

Artificial Intelligence in Design and Impact on Electronic Marketing in Companies

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Abstract

E-marketing refers to the use of technology and artificial intelligence to analyze and interpret marketing data. In addition to providing recommendations and guidance to improve marketing campaigns, improve user experience, and increase sales. These tools include data analytics, machine learning, data classification and aggregation, voice and image recognition, and natural language. Therefore, this study aimed to identify the effect of artificial intelligence (AI) in Design on E-Marketing in Companies. This study used a survey design with a quantitative approach, with the target group being workers of E-Marketing companies. A 198 surveys were also gathered from Jordanian E-Marketing companies, however, 187 questionnaires were judged viable for study. Where the results indicate AI positively affects E-Marketing, and natural language processing, analytical models, content marketing, and digital marketing affect E-Marketing.

Keywords: *Artificial intelligence; natural language processing; analytical models; content marketing; digital marketing and e-marketing.*

Introduction

AI is a strategy for making the most use of technology and market data to improve the customer experience (Alwreikat & Aliqteshat, 2024). AI is revolutionizing the marketing environment and will soon completely change it. Even though marketing is one of the most significant business applications of AI today, early adopters are working to extract value from it (Shaik, 2023). Therefore, AI is applied in a wide range of business activities across several functional areas and operations, one of them being marketing, which is considered the core of the firm (Alsmadi et al., 2023). Nowadays, AI is regarded as one of the most crucial of these technologies. It might help to better prepare the marketing plan and improve the consumer experience. It also allows marketers to do their jobs better (Shakhathreh et al., 2022). Furthermore, AI might do a better job than humans in preparing marketing plans (Paschen et al., 2019). Previously, E-marketing was viewed as a supplement to traditional marketing methods on which businesses could or could not rely. Similarly, firms may now choose whether or not to rely on AI (Benhmad et al., 2024). However, it will soon be vital to boost business and profitability for organizations that employ e-marketing. As a result, firms must strive to rely on AI and develop the necessary mechanisms to better E-marketing duties (Grewal et al., 2020). In the future, AI looks to affect marketing strategies such as company models, sales procedures, and client service alternatives, as well as client behaviors (Alazzam et al., 2024). Many sectors are becoming increasingly reliant on AI, and with quick progress demonstrating its efficacy, it will soon become necessary to utilize (AlZu'bi et al., 2019). Where the E-marketing is one of the industries into which artificial intelligence has begun to expand. It is predicted to make a significant contribution to upgrading e-marketing techniques, making them more successful and lucrative (Davenport et al., 2020). However, AI provides sophisticated technology that can replicate and even outperform the human factor. They have the potential to make significant contributions to the transformation of E-marketing. AI technology has the potential to greatly boost revenues for large, medium, and small businesses. Without question, developing a good marketing plan is the foundation for success (Almaiah et al., 2022). It has been observed that many e-

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marketing organizations are unable to develop an effective marketing strategy for their Internet business, that is despite the availability of technology that may help these organizations successfully prepare marketing plans and become more efficient (Fayed, 2021). With a shift in communication and integration strategies, traditional marketing has evolved into non-conventional marketing through the use of AI (Almatarneh et al., 2023). This trend has resulted in changes in the marketing industry, AI is a critical component of many industries, including marketing, AI transformed how we utilize data to make critical marketing decisions and improve the client experience (Thiraviyam, 2018; Qinghua & Tao, 2024).

As a result, many e-marketing organizations struggle to develop an effective marketing strategy that is consistent with selling their products electronically. This eventually leads to marketing failure and exclusion from the competition. These businesses should look for the tools they need to create a successful marketing strategy that is appropriate for their online activities. AI is a novel and crucial method for creating and improving firms' operations in all aspects. The most crucial of them is creating a marketing plan that is appropriate for e-marketing. Companies should profit from this significant technological advancement by upgrading and developing marketing strategy preparation. It should be highlighted that most e-marketing organizations have yet to rely on it in general while expanding their online businesses, particularly when formulating marketing plans. They use it for very specific purposes, such as instant messaging. These businesses are still unaware that by leveraging the current AI technology, they may develop a successful marketing strategy. As a result, this study adds to our knowledge of the use of AI in e-marketing by outlining a systematic framework for AI that makes use of the joint intelligence of AI, marketers, and consumers, as well as the consumer's viewpoints.

Literature Review

In a continually expanding civilization and an ever-changing globe, where there is a wealth of knowledge and products, the sale and consumption of commodities is an essential element of the majority of the world's residents' daily routines (Al Zobi & Jarah, 2023). People make decisions and choices about what things to consume based on the demands they desire to meet. As a result, it is critical to examine consumer motives and sentiments that drive reception-specific decisions regarding the products or services they consume regularly (Papadopoulos et al., 2018). Furthermore, the use of information technology in businesses promotes customer relationship management, which contributes to increased customer satisfaction, while new intelligent manufacturing capabilities are transforming the company-customer relationship from one focused on products to one focused on creating value and services, including personalization (Stăncioiu et al., 2023). AI is also rapidly acquiring popularity and importance in the larger marketing area. Many marketing roles have put AI applications into training, such as robots for customer greeting, big data analytics for price adjustment and prediction, recommender methods for product and promotional personalization, crude language processing for client engagement and in-store background optimization for customer satisfaction tracking (Huang & Rust, 2022).

Technology is critical in guiding marketing policies and creating plans for agencies and organizations (Jarah et al., 2023). AI enables businesses to acquire and track exact real-time client data, which they may then use to design unique marketing strategies (Krishna et al., 2023). Marketing refers to any tactics that can have a significant impact on individuals at a certain time, in a specified area, and via a specific channel (Abunasser et al., 2023). As a result, most businesses and commercial organizations began selling their products online after sensing consumer or customer interest in E-marketing (Hailat, 2023). AI is a critical tool for making the many forms of data acquired from various digital points of sale, whether sorted or unordered, comprehensible and rational in context. This is to swiftly execute marketing choices, give personalized customer care, and streamline marketing activities, giving you an advantage over rivals. AI is viewed as a revolution in e-marketing (Shaik, 2023). Therefore, it's important to emphasize AI's role in enhancing marketing choices and boosting productivity, support scientific research, set up a department dedicated to utilizing AI to activate E-marketing in companies and use AI applications in marketing services to enhance customer experience within the context of the global trend (Khalifa et al., 2023). Enterprises may now employ data, forecasting models, and sophisticated algorithms to optimize marketing strategies and tailor campaigns to the specific demands of each potential client (Ward et al., 2023).

As a result, AI technologies are rapidly being applied in the sphere of digital marketing in today's technology era (Arshad et al., 2023). The rapid development of technology has had a significant impact on human life.

New technologies are being applied in many fields (Ababneh et al., 2024). AI is a contemporary science that seeks to construct machines that mimic human intellect. Its applications include banking, robotics, healthcare, and marketing (Sadeq et al., 2023). Where the organizational processes have changed due to disruptive technologies like AI, big data analytics, blockchain, and the Internet of Things. AI is the most recent disruptive technology, with enormous promise for the marketing revolution. Practitioners worldwide are looking for the best AI solutions for their marketing tasks. E-marketing is an absolute need since it allows the firm to generate large earnings (Verma et al., 2021). These applications, characterized by diversity and continual innovation, have lately enhanced e-marketing organizations' global market competitiveness. Nowadays, the rise in internet user's forces organizations to rely increasingly on E-marketing (also known as e-marketing) to assist their marketing efforts (Aghion et al., 2019).

To increase their chances of success, define AI as computerized systems that collect data and do tasks often performed by intelligent humans (Jarah et al., 2024). Strong AI is a machine that has consciousness, and a mind and is intelligent in a variety of fields (Carracedo et al., 2023). AI remembers all previous customer encounters, including when, where, and how, to systematize consumer needs, interests, and behavior. Researchers have proved the influence of AI on internet marketing. AI converts data into intelligent information, allowing retailers to leverage social media as an advertising tool (Saeed Bazuhair, 2022). Therefore, AI tools are among the most important tools companies use to improve their online shopping experience and increase their sales (Jawad et al., 2024). Modern technologies such as data analysis are used to determine consumer behaviors and personal product recommendations to them, as marketing and sales have been greatly influenced by developments in information technology (Abdulridha & Reshak, 2023). AI technologies such as machine learning, neural networks, and AI bots can help improve user experience and increase the efficiency of core operations in e-commerce. AI can be used to analyze data, make forecasts and recommendations for customers, improve marketing operations, manage inventory, and improve the logistics and shipping system (Zhang et al., 2021). Aghion et al. (2019) found that robotization decreases employment at the employment zone level and has a greater negative impact on non-educated workers than on educated people. Furthermore, the study indicates that ineffective labor market and education policies decrease the good influence that AI and automation might have on employment.

Furthermore, the introduction of AI has altered the dynamics of the commercial sector. AI has a substantial impact on marketing success and is expected to continue to expand in the next years (Vlačić et al., 2021). AI has improved the performance of marketing in a variety of ways, AI is predicted to have a greater effect shortly. Robots will replace salesmen, and websites will be automatically updated and reformatted based on eye-tracking data (Almajali et al., 2023). The area of marketing is and will continue to change fast as AI evolves and advances. Furthermore, the employment of AI in digital marketing strategy through social media platforms may be extremely beneficial to marketers, allowing for the development of personal information and its subsequent use in successful campaigns (Basheer, 2024). AI is the solution to this challenge, with an emphasis on using customer data and machine learning in marketing strategies to anticipate consumers' next steps and improve their experience through content personalization (Ardash et al., 2022). E-marketing can be referred to as online marketing or internet marketing. It involves the exchange of products and services over the Internet and other media. E-marketing is vital for organizations for several reasons, including the ability to discover and target potential clients online and engage with the audience more efficiently (Sadeq et al., 2023). Fayed, (2021) study validates and theoretically establishes that AI makes a substantial contribution to formulating marketing plans by analyzing the environment, and rivals' methods, and setting marketing goals. Furthermore, AI helps to prepare the budget and appreciate the marketing plan, as well as to evaluate and regulate it. According to the report, AI can help with analyzing and selecting target markets and sectors, as well as targeting clients and developing appropriate marketing mix tactics for each sector.

In the age of AI, Big Data, and the Internet of Things, marketing decisions are more driven by current technology, while also influencing and shaping consumer online experiences (Mahany, 2022). Marketing is the key business function with the greatest AI applications now (Chan et al., 2022). Additionally, AI is a rapidly emerging field. It is the most current technological disruptor with massive marketing conversion potential. Experts from all around the world are working hard to identify the finest AI solutions for their marketing divisions. The world is rapidly shifting to a digital era, as is widely understood. Smart-marketing organizations that apply AI technology in their marketing activities confirm the increased utilization of

digital content (Chandra et al., 2023). Dharmaputra et al. (2021) found that the perceived ease of use of AI substantially and positively influenced customers' convenience and cost reduction as e-marketing results. The perceived utility of AI has a considerable and favorable impact on customers' convenience and cost reduction. A favorable and substantial association was discovered between consumer convenience and cost reduction.

As a result, AI and e-marketing are systems that use client data to predict the customer's next step and improve the client journey (Huang & Rust, 2021). AI bridges the gap between data collection and execution by sifting through and analyzing large amounts of data, which was previously an insurmountable task. Marketing and sales are at the forefront of AI innovation, driven by the need for increased efficiency daily. Companies who strongly believe in inbound leads and inbound marketing methods feel that customer data may assist them in understanding consumer behavior (Sumitha, 2022). Sadeq et al. (2023) found that AI applications had a statistically significant influence on e-marketing and its competitive advantage. According to Khalifa et al. (2023), the actuality of employing AI was reached to a large extent in the E-marketing of the website. Hassan (2021) said that AI systems derived from social computing technology may be used to comprehend social networks on the Internet. Ghaith et al. (2023) found an influence of AI on marketing performance. The research advised that managers encourage the use of AI technologies, which aid and expedite the completion of client services, because the use of these technologies' boosts customer satisfaction with bank performance. Shaik, (2023) research discusses the impacts of AI integration in marketing, the benefits and drawbacks of AI integration in marketing, as well as your company's before and post-AI marketing strategy, ethical issues, and the employment of AI in the marketing business. Sumitha, (2022) discovered that AI is an unavoidable component of the future marketing and sales environment. According to Mahany, (2022) research, consumers' high degree of understanding of technological applications in e-marketing adds to their increased awareness of privacy issues. Furthermore, the more people are exposed to e-marketing, the less they value their digital privacy. Furthermore, as people have a better understanding of how current technology might be used in e-marketing, their desire to preserve their digital privacy grows. Also, Jebril et al. (2023) discovered that both strategic intelligence and asset management have a favorable influence on boosting competitive advantage when cybersecurity plays a mediating role.

In addition, based on the literature review, the study model was developed as shown in Figure 1, also five hypotheses were developed as follows:

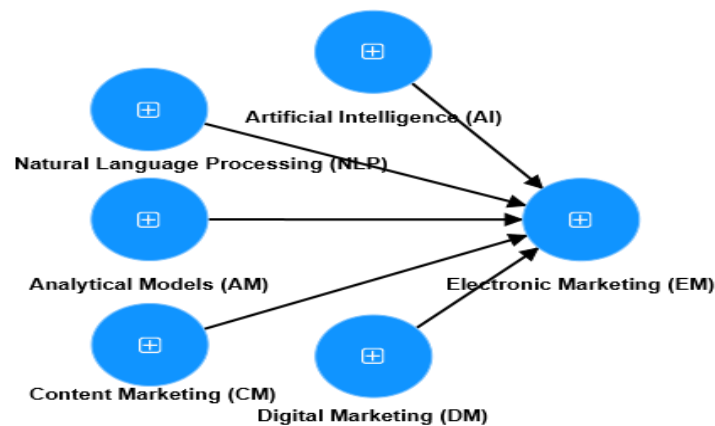


Figure 1. Research model.

H1: Artificial Intelligence (AI) passively effect Electronic Marketing (EM).

H2: Natural Language Processing (NLP) passively effect Electronic Marketing (EM).

H3: Analytical Models (AM) passively effect Electronic Marketing (EM).

H4: Content Marketing (CM) passively effect Electronic Marketing (EM).

H5: Digital Marketing (DM) passively effect Electronic Marketing (EM).

Methodology

This study used a survey design with a quantitative approach, with the target group being workers of e-marketing companies. 198 surveys were also gathered from Jordanian e-marketing companies, however, 187 questionnaires were judged viable for study. To capture the opinions of the selected sample, the questionnaire was used as a technique of data collection. In addition, the management of e-marketing companies gave verbal clearance to disseminate the questionnaire to its personnel. Also, informed consent was obtained from all participants included in the study. Participants were provided with detailed information about the study's objectives, procedures, potential risks, and benefits, and their consent was obtained before their involvement in this study. Also, the management of e-marketing companies gave the authors verbal clearance to disseminate the questionnaire to their personnel. It also addresses how participant confidentiality and anonymity were maintained throughout the study, including data collection, analysis, and reporting. Participation in this study was voluntary, and participants had the right to withdraw their consent at any stage without facing any consequences. Smart PLS 4 was utilized to test the study hypotheses. This enables more reliable hypothesis testing over all pathways with a single test.

Results

The missing value analysis found that seven responses had better than 16% of the responses missing. Also, the boxplot analysis identified three distributed univariate outliers. Due to the huge amount of missing data and outliers, it was determined to remove these responses. However, 187 surveys were confidently determined to be suitable for analysis. To ensure that the independent variables were not multicollinear, tolerance variable statistics and the variance inflation factor (VIF) were applied. All VIF values were less than 10, and the tolerance coefficient was greater than 0.05 while smaller than 1. These numbers demonstrate that the dimensions are not multicollinear, allowing multiple regression analysis to be utilized to test the hypotheses (Hair et al., 2017).

Measurement Model

A few conditions have to be met to determine convergent validity. To be employed, factor loadings must first be larger than 0.70. Additionally, Cronbach's Alpha (CA) and Composite Reliability (CR) must both be greater than 0.70 (Hamid et al., 2022; Al-Zaqeba et al., 2023; Al-Taani et al., 2024). There must be more than 0.50 in the AVE. Furthermore, all builds had Cronbach's Alpha values greater than 0.70, indicating precise measurements. Moreover, all structures had an overall reliability of better than 0.70. Figure 2 illustrates the measurement model's convergent validity.

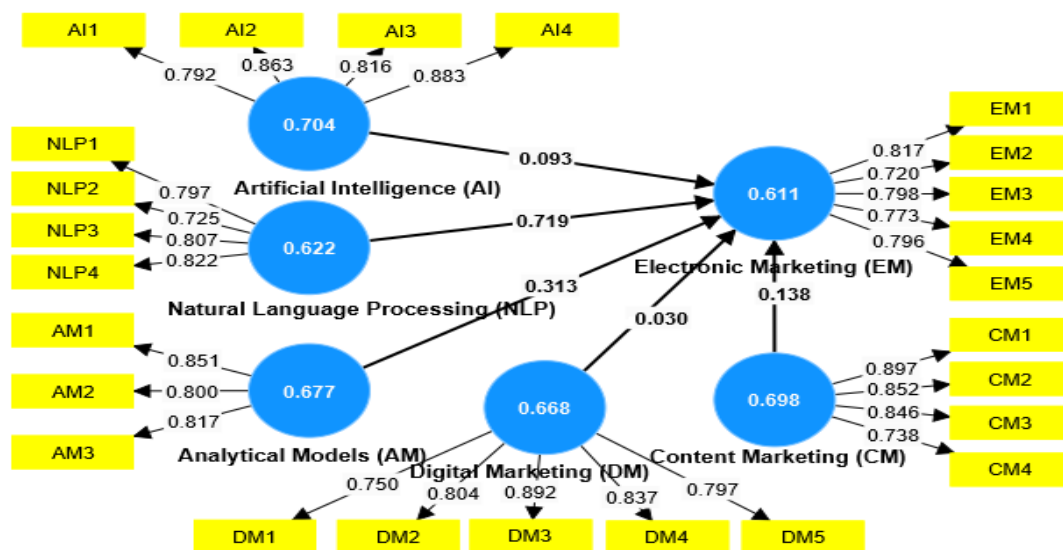


Figure 2. Measurement Model.

Each indication is shown in the corresponding yellow box, while latent variables are represented by the blue circles. Furthermore, the correctness of each signal and the construct's dependability concerning the

variables under investigation are assessed by the values assigned to each arrow. An indicator that has a factor weight value greater than 0.50 is considered valid.

Table 1. Convergent validity.

Variables	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Analytical Models (AM)	0.768	0.802	0.863	0.677
Artificial Intelligence (AI)	0.861	0.869	0.905	0.704
Content Marketing (CM)	0.855	0.876	0.902	0.698
Digital Marketing (DM)	0.875	0.885	0.909	0.668
Electronic Marketing (EM)	0.840	0.841	0.887	0.611
Natural Language Processing (NLP)	0.799	0.810	0.868	0.622

Cronbach Alpha scores ranging from 86.4% to 93.7%, with a stability degree of 95.4%, should all be considered acceptable because they are more than 0.70, according to Sekaran and Bougie (2016). The Kolmogorov-Smirnov test revealed that the data distribution was as expected, with all significant values more than 0.05 (Jarrah et al., 2022). Furthermore, the coefficient of variance inflation values was calculated to be 5, while the VIF, tolerance extracted, and coefficient of variance values ranged from 0.2-1.

Hypothesis Testing

All four latent variables have AVE values greater than the necessary value of 0.5, as can be seen in Table 1 above. The degree of variation caught by the latent variables concerning the measure errors is shown by the AVE measure. In this instance, the study's five latent variables all had AVE values higher than the suggested cut-off point of 0.5. In addition, Table 2 is related to the discriminant validity test. The explanation emphasises how the research's manifest variables satisfactorily satisfy the requirements for convergent validity, demonstrating that they are useful for measuring the relevant constructs. To fully comprehend the findings of the discriminant validity test and how they affect the measurement model, further data is necessary, as shown in Table 2. The standard for business research was followed by the researchers in this study, who used 95% confidence levels. The T-Statistics value indicates that the coefficient path score for the one-tailed hypothesis has to be higher than 1.65. Also, Table 2 presents the T-Statistics and Path Coefficients findings.

Table 2. Discriminant validity testing.

Variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Analytical Models (AM) -> Electronic Marketing (EM)	0.180	0.181	0.037	4.872	0.000
Artificial Intelligence (AI) -> Electronic Marketing (EM)	0.220	0.219	0.037	5.881	0.000
Content Marketing (CM) -> Electronic Marketing (EM)	0.098	0.098	0.035	2.804	0.005
Digital Marketing (DM) -> Electronic Marketing (EM)	0.129	0.130	0.037	3.496	0.000
Natural Language Processing (NLP) -> Electronic Marketing (EM)	0.520	0.519	0.037	14.256	0.000

The findings are shown in Table 2 that the model has strong discriminant validity, as shown by the greater root values concerning their correlation coefficients. These results confirm the validity of the data and show that all indicators consistently evaluate the variables, as indicated by Composite Reliability (CR) scores greater than 0.7 and Cronbach's Alpha values greater than 0.6. Also, in Table 2 and Figure 3, the results indicate AI positively affects E-Marketing, and natural language processing, analytical models, content marketing, and digital marketing affect E-Marketing. Thus, H1 to H5 are accepted. To go deeper into the results of the hypothesis test, the following figure depiction is offered:

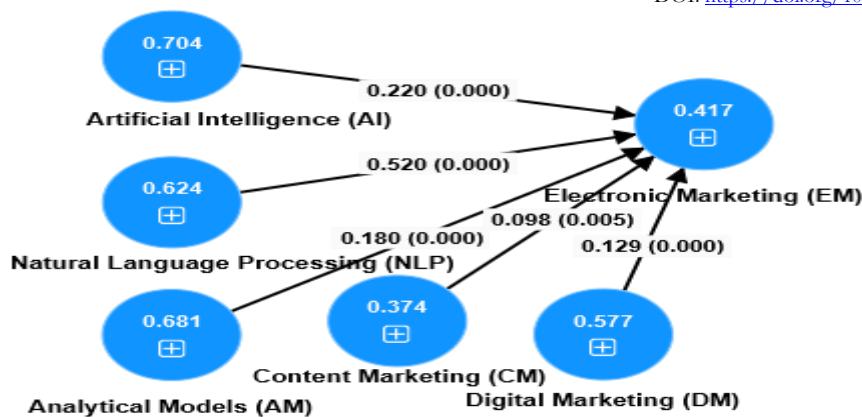


Figure 3. Discriminant validity testing.

Discussion and Conclusion

Most businesses and commercial organizations began selling their products electronically after sensing consumer or customer interest in E-marketing (Hailat, 2023). This is to swiftly execute marketing choices, give personalized customer care, and streamline marketing activities, giving you an advantage over rivals. AI is viewed as a revolution in e-marketing (Shaik, 2023). AI has transformed the corporate landscape (Vlačić et al., 2021). AI has improved marketing success in several ways (Shahid & Li, 2019). Furthermore, incorporating AI into digital marketing strategies through social media platforms may be extremely beneficial to marketers, allowing for the development of personal information and its usage in successful campaigns (Ardash et al., 2022). AI is also growing acceptance and relevance in the broader marketing field (Huang & Rust, 2022). Smart-marketing organizations that apply AI technology in their marketing activities confirm the increased utilization of digital content (Chandra et al., 2023). As a result, there is a need to strengthen the role of AI in improving marketing decisions and increasing productivity, promote scientific research, and develop a department dedicated to utilizing AI to activate E-marketing (Khalifa et al., 2023). Also, AI technologies are rapidly being applied in the sphere of digital marketing in today's technology era (Arshad et al., 2023). Therefore, E-marketing is an absolute need since it allows the firm to generate large earnings (Verma et al., 2021). To increase their chances of success, define AI as computerized systems that collect data and do tasks often performed by intelligent humans (Jarrah et al., 2024). AI converts data into intelligent information, allowing retailers to leverage social media as an advertising tool (Saeed Bazuhair, 2022). As a result, AI solutions are among the most essential tools that businesses utilise to improve their online shopping experience and boost revenues (Abdulridha & Reshak, 2023). AI may be used to analyse data, forecast and propose products to clients, improve marketing operations, manage inventories, and enhance the logistics and shipping system (Zhang et al., 2021).

According to Fayed, (2021) study validates and theoretically establishes that AI makes a substantial contribution to formulating marketing plans by analyzing the environment, and rivals' methods, and setting marketing goals. Dharmaputra et al. (2021) found that the perceived ease of use of AI substantially and positively influenced customers' convenience and cost reduction as e-marketing results. Sadeq et al. (2023) found that AI applications had a statistically significant influence on e-marketing and its competitive advantage. Khalifa et al. (2023) discovered that the actuality of employing AI was accomplished to a large extent in the website's E-marketing. Ghaith et al. (2023) found an influence of AI on marketing performance. Shaik (2023) research examines the impacts of AI integration in marketing, the benefits and challenges of AI integration in marketing, and your company's before and post-AI marketing strategy. Sumitha, (2022) discovered that AI is an unavoidable component of the future marketing and sales environment. According to Mahany (2022) research, consumers' high degree of understanding of technological applications in e-marketing adds to their increased awareness of privacy issues. Also, Jebiril et al. (2023) discovered that both strategic intelligence and asset management have a favorable influence on boosting competitive advantage when cybersecurity plays a mediating role.

As a result, the purpose of this study was to determine the impact of artificial intelligence (AI) in design on company e-marketing. This study used a survey design with a quantitative approach, with the target group

being workers of E-Marketing companies. 198 surveys were also gathered from Jordanian E-Marketing companies; however, 187 questionnaires were judged viable for study. The findings reveal that AI has a favorable impact on E-Marketing, as do natural language processing, analytical models, content marketing, and digital marketing. Based on the findings, the researchers suggest employing artificial intelligence to investigate consumer behavior models, forecast market trends, and uncover strategic prospects for electronic marketing. As a result, artificial intelligence may be used to efficiently drive marketing initiatives, such as properly identifying the target demographic or personal items for each consumer, resulting in higher success rates and a better shopping experience for customers.

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