NIU Journal of Management Sciences Copyright©2026
Nexus International University ISSN: *3007-1887;* 12(3): 5-13

Using Artificial Intelligence Tools in Digital Marketing: A Survey Study of a Number of Private Sector Banks in Iraq

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Abstract. This research aims to explore the role of artificial intelligence (AI) in digital marketing. A questionnaire was developed to confirm the relationship between the research variables. Using a sampling methodology, 384 questionnaires were distributed to private sector banks in Nineveh Governorate, and the data were analyzed using SPSS version 24. The research results revealed a knowledge gap regarding the nature of the relationship between AI and digital marketing, and confirmed a statistical relationship between the research variables. Therefore, the banks included in the study need to enhance the role of AI in digital marketing. This research is the first of its kind to integrate current variables (AI and digital marketing) into a single hypothetical model for Iraqi private sector banks. The research findings can be utilized to implement AI in digital marketing, increasing banks' opportunities to achieve their goals and objectives. Consequently, private banks should organize training courses for their departments and participate in training courses with other banks.

Keywords: Artificial intelligence; Digital marketing; Attraction; Engagement; Learning; Retention; Communication.

1. Introduction

Over the past few years, modern technologies have revolutionized the field of digital marketing, enabling more efficient and effective strategies. Among these technologies is artificial intelligence (AI), which enables marketers to enhance the efficiency and effectiveness of their strategies. AI has demonstrated significant potential to revolutionize how marketers operate. By implementing AI applications, companies can achieve various benefits, such as increased revenue, reduced costs, and improved operational efficiency (Chang, 2023).
The inclusion of AI algorithms into mathematical marketing design is a ground of the projected framework. The concerning mathematics content and childbirth model are created, e.g., labeling customers interested in the shopping message through AI algorithms and transferring ideas to them through handy television. Then it is imperative to gain unification middle from two points AI and digital shopping, in the framework of banking duties, dossier that feeds the AI systems emanates various beginnings (e.g. credit instrumentalities, extrinsic partners, friendly publishing, the web, travelling phones, and different). Attention must be devoted to the characteristic of the dossier, other than possible, unfit aids and products will be brought, the fullness of the data endures feel so the forecasting process would be correct. The projected framework for mixing machine intelligence into digital shopping Our projected framework circumscribes AI structures that collect humans and calculating. Integrating artificial intelligence (AI) algorithms into the design of sports marketing strategies is a cornerstone of the proposed framework. The goal is to create targeted and personalized sports content, including segmenting customers interested in marketing messages using sophisticated algorithms that deliver ideas to them through channels such as interactive television. Furthermore, it becomes essential to identify an intersection between AI and digital marketing to enhance efficiency and innovation. In the context of banking operations, AI systems rely on data from multiple sources, such as credit instruments, external partners, interactive publishing, the internet, mobile devices, and more. To ensure the success of this integration, attention must be paid to the accuracy and completeness of the data used, as failure to do so could lead to the delivery of products

and services that do not adequately meet user needs. Data quality is a critical factor for achieving accurate predictions and developing appropriate solutions. The goal is to create targeted sports content, with customers divided into groups to receive promotional messages through modern algorithms that deliver ideas via channels such as interactive television. It's also essential to integrate artificial intelligence with digital marketing to enhance efficiency and innovation. In the banking sector, AI systems utilize data from numerous sources, including credit instruments, external partners, interactive publishing, the internet, mobile devices, and more. For successful integration, data accuracy and completeness are crucial; otherwise, services and products may be unsuitable for users. High-quality data is essential for accurate predictions and the development of innovative ideas.

The proposed framework for integrating AI into digital marketing features a comprehensive design that blends the human dimension with elements of intelligent computing, fostering collaboration between humans and technology to achieve better results that are more suited to the demands of the digital age (Aladayleh, 2020).

2. Previous Studies

Study title "Measuring the impact of digital marketing dimensions in gaining customer satisfaction: Researcher Osama Mohamed Salam conducted an applied study on a sample of customers of the Egyptian General Company for Tourism and Hotels. The study, using this customer sample, aimed to bridge the knowledge gap between the variables of digital marketing and customer satisfaction by defining the nature of their relationship. This is based on the premise that digital marketing is the cornerstone of customer satisfaction. The study employed a descriptive-analytical approach of the 384 questionnaires distributed, 315 were completed, and IBM SPSS Statistics 23 was used for analysis. The study concluded that there is a statistically significant impact of the dimensions of digital marketing (retention, learning, and communication) on gaining customer satisfaction (Salam, 2021).

"A Framework for Integration of Artificial Intelligence into Digital Marketing in Jordanian Commercial Banks". This research focuses on exploring the relationship between artificial intelligence (AI) and digital marketing within the Jordanian banking sector. It primarily examines the impacts of data collection, information modeling, processing, and effective distribution. It also highlights the role of human interaction and the ethical issues associated with the use of AI in this field.

This study provides a comprehensive overview of how artificial intelligence technologies can be integrated into the digital marketing strategies adopted by Jordanian banks. It also includes a set of suggestions aimed at enhancing the banks' effectiveness in better targeting their customers (Aladayleh, 2020).

The study's title is "The Reality of Islamic Banks' Use of Artificial Intelligence Applications in Digital Marketing". A Case Study of Al Salam Bank Algeria, by researcher Murad Mahdi. This study focuses on exploring the impact of artificial intelligence (AI) and its application in enhancing the effectiveness and increasing digital marketing in public activities, with a particular emphasis on Islamic institutions. The descriptive framework was revisited to analyze the phenomenon and derive the findings. The study concluded that AI has significantly transformed social media platforms, such as Facebook and Twitter, into effective tools to support female students in the field of digital marketing within Islamic institutions, thereby enhancing their effectiveness and efficiency (Mahdi, 2022).

The title of the study is "The Impact of Artificial Intelligence Technologies in Improving Banking Marketing Strategies" by researchers Mishaal Abdullah Al-Wasil and Shahd Abdullah Muallem. The study employed both descriptive and survey methodologies to analyze the impact of modern technologies on enhancing reach to the target audience, improving user experience, and assessing their effect on social media marketing. Researchers arrived at several important findings, most notably the role of artificial intelligence in developing digital marketing strategies and increasing their effectiveness in reaching the target audience. The study also demonstrated the feasibility of leveraging AI technologies to produce creative and engaging content that efficiently meets the needs and interests of the target audience. (Al-Wasil, et al., 2023).
The study, titled "A Study of the Relationship between Artificial Intelligence and Digital Advertising in Marketing Strategy," by researcher Dr. Dhruv Sabharwal, 2022, aimed to examine the relationship between digital advertising (DA) and artificial intelligence (AI) and their impact on developing an appropriate marketing strategy for any organization. The study method is descriptive; a survey method was used to collect data. The most important findings of the study are: Marketing has changed the way we communicate with consumers. It is changing every day, and this is where the big shift has occurred. The

biggest change taking place in marketing is artificial intelligence and machine learning. It creates new opportunities for storytelling, and marketing will transform how people interact with information, technology, brands, and services. Therefore, marketers must adopt AI systems in their marketing strategies to achieve success in the current era of digital marketing. It saves time and effort for marketers and potential customers, and occupies their minds without human intervention (Sabharwal et al., 2022).

The study titled "Exploring the Role of Artificial Intelligence in Digital Marketing Strategies" by Awad, Tauheed1*, Aumir Shabbir1, Muhammad Shahid Pervez1 2024. The study aimed to investigate the role of artificial intelligence in digital marketing strategies. The study method was a quantitative survey using a stratified random sampling technique. The results of the study revealed a strong positive relationship between artificial intelligence and digital marketing strategies. AI can explain 82.4% of the variance in digital marketing strategies. Comparison with previous studies reinforced the transformative impact of artificial intelligence on digital marketing. The results contributed to a more accurate understanding of the role of artificial intelligence in shaping modern marketing strategies. (Tauheed et al., 2024).

The study, titled "Transforming Marketing Decisions Through Artificial Intelligence and Digital Marketing," by Khansa Zaman *, 2022, aims to provide a comprehensive understanding of the role of artificial intelligence in digital marketing to better understand their target audience. Secondly, it also highlights the role of artificial intelligence and predictive marketing in understanding complex consumer behavior by highlighting several solutions for predicting consumer expectations. The contribution of artificial intelligence to customer relationship management, along with the effective role of managers, is one of the objectives of the study. The current study also discusses the future of artificial intelligence in marketing and the role of managers in using disruptive technology. The study approach is exploratory, and the results the researcher arrives at provide a comprehensive understanding of the role of artificial intelligence in digital marketing to better understand their target audience. Secondly, it also highlights the role of artificial intelligence and predictive marketing in understanding complex consumer behavior by highlighting several solutions for predicting consumer expectations. Furthermore, the contribution of artificial intelligence to customer relationship management, along with the effective role of managers, is one of the objectives of the study. The current study also discusses the future of artificial intelligence in marketing and the role of managers in using disruptive technology. The managerial implications of this research paper are relevant because the deployment of AI in competitive firms is essential to improving decision-making (Zaman, 2022).

“Employing artificial intelligence applications in electronic marketing” by researcher Abu Zaid Sufyan, 2022. The study aimed to identify the impact of using artificial intelligence on the effectiveness of digital marketing methods as one of the most important modern technological tools in this field and then measure the effectiveness. The results reached by the study are that the use of artificial intelligence in the marketing process will give marketers access to deeper and actionable insights. Also, the employment of artificial intelligence applications in digital marketing plays a fundamental and important role that cannot be denied (Sofean, 2022).

3. Artificial Intelligence

The term artificial intelligence first appeared when a group of computer scientists, led by the American John McCarthy, announced the birth of artificial intelligence at a scientific conference at Dartmouth University in 1956. It was agreed that artificial intelligence is related to the creation of machines that are similar in intelligence to the human mind. During its development, it branched out into many types, including general artificial intelligence, which specializes in performing any human, physical, or emotional tasks; limited artificial intelligence, which refers to a group of systems that can handle a limited set of tasks, such as the way Google Translate works; and super-artificial intelligence, which includes technologies equipped with cognitive capabilities that exceed human intelligence. Recently, the revolution of generative artificial intelligence has emerged, which has witnessed widespread global interest in benefiting from its many technologies in writing content and designing images, videos, and others (Dr. Moeen Amin Al-Sayed, Prof. Hamou Ali, n. d.).

Artificial intelligence (AI) has become a key driver of transformation in digital marketing, effectively enhancing the performance and efficiency of marketing campaigns. AI allows computer systems to mimic human thought processes and decision-making that were previously based solely on human perception. Today, companies rely on AI technologies to develop predictive analytics systems that analyze consumer behavior. This significant development is driven by the exponential growth in the volume and complexity of data, making manual processing practically impossible. Furthermore, quantum computing, with its high capabilities and speed in solving complex equations, is accelerating innovation in this field. As AI technologies become more widespread, their use is extending to small businesses as well; however, the success of these companies depends primarily on their willingness to invest in this advanced technology (Tauheed et al., 2024).

Tab. 1 shows the most important applications of artificial intelligence used in digital marketing campaign (Al-Aswadi, 2023).

Tab. 1 Applications of Artificial Intelligence

No.	Application	Its uses
	Auto-responder bots	These robots rely on artificial intelligence and boast a range of features, most notably the ability to automatically respond to customer inquiries via email or social media, saving time and effort and improving customer satisfaction and targeting.
	Mobile Marketing	This type of application relies on analyzing mobile phone data to be used in categorizing targeted digital marketing campaigns for each current or potential customer. The goal is to reach customers at the right time and place.
	Analyze digital marketing campaigns instantly.	These types of applications rely on analyzing the actual performance of digital marketing campaigns, identifying the pros and cons, and the ability to improve performance immediately by providing automatic suggestions during campaigns. This ensures that campaigns run effectively without disruption or hindrance.
	Targeted advertising	These applications rely on targeting ads based on each customer category, and this is determined precisely by analyzing demographic data and product search behavior.
	Customer behavior expectations	These applications rely on predicting future customer purchasing behavior by using machine learning algorithms.
	Email Marketing	This type of marketing application relies on personalized messages, setting the appropriate time for customers to receive messages, and improving email marketing strategies.
	Text analysis	These applications rely on analyzing marketing textual content, such as comments and articles, to extract future insights into customer opinions and identify purchasing trends.
	Voice interaction	The use of these types of applications relies on search engines via voice assistants. This helps identify the appropriate content for each current and potential customer, increasing the chances of product names appearing on search engines.
	Marketing Automation	It is considered one of the most important applications used in artificial intelligence and digital marketing, given its ability to encompass all marketing operations in general, from sending marketing messages, managing customer relationships, and monitoring marketing performance. The goal is to save time and effort, focus on the most important marketing strategies used, and improve their effectiveness.
	Customer Relationship Management	This type of approach relies on managing customer relationships using artificial intelligence. This approach analyzes customer interactions with products, understands their trends and purchasing behavior, and provides recommendations and suggestions to improve marketing performance and achieve customer satisfaction.
	Marketing content quality analysis	This type of application relies on analyzing all types of marketing content and determining its quality, whether written or visual, to ensure it resonates with each target customer. This helps marketers choose content that aligns with their customers' purchasing trends.
	Interactively analyze images and videos	These applications rely on analyzing customer interaction with product-related images and videos using artificial intelligence, with the goal of improving visual content strategies based on customer interaction and enhancing their shopping experience.

4. Digital Marketing

Digital marketing is the presentation of products and services to potential customers, allowing them to access all types of product information, conduct online transactions once they have selected a product, establish their requirements, and communicate and interact with companies and brands to evaluate products and services and make proposals. Digital marketing also enables companies to achieve their marketing objectives, such as distributing and selling consumer goods and services, managing customer relationships, and influencing customer behavior at a relatively low cost. (Al-Suhaimi, 2024). It is worth noting the need to distinguish between the term e-marketing and internet marketing, as the latter is considered part of digital marketing, as it refers to the internet, various social media and email, while digital marketing refers to all digital tools such as internal and external networks. (Mahdi, 2022). Digital marketing is increasingly relying on artificial intelligence (AI) tools to analyze data and transform it into more relevant and understandable formats. The application of AI in this field represents an innovative approach that helps companies gain a deeper understanding of their target audience and their behavior patterns in advanced ways. AI-powered digital marketing enables direct interaction with customers, whether through sending messages, responding to inquiries, or providing them with essential information. Furthermore, the effective use of these technologies reduces the need for human intervention in routine communication tasks, thereby enhancing operational efficiency (Zaman, 2022).

5. Dimensions of Digital Marketing

Many researchers have addressed the dimensions of digital marketing. However, there is one model that is most widely used and widespread, which is the Zeisser model, which established five dimensions of digital marketing: attraction, absorption, retention, learning, and communication. The model is used as a methodological basis in many studies, despite the passage of 22 years since its establishment (Al-Suhaimi, 2024).

The following is an overview of the five dimensions:

Attraction Dimension: This is the attraction of customers to the website, or the creation of new customers. Customers can be attracted through advertising. Attraction can be achieved through advertising sites or related links, which may result in improved search engine rankings. Attraction focuses on branding when using apps, as building an app that combines digital marketing and blended marketing requires the website to bear the name of the brand being promoted (Al-Suhaimi, 2024).

Engagement Dimension: The engagement dimension refers to the degree of user interaction, interest, and participation. It aims to enhance interaction and engagement among users. Organizations can leverage creative programming techniques to produce interactive tools and valuable content that attract customers and maintain their attention. Examples include animations that engage users, as well as interactive content that enables websites to create a virtual environment that encourages participation, such as forums dedicated to topics relevant to their interests, allowing users to communicate and interact with each other (Teo & Tan, 2002).

Learning Dimension: This refers to identifying customer preferences. It involves gathering information about current and potential customers, for example, through online surveys. Providing personalized services for these purposes can generate unique feelings among customers. However, many organizations still view the process of gathering information about customer preferences as difficult and costly. Learning dimension represents one of the basic strategies for building an online brand by exploring customer insights to improve corporate websites. This suggests a positive relationship between companies' attempts to gain information about customer preferences and the value of online intellectual property (Dayoub, 2024).

Retention Dimension: Organizations seek to retain customers by building profitable, long-term relationships with them and encouraging them to repeat purchases from their websites. Therefore, an important element that systems must take into consideration when implementing the digital approach is building positive relationships with customers and retaining them (Mohammed Fouad & Abdulrahman Jameel, 2023).

Communication Dimension: Communication: The Internet is one of the most prominent digital tools that contributes to achieving and making communication successful with customers through constant interaction. Among the most common and widely used tools for communicating with customers are personal communications, direct interaction, email, and personal pages (Onis, 2025).

Barriers to Digital Marketing (Salam, 2021):

- The demand for digital marketing has decreased as a result of widespread economic hardship and a growing lack of trust among consumers.
- Lack of confidence in the existence of guarantees to protect all parties involved.
- Lack of confidentiality, privacy, and security (customer perspectives).
- Lack of trust in electronic payment methods.
- Language and cultural barriers.

6. Research Methodology

Research Problem:

Despite the rapid developments in digital marketing, many banks still face difficulties in effectively leveraging artificial intelligence tools to achieve a competitive advantage. Some banks use these tools in a limited manner, limited to data collection or automated advertising campaigns. This gap between the potential for applying artificial intelligence in marketing and its actual use raises some questions:

The following questions are of a cognitive and practical nature:

- What are the conceptual considerations of artificial intelligence and digital marketing?
- Can artificial intelligence tools contribute to the adoption of digital marketing in the banks studied?
- Can the difficulties facing the implementation of the proposed conceptual model be identified?

Research Objectives:

- To develop a conceptual model for artificial intelligence and digital marketing tools.
- To determine the extent of application of artificial intelligence and digital marketing

tools in the banks studied.
- To diagnose the limitations and difficulties facing the proposed conceptual model.

Significance of the Research:

The importance of the research revolves around the cognitive and applied levels, as follows:

Cognitive Level: Through a cognitive framework around the research variables, as no Arab or foreign study has combined its variables into a single hypothetical model in Iraq, to the researchers' knowledge. Therefore, this will be of benefit to researchers when conducting studies in this field.
Applied Level: The applied importance of the research stems from the benefits achieved when the banks surveyed apply artificial intelligence tools to digital marketing.

Research Hypotheses:

H_1: There is a statistically significant positive correlation between the application of artificial intelligence tools and digital marketing.
H_2: There is a statistically significant effect of the application of artificial intelligence tools and digital marketing.
The researchers designed a hypothetical research plan based on the study's problem and objectives, as illustrated in Figure (1).
Figure (1) illustrates the nature of the relationship between the main research variables. The independent variable (Artificial Intelligence) is drawn as a rectangle, and the dependent variable (Digital Marketing) is drawn as an oval, based on (Sekaran and Bougie, 2016).

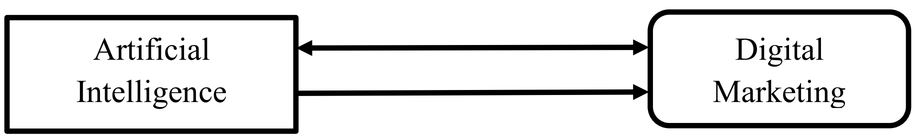

***Fig. 1** hypothetical model.*

7. Statistical Framework

7.1 Descriptive Statistics of Research Variables:

This section aims to present the results of the research variables and items using statistical methods and tools, such as standard deviation and coefficient of variation for each variable and item, to determine the dispersion of responses. Additionally, the means of the variables and items are used to determine the level of response for each, as follows:
Description of the Independent Variable (Artificial Intelligence) in the Researched Banks:

Table (2) highlights the statistical data related to artificial intelligence. It includes the arithmetic mean (mean), which represents the central value of these elements, as well as the standard deviation (standard deviation), which illustrates the variance and distribution of values around the mean. The table also shows the coefficient of variation (variance), which serves as a relative indicator to measure the degree of dispersion compared to the arithmetic mean, thus providing a deeper understanding of the data distribution and consistency within this context.

Tab. 2 Description of the Items of the Independent Variable (Artificial Intelligence)

No.	Dimensions	Mean	S.D.	C.V.
1	The use of machine learning technologies in banking is essential for banking operations.	2.95	1.04	1.09
2	Employing machine learning in the bank helps customers develop new and different insights.	2.99	0.97	0.95
3	It is essential to train bank employees in machine learning technology.	2.98	1.08	1.17
4	The bank uses machine learning technologies to support decision-making in management planning.	3.03	1.06	1.13
5	Adopting machine learning technology provides multiple design options and saves time, giving employees more opportunities for innovation and creativity.	2.98	1.05	1.09
6	Natural Language Processing (NLP) is an important technology that should be adopted in banking operations.	2.94	1.11	1.24
7	NLP enables bank employees to access customer data more quickly.	3.04	1.07	1.15
8	Banking operations rely effectively on the application of (NLP) technologies.	2.93	1.01	1.02
9	The bank has the potential to implement neural network technology in banking operations.	3.06	1.07	1.15
10	Neural networks help employees reduce errors in completing tasks.	2.99	1.01	1.03
11	Neural networks improve the banking process and facilitate access to information.	3.01	1.03	1.06
12	Neural networks offer multiple options due to their high capacity for information analysis.	3.06	1.08	1.16
13	The bank relies on neural networks to process large amounts of information.	2.92	0.99	0.98

14	The bank utilizes robotics-supported tools and methods in the banking sector.	3.03	1.03	1.07
15	The bank provides the necessary resources, equipment, and training to promote the use of robots in banking operations.	2.96	1.06	1.12
16	Security and privacy concerns pose a significant obstacle to the adoption of robots at the bank.	2.96	1.07	1.14
17	The availability of specialists and experts in robotics technologies.	2.97	1.03	1.05
18	Robots contribute to reducing the workload of bank employees by performing routine tasks.	3.03	1.04	1.07
	Overall rate of the independent variable	**3.00**	**0.77**	**0.59**

The results presented in Table (2) regarding the descriptive statistics for the items of the independent variable (artificial intelligence) demonstrate consistency in the responses of the participants. This is evident from the arithmetic means, which ranged from (2.92 - 3.06), the standard deviations, which ranged from (0.99 - 1.07), and the coefficient of variation, which ranged from (0.98 - 1.15). The overall arithmetic mean for the independent variable (3.00), indicates positive acceptance and importance of artificial intelligence among the participants, which is equivalent to the hypothetical mean (3). This confirms the reality of private sector banks in Nineveh Governorate regarding the focus on adopting artificial intelligence by management and employees. Furthermore, the overall standard deviation of (0.77) and the overall coefficient of variation of (0.59) indicate that the participants' responses were not scattered around the arithmetic mean and that there is consistency in their responses, understanding, and comprehension of the questionnaire items.

7.2 Description of the dependent variable (Digital Marketing) in the banks under study

Table (3) presents the statistical data related to the elements of digital marketing. It includes the arithmetic mean, as well as the standard deviation and variance.

Tab. 3 describes the items of the dependent variable (digital marketing)

No.	Dimensions	Mean	S.D.	C.V.
Attraction:				
	The bank uses attractive advertising windows across websites to attract its customers.	2.93	1.05	1.11
	The bank relies on using interactive advertisements published across external websites and pages as a means of attracting customers and maintaining their ongoing business.	2.93	1.08	1.16
	The bank uses a range of attractive tools in its applications and services.	3.04	1.01	1.02
	The bank's branding website helps attract customers' attention in search engines.	3.03	1.02	1.04
	The bank advertises additional services to attract and encourage customers to use its services.	2.91	1.05	1.10
	The bank uses dual advertising.	3.03	1.09	1.19
Engagement:				
	The bank aims to provide a multilingual website to enhance communication with customers and encourage their interaction and participation in its marketing activities.	2.96	1.05	1.11
	The bank offers advanced platforms, both through its website and mobile application, which allow customers to book online easily and seamlessly.	2.92	0.99	0.98
	The bank utilizes virtual communities to facilitate communication between customers and the bank.	3.00	1.02	1.04
	The bank relies on a strategy of activating customer engagement through digital means in its marketing activities.	3.05	1.05	1.11
	The bank uses innovative programs to encourage customers to participate in its marketing activities.	3.05	1.10	1.21
	The bank uses diverse methods to create a large and diverse audience. In multiple languages	3.03	1.02	1.05
Retention:				
	The bank's website is characterized by its fast response time to information, which encourages customers to use it continuously.	2.98	1.03	1.06
	The bank takes into account the high degree of privacy of customer information when promoting its online services.	3.10	1.10	1.21
	The bank is committed to achieving customer loyalty programs.	3.01	1.05	1.10
	The bank continuously updates the content of its digital channels.	2.96	1.07	1.14
	The bank provides hyperlinks to other websites, enabling customers to access the information available there.	3.04	1.05	1.11
Learning:				
	The bank conducts research and surveys with customers through digital channels.	2.97	1.08	1.16
	The bank relies on digital communities and websites to analyze customer views and interests.	3.03	1.05	1.11
	The bank relies on customer feedback to develop and improve its services.	3.11	0.95	0.91
	The bank uses blogs and interactive channels to help its customers experience its digital services.	2.97	1.06	1.13
	The bank's website is designed according to customer preferences and desires.	2.96	1.11	1.24
Communication:				
	The bank assigns staff to communicate directly with customers through its website.	3.05	1.03	1.06
	The bank publishes specialized pages to inform customers about its services.	3.01	1.01	1.03
	The internet is the most prominent digital channel used by the bank to communicate with customers.	3.03	1.04	1.08
	The bank responds to its customers' interactions as required.	2.98	1.08	1.17
Overall Rate of the Dependent Variable		**3.00**	**1.05**	**1.10**

The descriptive statistics for the dependent variable (digital marketing) in Table (3) indicate a level of consistency in the respondents' answers to some items. This is evident from the mean values ranging from 1.12 - 3.38, the standard deviations ranging from 0.73 - 1.32, and the coefficients of variation ranging from 27.56 - 39.83. The overall arithmetic mean for the dependent variable 2.42, suggests that respondents do not recognize the value and importance of digital marketing. This aligns with the assumed mean value of 3, reflecting the reality of private sector banks in Nineveh Governorate regarding digital marketing applications. Furthermore, the overall standard deviation of 1.05 and the coefficient of variation of 1.10 indicate that the respondents' answers were close to the mean, reflecting the consistency of their responses and their good understanding of the questionnaire items.

7.3 Hypothesis Testing

Table (4) shows the results of the correlation analysis between the different study variables. It reveals a statistically significant positive correlation ($p < 0.01$) between the application of artificial intelligence and digital marketing at both the variable and dimension levels. This result indicates that the application of artificial intelligence is a fundamental pillar that the banks studied should adopt to enhance digital marketing practices in private banks in Nineveh Governorate.
Therefore, the first research hypothesis, which states that there is a statistically significant positive correlation between the application of artificial intelligence and digital marketing, is accepted.

Tab. 4 Results of Correlation Relationships between Research Variables and Dimensions

	AI	Attraction	Engagement	Learning	Retention	Communication
AI	1					
Attraction	.891**	1				
Engagement	.887**	.840**	1			
Learning	.901**	.847**	.826**	1		
Retention	.881**	.834**	.826**	.827**	1	
Communication	.874**	.841**	.817**	.818**	.825**	1

Table (5) shows the results of the analysis of the impact of artificial intelligence (AI) on digital marketing, indicating a significant effect of AI on digital marketing as a whole. This significance is reinforced by the calculated F-value and its significance level of (0.000), a figure much lower than the assumed level of significance for the current study.
The coefficient of determination (R^2) indicates that (63%) of the variance in AI is explained by the application of digital marketing included in the model, while (27%) is explained by other factors not included in the regression model. At the sub-dimension level, all sub-dimensions showed a significant impact of AI on digital marketing.

Tab. 5 The Impact of Artificial Intelligence on Digital Marketing

	AI		F	Sig.	Adjusted R^2
	β	R^2	Calculated		
Attraction	0.89	0.793	1068	0.000	0.792
Engagement	0.90	0.812	1201	0.000	0.811
Learning	0.90	0.811	1189	0.000	0.810
Retention	0.88	0.776	964	0.000	0.775
Communication	0.87	0.764	899	0.000	0.763
Digital Marketing	0.96	0.634	480	0.000	0.634

8. Conclusion

The research results show a statistically significant relationship between the use of artificial intelligence and the effectiveness of targeted digital marketing to bank customers. The study results show that the adoption of smart technologies by the banks surveyed enhances their analytical capabilities regarding customer data, enabling them to understand customer needs and banking behavior patterns and design more precise and targeted digital marketing programs.

Statistical analysis also revealed the impact of artificial intelligence (AI) on improving the efficiency of digital marketing activities. Data analytics applications and predictive algorithms contributed to supporting and strengthening marketing decisions and improving communication with customers across various electronic channels. This was reflected in an improved customer experience and increased engagement with the digital services offered by the banks.

These results indicate that integrating AI technologies into digital marketing strategies and tools is a crucial trend for banks seeking to enhance their capabilities and competitive advantage in light of the accelerating digital transformation of the financial sector. Therefore, improving and developing banks' technological infrastructure and investing in training human resources in modern digital technologies is essential to maximizing the benefits of these solutions in improving the quality of marketing services provided to customers. This study focuses on analyzing AI and its impact on a range of digital marketing tools and activities. Other related technologies and tools in the public and private sectors, as well as in the production and services fields, can also be explored.

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