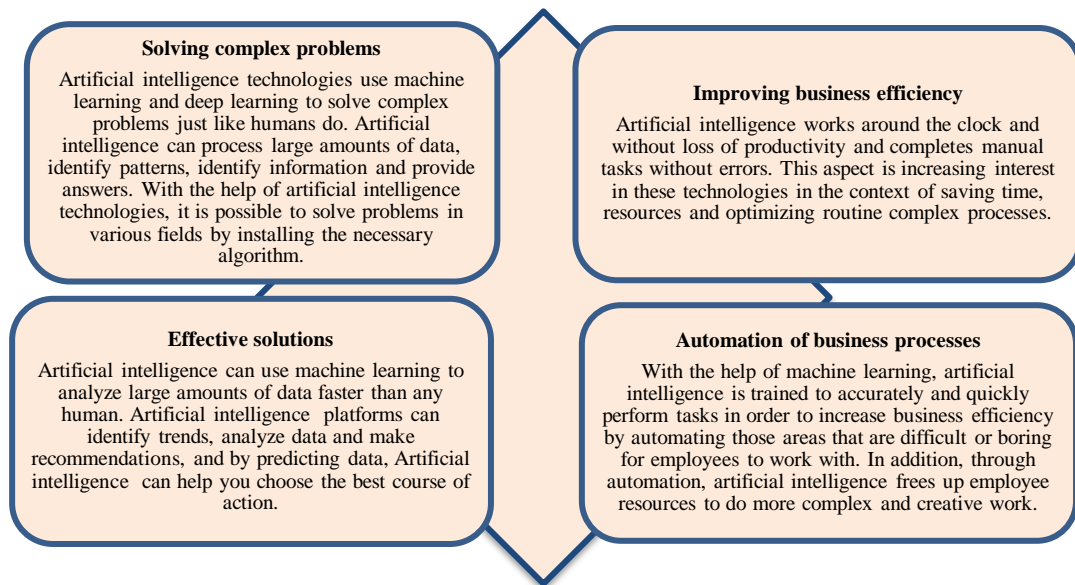


Figure 2 Structuring the key advantages of introducing artificial intelligence technology into digital marketing and logistics of contemporary companies

The introduction of artificial intelligence technologies significantly optimizes the existing business processes of contemporary companies through automation, machine learning and increasing their effectiveness, which is actually the reason for the wide range of their application, which leads to transformation processes and modifications of a particular industry. Based on this, to determine the features of modernizing the management of trends in digital marketing and logistics of companies, it is necessary to consider the classification of the main technologies of artificial intelligence and their implementation in the strategic management of marketing and logistics of modern

companies. It is important to note that today digital marketing has long been ahead of classical marketing, and artificial intelligence has transformed and brought the entire industry to a new level based on the introduction of these technologies [15,16]. This modification of digital marketing and the intensity of introduction processes are characterized by the fact that these technologies make it possible to simplify the company's work in the digital sphere, and allow consumers to receive a higher quality and improved customer experience. The ranging of key artificial intelligence technologies that modify the digital marketing of companies is presented in Table 1.

Table 1 Ranging of key artificial intelligence technologies that modify digital marketing of companies

ARTIFICIAL INTELLIGENCE TECHNOLOGIES	THE ESSENCE OF TECHNOLOGY	SPECIFICS OF MODIFICATIONS DIGITAL MARKETING
CONTENT GENERATION	Tools based on artificial intelligence allow you to quickly and easily generate content plans, create posts for social networks, slogans, advertising messages, articles, pictures, audio and video. This greatly optimizes the business process of developing materials, texts and content in general.	Modification of the content preparation process, optimization of the company's human resources and reduction of operating costs.
AUTOMATION OF MAILINGS	Communication with clients through mailing lists and instant messengers no longer requires many physical resources. Using artificial intelligence technologies, a company can interact with clients around the clock: consult, register, nurture leads, and accept orders based on the implementation of artificial intelligence and machine learning.	Optimization of routine business processes, transparency and increased efficiency. Freeing up additional company resources in both human and financial dimensions.
DATA ANALYSIS	Using artificial intelligence, companies analyze the results of marketing campaigns, build predictive models of customer behavior and improve their digital marketing strategy.	Increasing the level of reliability and accuracy of information based on big data analysis and manual labor automation. Saving time and financial costs for paying for analytical studies.

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CUSTOMER SEGMENTATION	Artificial intelligence tools study and analyze customer information to determine key criteria for effective segmentation. Rational division of customers into groups and segments helps to personalize offers, optimize marketing costs, and increase company profits.	Freeing up time, human and financial resources due to the automation of routine processes.
PERSONALIZED APPROACH TO THE CLIENT	Without technology, it is difficult to predict the buyer's next move and make an offer that will interest him. Artificial intelligence can analyze behavioral factors such as clicks, purchases, search queries and recommend the most suitable products to the client.	Improving the quality of customer service through a personalized approach, reducing manual labor, optimizing the process of analysis, and marketing research.
INCREASED CUSTOMER SATISFACTION	Automation of the process of communication with clients and personalization of offers improves the quality of service. The level of customer satisfaction and, consequently, their loyalty increases.	Improving the quality of service, simplifying the procedure for establishing communications and studying the client.
SEARCH ENGINE OPTIMIZATION	Artificial intelligence helps analyze data, develop and improve a content strategy, generate content optimized for search engines, think through promotion and thereby increase traffic growth.	Automation of the process of setting up and integrating search algorithms. Economics in monetary and time equivalent to the need to attract hotel companies and specialists.

Conceptualizing, it should be noted that if before the introduction of artificial intelligence technologies in marketing business processes, it took a lot of time to connect the team, determine the main tasks and goals of the marketing strategy. Today this has been modified and in a matter of minutes, with the help of artificial intelligence technologies, it will be possible to complete a number of marketing tasks while increasing efficiency, quality of service, reducing costs and optimizing business processes. Artificial intelligence simplifies and makes intuitive the complex, multifaceted processes that underlie the functioning of any company. Definitely, for the strategy of modern companies to be effective, digital marketing must be inseparable from logistics. Artificial intelligence in logistics is having a similar impact as digital marketing,

transforming what was once a linear, predictable process into a dynamic and intelligent business process. Artificial intelligence technologies have found wide application and are redefining the boundaries of what is possible in the logistics industry. Artificial intelligence radically modifies logistics processes, leads to their optimization, job reductions, and focuses on data confidentiality and the ethical use of technology [17,18]. Based on what has been presented, in order to argue for the management methodology and determine the modification of digital marketing and logistics under the influence of artificial intelligence technologies, we should consider the ranging of key artificial intelligence technologies that modify the logistics of modern companies, which is indicated in Table 2.

*Table 2 Ranging of key artificial intelligence technologies that modify the logistics of contemporary companies*

ARTIFICIAL INTELLIGENCE TECHNOLOGIES	FEATURES OF THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES AND MODIFICATION OF LOGISTICS
AUTONOMOUS VEHICLES AND DRONES	The implementation of artificial intelligence technologies in vehicles contributes to the emergence of new vehicles and drones. Drones and autonomous vehicles are the epitome of artificial intelligence in logistics, providing a high level of scalability and efficiency for the business of not only goods, and are driving improvements in the speed, flexibility and agility of the supply chain. The dissemination and implementation of these technologies allows companies to modify management approaches by optimizing logistics routes to increase efficiency.
PREDICTIVE ANALYTICS	The analytical component of artificial intelligence to process huge volumes of historical data to predict future trends, demand patterns and needs for inventory and delivery of goods. This trend forecasting is critical in logistics because it allows data-driven strategic decisions to be made that improve operational efficiency. These artificial intelligence tools allow logistics companies to stay one step ahead of market demands and potential disruptions.
ROBOTICS BASED ON ARTIFICIAL INTELLIGENCE IN WAREHOUSES	The implementation of artificial intelligence technologies in warehouse operations has become a real revolution in the field of logistics of companies. Intelligent robots are now capable of automating complex tasks such as picking, packing, sorting and transporting goods. It is important to note that these are not homogeneous robots that undergo training and improve their knowledge over time thanks to machine learning, thereby constantly increasing their productivity and profitability of the company.
INTELLIGENT FREIGHT COORDINATION	The introduction of artificial intelligence technologies will radically transform the way cargo transportation is coordinated. These technologies implement multifaceted interaction algorithms and companies, when organizing logistics, can select the most suitable transportation from carriers. This not only optimizes logistics efficiency, but also reduces operating costs. The use of artificial

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	intelligence simplifies booking procedures, improves cargo tracking and significantly improves overall customer satisfaction.
ONLINE SHIPMENT TRACKING AND MONITORING	The functioning of modern business is based on information, which is of critical importance. Online tracking and monitoring of cargo and goods deliveries using artificial intelligence technologies ensures the transparency of the entire supply chain. These technologies ensure that both companies and their clients can track and monitor the movement of their goods and cargo online at every stage. Technological solutions in the field of online tracking and monitoring of cargo and goods deliveries not only improve the quality of customer service, but also ensure effective supply chain management for modern companies.

Having stated the above, the introduction of artificial intelligence and machine learning is radically modifying the business segments of contemporary companies, including marketing and logistics management systems. From optimization of operations and key business processes to a personalized approach to service, learning needs and preferences to autonomous logistics and service systems. It is important to note that these technologies have already influenced businesses around the world, modernizing and modifying traditional business processes with the help of new artificial intelligence capabilities for future growth, increasing efficiency, profitability and minimizing operating costs [19,20]. Undoubtedly, in modern conditions there are colossal transformations in the strategic management of marketing and logistics of companies, which are caused by the implementation of artificial intelligence technologies. Based on this, in order to substantiate the main aspects of managing the modification of digital marketing and logistics of companies, it is necessary to determine the key tendency in the evolution of digital marketing and logistics of contemporary companies with justification for the statistical observed anomalies.

The intensity of development and introduction of artificial intelligence methods in digital marketing in the world is one of the most rapidly developing industries, which requires detailed study and research. It is important to note that many companies are constantly searching for solutions and new approaches to improve and optimize marketing business processes, increase efficiency and profitability, which are provided by artificial intelligence technologies, which cause its maximum modification. Attention to trends in the development of digital marketing allows companies to significantly accelerate and transform their strategy in accordance with trends and innovations for business scaling, sales growth and the long-term development of the company brand [21]. Using artificial intelligence, companies significantly simplify the process of studying and researching consumer behavior, which affects the company's business indicators of interest, profitability, cost reduction, increased efficiency and market scaling. Trends in the implementation of artificial intelligence technologies in digital marketing of companies and the structure of key tools are presented in Figure 3.

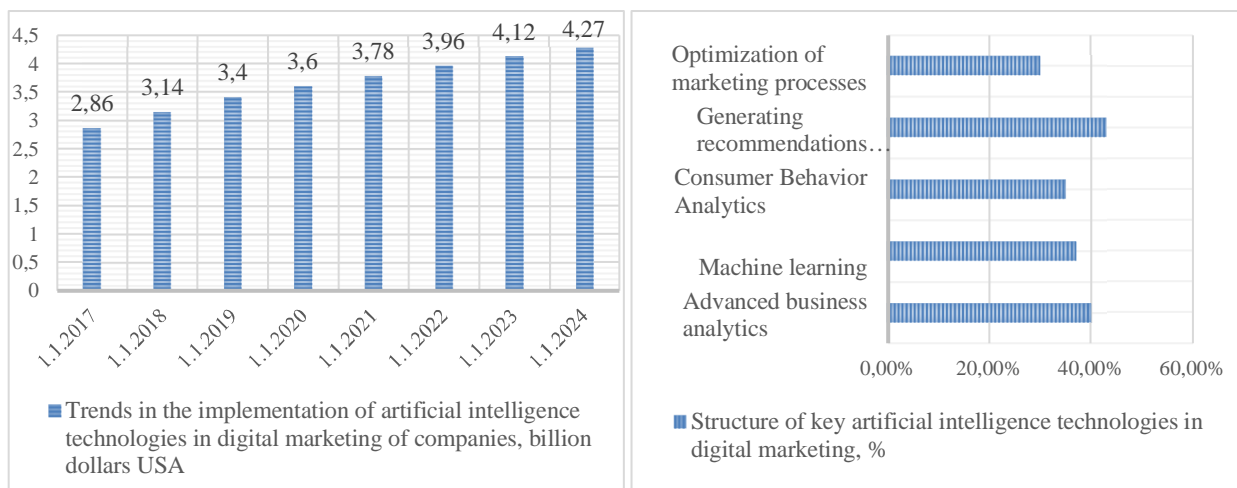


Figure 3 Trends in the implementation of artificial intelligence technologies in digital marketing of companies and the structure of key tools

Summarizing what has been presented, it should be noted that the introduction of artificial intelligence technologies and key tendency indicate that these technologies are radically modifying digital marketing and its management. Artificial intelligence and its key tools

stimulate profit growth, new approaches retain customers and allow more accurate targeting of target audience segments and reliably, loyalty and effective communication with clients is built [22,23]. The introduction of artificial intelligence greatly simplifies,



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optimizes and improves the management of digital marketing of companies.

Having stated the above, it should be noted that contract logistics of the Gulf Cooperation Council (GCC) demonstrates only positive development trends and an increase in its volumes in key countries. The implementation of artificial intelligence technologies increases the intensity of development, contributes to the transformation of marketing and an increase in sales volumes through e-commerce, which increases the volume of supply chains. The contract logistics market of the Persian Gulf countries is extremely fragmented and gaining popularity every day. Logistics is the best way for local companies to adjust the process with the growing cross-border flow of goods, while simultaneously expanding their logistics processes based on artificial intelligence technologies, reducing costs through

centralized suppliers and industrial zones. The largest participants in the logistics market of the Persian Gulf countries are the following: Agility Logistics Pvt. Ltd, Gulf Warehousing Company QPSC (GWC), Al Futtaim Logistics, Almajdouie Logistics Co. LLC and Ceva Logistics. These market players dictate their rules to the rest and integrate technological aspects as much as possible in the development of logistics [24,25]. Based on the presented, for the argumentation of the main aspects of the modification of digital marketing and logistics of companies under the impact of artificial intelligence, it is necessary to consider the trends in the development of contract logistics of the Gulf Cooperation Council (GCC). Growth in E-commerce Driving the Market, and the features of the implementation of artificial intelligence technologies, which are presented in Figure 4.

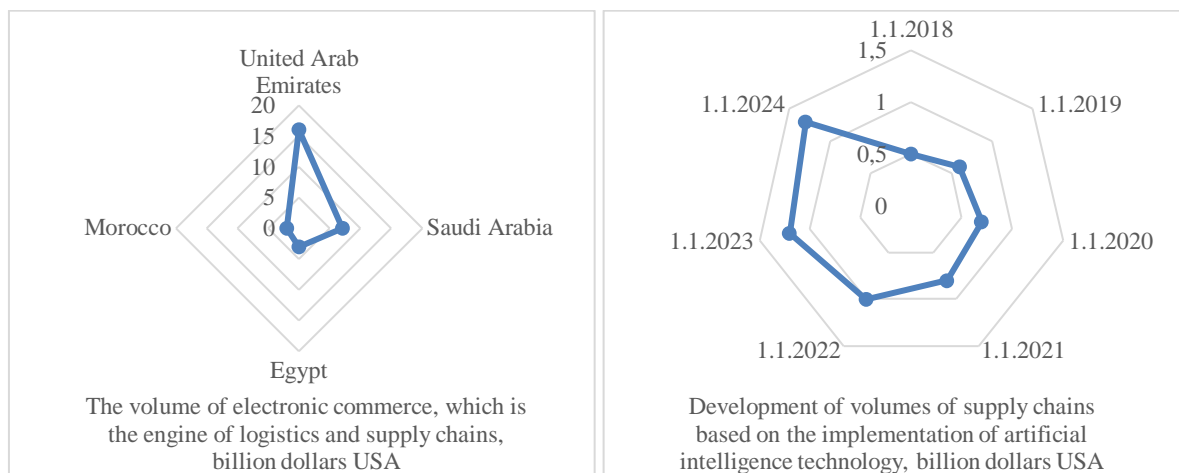


Figure 4 Trends in the implementation of artificial intelligence technologies in contract logistics of the Gulf Cooperation Council (GCC) and Growth in E-commerce Driving the Market the features of the implementation of artificial intelligence technologies

Stating what has been presented, it should be noted that the trends in the development of technologies of the artificial intellect in the world have flooded all branches of the world economy. These technologies are in demand and relevant in the formation of modern companies from the strata of development, so that they ensure the optimization and increase in the level of efficiency of business processes. Consideration of tendencies and trends in the development of artificial intelligence allowed us to substantiate their importance and demand in the field of digital marketing and logistics, which envisage their radical modification and maximum automation of all

aspects [26]. In order to interpret the key results of the study on the determination of trends in development and modification of digital marketing and logistics under the influence of artificial intelligence, the main results of the economic and statistical a priori analysis should be cited, which are presented in Table 3.

The interpretation of the main results of the a priori analysis made it possible to reveal the abnormality, interrelationship, and dependence of the processes of modification of the management of digital marketing and logistics under the influence of artificial intelligence [27-29].

Table 3 The main result of the economic and statistical a priori analysis of the management of the modification of digital marketing and logistics under the influence of artificial intelligence

ANALYSIS PERIOD	STATISTICS λ OF MODIFICATIONS OF DIGITAL MARKETING AND LOGISTICS UNDER THE INFLUENCE OF ARTIFICIAL INTELLIGENCE TO DETECT ANOMALOUS OBSERVATIONS		
	Modifications of digital marketing	Modifications of logistics	Interpretation of the level of communication on the modification of the dependence of digital marketing and logistics in the context of the introduction of artificial intelligence technologies

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01.01.2018	2.8	3.7	A strong level of communication and interdependence of process modifications
01.01.2019	2.2	2.9	A strong level of communication and interdependence of process modifications
01.01.2020	1.5	2.1	The average level of connection and interdependence of process modifications
01.01.2021	1.7	2.0	A strong level of communication and interdependence of process modifications
01.01.2022	1.8	1.9	The average level of connection and interdependence of process modifications
01.01.2023	2.1	2.4	Low level of communication and interdependence of modification processes
01.01.2024	2.0	2.5	A strong level of communication and interdependence of process modifications

The main task of statistical research at the stage of a priori analysis is the selection of homogeneous groups of indicators that are interdependent and affect the performance indicator. In this case, the profitability of the company. It is important to note that the growing pace of development and implementation of artificial intelligence in marketing leads to the growth of e-commerce, which is directly related to logistics and inventory management. Arguing the above, it should be noted that artificial intelligence technologies not only modify the marketing and logistics of a company, they stimulate the growth of competition, technologies, services and the optimization and improvement of existing business processes of companies. The introduction of artificial intelligence in logistics and automation of supply chains, inventory and warehouse management lead to a significant reduction in costs for business and helps to minimize errors in product delivery. However, due to high initial costs, a long period of achieving return on investment limits the mass implementation of solutions for automation and optimization of logistics processes and requires a search for investors.

A colossal leap in scaling artificial intelligence technologies was caused by a pandemic in which the implementation of artificial intelligence was carried out in a short time with large budgets. From what has been presented, it should be noted that the modification of digital marketing and logistics management under the influence of artificial intelligence technologies has a significant role and influence on the company's strategy, its competitiveness and affordability. The study, research and definition of such modifications, which are called for by the implementation of artificial intelligence technologies, are important and necessary in modern conditions.

**4 Conclusions**

The conclusion of the study are that the need and relevance of studying the processes of modification of digital marketing and logistics and their management under the influence of artificial intelligence is formalized. The intensity of technology development and its implementation in all areas of the global economy is of great interest in business as part of optimizing existing

business processes, reducing costs and increasing efficiency. It is substantiated that the introduction of artificial intelligence technologies is conceptually necessary for modern business of companies, since a high level of competition and the need for scaling are impossible without their use.

To substantiate the main theories of the evolution of artificial intelligence and its introduction in marketing and logistics, a critical analysis of scientific approaches and research was carried out. It has been determined that it is conceptually necessary in contemporary conditions to ensure the efficiency and profitability of a business to formulate a strategy in such a way that marketing and logistics are a single integrated whole. On the basis of scientific generalization, the theory and specifics of the evolution of artificial intelligence in the world, and the features of its application in digital marketing and logistics of companies are determined. It has been proven that the functioning of contemporary business is inextricably linked with transformations characterized by the intense influence of artificial intelligence on all existing business processes of companies. To confirm theoretical hypotheses and premises, a methodology for studying the modification of digital marketing and logistics and management features under the influence of artificial intelligence has been defined.

The trends in the introduction of artificial intelligence in the world are highlighted, on the basis of which a classification of the main technologies and tools that are relevant and in demand in business has been developed.

The role of artificial intelligence in management and its impact on the modification of digital marketing and logistics of modern companies are substantiated. The indicators of the dynamics of digital marketing and logistics development under the influence of artificial intelligence in the world are structured in the context of technologies and areas of their application. It is substantiated that the penetration of artificial intelligence into the management of digital marketing and logistics of modern companies leads to their modification, which is due to the automation and optimization of business processes that stimulate sales growth, business scaling and increasing its profitability. Based on the formulated

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theoretical aspects and hypotheses, the need to use economic-statistical and a priori analysis and identify anomalies in the interdependence of digital marketing development trends and contract logistics market trends for the Gulf Cooperation Council is substantiated. Interpretation of the key results of the economic-statistical a priori analysis of digital marketing and logistics modification management under the influence of artificial intelligence confirmed the levels of interdependence and argued the main prospects for the evolution of digital marketing and logistics in the context of the influence of artificial intelligence.

The obtained results can be used as a basis for further research and expansion of the area of defining the processes of modification of the digital marketing and logistics system of companies. The theoretical aspects and methodological approaches to defining modifications of digital marketing and logistics and the features of their management are conceptualized and have independent value and practical significance. The results of the study can be applied in practice when building marketing and logistics strategies as a single management concept in terms of arguing the features of modifications under the influence of artificial intelligence. The developed methodology can be supplemented and expanded depending on the specifics of the companies' activities and the indicators that will serve as the information base for the study.

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**Review process**

Single-blind peer review process.