

Impact of Artificial Intelligence on E-marketing

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ABSTRACT

The huge development of technology has greatly affected human life. Recent technologies are being used in all sectors. Artificial intelligence is a modern science that aims to create a machine that imitates human intelligence. It is used in many domains like finance, robotics, healthcare, and marketing. The goal of this paper is to study the impact of artificial intelligence applications on e-marketing and its competitive advantage for Iraq's marketing companies. The authors used a descriptive-analytical approach. It considered three dimensions of artificial intelligence: natural language processing, expert systems, kinetic navigation used in email marketing, and the application of automated robots. To investigate this impact, a questionnaire with 28 items is being developed. The research community consisted of marketers and employees of marketing companies in Iraq, where the researcher distributed 300 questionnaires to a convenience sample, and 288 valid questionnaires were retrieved for research purposes. The collected data is examined using SPSS. The results prove the presence of a statistically significant impact of artificial intelligence applications on e-marketing and its competitive advantage.

KEYWORDS: E-marketing, artificial intelligence, natural language processing, expert system, competitive advantages, motion navigation, Automate bots

I. INTRODUCTION

Today, the world is witnessing technological development in all aspects of life and globalization (Buhalis, et al., 2020). Its challenges have dramatically impacted trade sectors worldwide, leading companies to arm themselves with new mechanisms to reformulate their strategies and adapt to these recent and rapid developments. Artificial intelligence is a modern field of computer science (Enholtm, et al., 2022; Sun & Medaglia, 2019). It consists of studying the nature of human intelligence to create a new generation of intelligent systems. These systems can be programmed to perform a wide range of tasks that require advanced deductive reasoning and perception (Borges, et al., 2020).

Recently, artificial intelligence has been widely used in all domains. Artificial intelligence applications become necessary in many fields, such as finance, banking, healthcare, and power generation (Nasserddine, et al., 2023).

In marketing companies, they represent an indispensable necessity, as they enable the company

to achieve high profits (Verma, et al., 2021). These applications, characterized by diversity and continuous innovation, have recently increased the competitive advantage of e-marketing companies at the global market level (Aghion, et al., 2019). Nowadays, the increase in online users pushes businesses to rely more on electronic marketing (also called e-marketing) to support their marketing actions. E-marketing can be defined as online marketing or internet marketing. It consists of the commerce of goods and services via the internet and other media. E-marketing is important for business for many reasons:

- Permits businesses to find and target possible customers online
- Allow businesses to communicate with the audience in a more efficient way.
- Personalize your marketing strategy based on your customers' preferences.
- Increase brand visibility
- Obtain qualified leads interested in one's product.

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Nowadays, many companies use artificial intelligence applications in e-marketing. These applications permit marketing companies to create more effective advertisements, personalize the product, understand client needs, suggest recommended products, and generate relevant messages. (Campbell, et al., 2020). They allow marketing to deliver the best services to customers in the least amount of time and with the least amount of effort. These technologies also contain a tremendous amount of information about the services and products that customers may want to acquire, facilitating access to customers' desires (Kumar, et al., 2019).

In this paper, the authors study the impact of using Artificial Intelligence tools in E-marketing. There are three primary objectives in this study:

- Study the central role of artificial intelligence in E-marketing
- Study how artificial intelligence tools enhance the efficiency of e-marketing
- Study how artificial intelligence tools improve the competitive capability of a company

A descriptive-analytical approach is adopted to achieve the objectives mentioned above. Accordingly, this paper is organized as follows: first, a background on E-marketing and Artificial Intelligence are described in Section II. The research problems and questions are presented in Section III, followed by significant illustrations in Section IV. Afterward, this study methodology is explained in Section V. This research's sample and procedure are detailed in Section VI, followed by a discussion of the obtained results in Section VII. Section VIII concludes this paperwork.

II. Background

E-marketing

Electronic Marketing (E-Marketing) can be viewed as a new philosophy and a modern business practice involved with marketing goods, services, information, and ideas via the Internet and other electronic means. Reviewing the relevant literature shows that definitions of electronic marketing (E-Marketing) vary according to each author's point of view, background, and specialization. While Smith and Chaffey define it as: "Achieving marketing objectives through applying digital technologies" (Jaas, 2022), Strauss and Frost define it as: "The use of electronic data and applications for planning and executing the conception, distribution, and pricing of ideas, goods, and services to create exchanges that satisfy individual and organizational goals" (Rajasekaran, et al., 2019).

On the other hand, the review of the relevant literature revealed that one of the main obstacles is

the unclear way of dealing with the concept and definition of E-Marketing (Devi & Anita, 2013). In this respect, most researchers misused the term E-Marketing; most researchers use the terms: E-Marketing, Internet-marketing, E-commerce, and E-business as equivalents for the same meaning, which is incorrect because they are different. For example, E-Marketing has a broader scope than internet marketing since Internet Marketing (IM) refers only to the Internet, World Wide Web, and emails. In contrast, E-Marketing includes all of that plus all other E-Marketing tools like Intranets, Extranets, and mobile phones. In contrast, E-commerce and E-business have a more comprehensive scope than E-Marketing. These differences can be illustrated in Figure 1 (Mirzaei, et al., 2012).

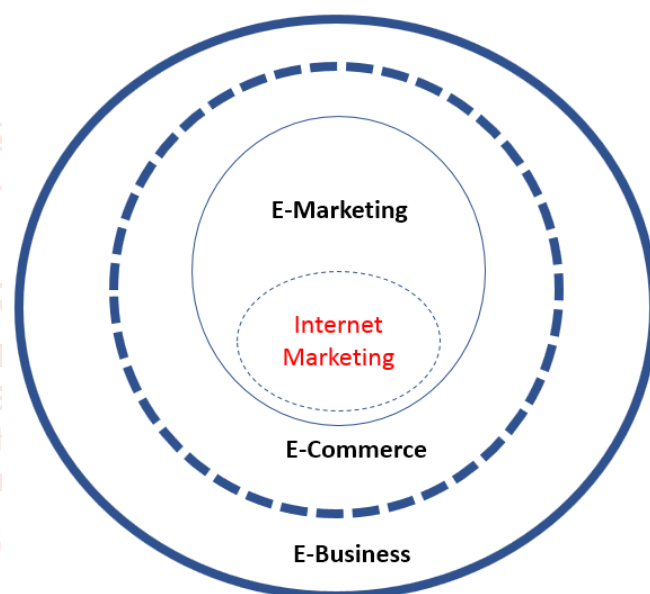


Figure 1: Differences between Internet marketing, E-Marketing, E-commerce, and E-Business

From the author's point of view, implementing electronic marketing (E-Marketing) by small business enterprises can change the shape and nature of SBEs business worldwide due to the increased use of the Internet and other electronic marketing tools. Using such tools is included in intranets, extranets, and mobile phones through electronic transactions that might create many opportunities for small business enterprises and degrade threats (Al Asheq, et al., 2021).

Artificial Intelligence

Artificial intelligence (AI) is a new generation of technologies that can interact with their surroundings and attempt to mimic human intelligence (Glikson, & Woolley, 2020). AI is made up of two words: artificial, which refers to something made by a human, and intelligence, which refers to the ability to think. Thus, AI systems are human-created systems with intelligence and reasoning power. Intelligence

gives the system the ability to compute, sense, detect relationships, learn from experience, memorize and recover information, decode issues, use the natural language fluently, categorize, and adjust to new situations. Because AI systems require data to function correctly, there is an urgent need for hardware and software to handle and manage massive amounts of data efficiently. Data science is familiar with the procedure for handling these data.

Using available information and data, AI can perform repetitive tasks without human intervention (McCarthy, 2019). It also provides intelligence to existing systems. However, AI cannot be viewed as a stand-alone system. AI systems cannot replace humans, but they can be considered and supplemented so that humans can perform their tasks more efficiently.

The use of AI systems in different business sectors has numerous advantages (Chowdhury & Sadek, 2012; Khanzode & Sarode, 2020), including:

- One of the essential advantages of using AI systems is that it reduces human error. Indeed, AI tools can potentially reduce errors while improving precision and performance significantly. AI systems make decisions based on gathered data and rules at each stage. It is not affected by human emotions.
- Unlike humans, AI systems do not require rest or sleep. They are accessible 24 hours a day, seven days a week. According to many recent studies, humans are only effective for about 3 to 4 hours per day. AI systems, on the other hand, can work indefinitely without rest. They also think faster than humans and can simultaneously complete multiple tasks with pinpoint accuracy. They can also handle time-consuming, repetitive tasks quickly.
- AI helps almost all inventions in every sector by assisting humans in solving the most challenging problems.
- Emotions drive human behavior, whether we like it or not. AI, on the other hand, is emotionless, practical, and rational in its approach. One significant benefit of AI is that it is free of bias, resulting in more accurate decision-making.
- By utilizing AI systems, many risks can be avoided. Indeed, AI robots can perform many dangerous tasks in place of humans, such as traveling to space or exploring the deepest parts of the ocean. Furthermore, they can deliver precise work with greater responsibility while not wearing out quickly.

- AI systems are faster and more accurate than humans.

AI is divided into several branches (Nasserddine & Arid, 2023; Zhang & Lu, 2021), as follows:

- Machine learning - a feature of artificial intelligence that allows the computer to automatically gather data and learn from the experience of previous problems or cases rather than being specially programmed to perform the given task or work (Abdulmajeed, et al., 2023).
- Expert system - a computer program that simulates human judgment and behavior or an expert organization in a specific field (Zhao, et al., 2020).
- Natural language processing – a subfield of artificial intelligence within computer science concerned with assisting computers in understanding how humans write and speak (Kaddoura & Ahmed, 2022).
- Computer vision - a computer-based system that teaches computers how to capture and interpret data from images and videos (Esteva, et al., 2021).

Artificial Intelligence Applications in E-marketing

Here, the researcher presents some applications used in e-marketing that rely heavily on artificial intelligence:

➤ Chat Bots

They are computer applications that interact with customers, answer their inquiries and reply to them automatically, and provide assistance and suggestions to support their purchasing decisions and complete the shopping process replaced by humans (Ma & Fildes, 2021).

➤ Dynamic Pricing

Dynamic pricing is a pricing strategy that is commonly called (personal pricing). It determines the product's price according to demand, product inventory, and customer profile, where artificial intelligence technology can analyze the customer profile through cookies, the number of visits, searches, and other information stored in a database of Customer company data. Based on that activity, the price is determined automatically, for example, sites for booking hotel rooms and booking travel and airline tickets, where prices rise and fall according to the tourism season or the number of rooms available and the customer's previous reservations (Misra, et al., 2019).

➤ Targeted Presentations

Ads are directed to consumers through cookie data and the history of customers' visits to the site; This is

done through artificial intelligence techniques based on specific criteria such as age, gender, and geographical area. It can be seen through Google, Facebook, and YouTube ads; for example, when we search for something and then go to the YouTube application and browse it, we often see ads related to the search topic. It is done by AI algorithms that analyze the client's past activity (Berger, et al., 2019).

➤ **Data Analysis**

One of the most important applications of artificial intelligence in e-marketing is data analysis, as companies have an extensive database of their customers and their data that artificial intelligence can analyze and reuse the results to formulate practical and attractive marketing messages. It is also possible, through intelligence applications, to predict market fluctuations and analyze future consumer behavior (Mihni, 2022).

➤ **Customers Understandings**

AI algorithms can learn what customers say about a brand in real-time. It helps marketers reformulate their marketing messages through artificial intelligence technology, where it is possible to know whether the brand is mentioned in areas of praise, slander, or neutrally in the chat and comment communities. Based on this information, the highest potential for effectiveness can be achieved by reformulating marketing campaigns, attracting customers more efficiently, and identifying and improving product weaknesses (Novak & Hoffman, 2019).

➤ **Content Analysis**

Content analysis is one of the best artificial intelligence applications in e-marketing, where artificial intelligence algorithms analyze customers' activities on websites. Afterward, these algorithms recommend the product that better suits each customer's activity. For instance, marketers seek to find modern and new ways to communicate with their customers and to succeed in keeping them as long as possible. Hence, the role of artificial intelligence comes in providing engaging content and services commensurate with the interests and needs of the customer based on his previous activities and previously searched positions (Marchand & Max, 2020).

➤ **Dynamic Product Recommendations**

Product suggestions and recommendations are one of the most important applications of artificial intelligence in e-marketing. The application's customized dynamic recommendations to the online

shopper increase conversion rates for the proposed product (Sriram, et al., 2019).

Artificial intelligence uses a massive database in e-marketing to influence customers' purchasing decisions by knowing about previous purchases, previously searched products, and online browsing sites (Song, et al., 2019, August).

III. Research Questions

With the increasing number of Internet users and products being marketed electronically on Internet pages, artificial intelligence technology has emerged as one of the most prominent modern technologies, representing the fourth technological revolution widely used in marketing. Accordingly, most marketing managers are confident that artificial intelligence is a technological revolution in marketing, as it contributes theoretically and practically to marketing decision-making. This importance has been recognized within a limited scope, as many are still unaware of how to rely on artificial intelligence to improve their marketing campaigns and whether they will be dispensed with if companies apply the concept of artificial intelligence correctly in e-marketing operations. Therefore, the following questions will be answered:

1. How do artificial intelligence applications affect e-marketing strategies?
2. How do artificial intelligence applications affect the e-marketing competitive advantage?
3. Does artificial intelligence enhance the competitive advantage of e-marketing companies?
4. Will AI reshape the marketing industry?
5. What opportunities will artificial intelligence applications provide for e-marketing to become more effective?

IV. Research Hypotheses

This study's essential goal is to examine the impact of artificial intelligence on e-marketing and its competitive advantage. Therefore, artificial intelligence is considered the independent variable, whereas e-marketing is considered as the dependent variable. The following dimensions of artificial intelligence are studied:

- Natural language processing
- Motion navigation via email - a software application based on machine learning
- Expert systems
- Automate bot application - a machine-learning-based application

Figure 2 shows the conceptual framework of this study.

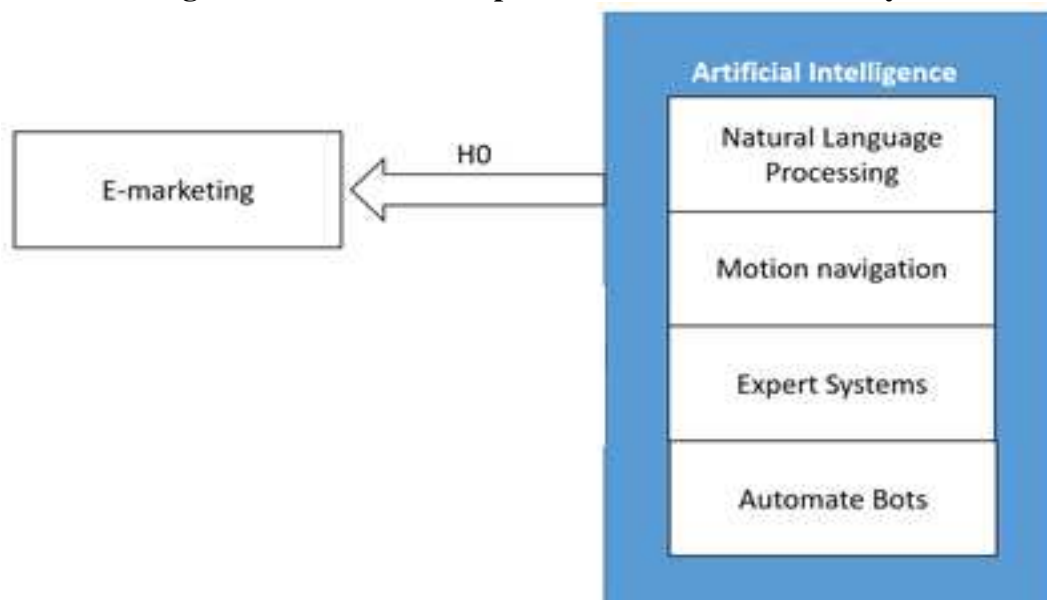


Figure 2: The conceptual framework shows artificial intelligence's impact on e-marketing and its competitive advantage.

Based on Figure 2, the following hypotheses can be concluded:

Basic Hypotheses

H0: There is a statistically significant effect between using artificial intelligence applications with their combined dimensions and developing e-marketing strategies.

Sub-Hypotheses

- H01: There is a statistically significant effect between using artificial intelligence applications (natural language processing) and e-marketing.
- H02: There is a statistically significant effect between using artificial intelligence applications (motion navigation) and e-marketing.
- H03: There is a statistically significant effect between using artificial intelligence applications (automated bots) and e-marketing.
- H04: There is a statistically significant effect between the use of using artificial intelligence applications (expert systems) and e-marketing

V. Procedure

This study examines the impact of artificial intelligence applications on e-marketing and its competitive advantages. Therefore, the descriptive-analytical approach was used. The adopted procedure is composed of three primary steps:

- A questionnaire built to collect answers.
- Selection of a convenience sample to collected answers.
- Analysis of results using the SPSS and statically methods to find the correlation coefficients between this study's variables.

Survey

The questionnaire includes demographic information, such as gender, age, educational level, specialization, experiences, and title. In addition, there are 28 items covering this study's variables, as illustrated in Table 1:

Table 1: Items in Questionnaire

| Variable | | Number of items |
|-------------|-----------------------------|-----------------|
| Dependent | E-Marketing | 7 |
| Independent | Natural language processing | 5 |
| | Expert system | 5 |
| | Motions navigation | 5 |
| | Automate bots | 6 |

Sample

The study population includes employees of marketing companies in Iraq. Three types of marketing companies are considered: communications companies, electrical appliance marketing companies, and clothing marketing companies.

The questionnaire was distributed among 300 employees of marketing companies in Iraq; only 288 responses were collected. Thus, the response rate is:

$$\begin{aligned} \text{Ratio} &= \text{number of answer} / \text{total number of the population} * 100 \\ &= (288/300 * 100) = 0.96 \end{aligned}$$

This ratio with a value of 96% is considered “Good”.

Statically methods

In order to prove hypotheses and find the correlation between the dependent variable (e-marketing) and the independent variables of artificial intelligence applications, SPSS program is used to perform the following statistically methods (Aithal & Aithal, 2020; Shrestha, 2021):

- Cronbach alpha
- Pearson correlation
- Kaiser-Meyer-Olkin test- KMO
- P-P plot and Histogram
- Skewness and Kurtosis test
- VIF
- Multiple Linear Regression method
- Simple linear regression method

VI. Results and Discussion

Demographic Results

1. Distribution of respondents' gender

Table 2 illustrates the demographic distribution of the sample chosen from the marketing sector in Iraq. Based on it, an analysis of some observations is expressed as follows:

Table 2 Demographic distribution of the sample

| No | Variants | Class | Number | Ratio (%) |
|----|----------------|-------------------------|--------|-----------|
| 1 | Certificate | Ph.D. | 65 | 25 |
| | | Masters | 81 | 31 |
| | | Higher Diploma | 8 | 4 |
| | | Bachelors | 104 | 40 |
| 2 | Age | 18-30 | 25 | 10 |
| | | 31-40 | 123 | 48 |
| | | 41-50 | 76 | 29 |
| | | Above 50 | 34 | 13 |
| 3 | Gender | Male | 187 | 73 |
| | | Female | 71 | 27 |
| 4 | Service Length | Less than 5 | 39 | 15 |
| | | 6-10 | 61 | 24 |
| | | 11-15 | 59 | 23 |
| | | Above 15 | 99 | 38 |
| 5 | Speciality | Marketing | 22 | 9 |
| | | Artificial Intelligence | 16 | 6 |
| | | Other | 220 | 85 |
| 6 | Title | Higher manager | 36 | 14 |
| | | Middle manager | 132 | 51 |
| | | Employee | 90 | 35 |

- Most of the workers in the field of marketing are males, as their percentage was 73% of the sample. It is expected in developing country like Iraq, which still has specific jobs for female workers.
- The youth group is the predominant group working in the marketing field as the respondents whose ages range from 31 to 40 years represent 48% of the sample. Indeed, marketing profession need effort and enthusiasm which is difficult for the older age group to do.

- The employees of e-marketing companies are holders of university degrees which reflects the high education of workers in this field. This point helps in this study. It allow to obtain more relevant information.
- Most respondents have more than 15 experience years. Thus, the sample have good experience. This is good for the study and provide with relevant information.
- The unspecialized workers in marketing represent 85%. This reflect the way Iraqi society thinks. As they consider marketing needs more talent than certification
- The percentage of workers in the middle management of the companies under study came to 51%. The results are expected as they corresponded to the experience of more than 16 years.

Descriptive Statistics of Variables

A Five-Likert scale is adopted to determine the agreement degree with the weight of each statement in the questionnaire, as shown in Table 3.

Table 3: Five-point Likert scale scores

| Degree | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--------|-------------------|----------|---------|-------|----------------|
| Weight | 1 | 2 | 3 | 4 | 5 |

Table 4 shows the mean interpretation compared to the Likert gradient used during this study (Younis, et al., 2022).

Table 4: The interpretation of the mean compared to the Likert gradient

| Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-------------------|-----------|----------|----------|----------------|
| 1-1.80 | 1.81-2.60 | 2.61-3.4 | 3.41-4.2 | 4.21-5 |
| Very Weak | Weak | Moderate | Strong | Very strong |

Reliability

The reliability of the questionnaire is computed based on 30 responses that are later excluded from the sample used in this study. Table 5 shows the reliability:

Table 5: Cronbach's alpha values

| Variant | Cronbach's alpha values |
|-----------------------------|-------------------------|
| E-marketing | 0.88 |
| Natural Language Processing | 0.81 |
| Motions navigation | 0.81 |
| Automated bots | 0.86 |
| Expert Systems | 0.81 |
| Total | 0.94 |

Cronbach's alpha values are between 0.81 and 0.88, with total value of 0.94. The results indicate a high degree of questionnaire reliability relied upon in the application of the study according to the Nayley scale, which adopted 70% as a minimum level of reliability.

KMO and Bartlett's Test

KMO is a statistical test that describes the suitability of data for factor analysis. KMO value can vary from 0 and 1 and can be explained as:

- Between 0.8 to 1.0 indicate the sampling is good.
- Between 0.6 to 0.79 indicates that the suitability between data and factors is tolerable
- Smaller than 0.6 specifying that the sampling is not adequate and the other actions should be performed.

The KMO value of the collected data in this study is equal to 0.88. This value shows that the collected answers are very suitable for the variables in the study.

Independent Variables - Mean and Standard Deviation

Table 6 shows the mean, standard deviation, skewness and kurtosis of the independent variable (artificial intelligent) within its four categories, as illustrated in Table 6. The values are explained as follows:

Table 6: The mean, standard deviation, skewness and kurtosis of the variables

| Variable | Statement | Mean | Standard deviation | Skewness | Kurtosis |
|-----------------------------|---|------|--------------------|----------|----------|
| Natural language processing | The company understands the need to introduce AI applications for search engine promotion. | 4.09 | 0.79 | -0.939 | 1.618 |
| | The use of artificial intelligence applications increased the percentage of sales. | 3.96 | 0.75 | -0.692 | 1.199 |
| | The company gained more customers when using AI when promoting through search engines. | 4.00 | 0.75 | -0.864 | 1.950 |
| | Intelligence applications helped develop e-marketing. | 4.01 | 0.79 | -0.860 | 1.482 |
| | Speech and natural language recognition has helped develop cross-engine advertising. | 4.03 | 0.78 | -1.000 | 2.031 |
| Motion Navigation | The company uses e-marketing via email in its marketing campaigns. | 4.00 | 0.91 | -0.934 | 0.746 |
| | The company recognizes the importance of artificial intelligence applications for email marketing development. | 3.97 | 0.80 | -0.931 | 1.788 |
| | The intelligence applications used in the email helped the company lead in the market. | 3.94 | 0.77 | -0.647 | 0.532 |
| | Intelligence applications used in email helped increase sales. | 4.00 | 0.83 | -0.878 | 0.902 |
| | Kinetic navigation has helped develop email marketing. | 3.86 | 0.83 | -0.743 | 0.522 |
| Automate Bots | Marketing companies use social networking sites such as Instagram. | 4.00 | 0.91 | -0.934 | 0.746 |
| | The company realizes the need to include intelligence applications in its marketing campaigns through communication sites. | 3.97 | 0.80 | -0.931 | 1.788 |
| | The percentage of sales and the number of customers increased when using intelligence applications through communication sites. | 3.94 | 0.77 | -0.647 | 0.532 |
| | The number of customers increased when using intelligence applications through communication sites. | 4.00 | 0.83 | -0.878 | 0.902 |
| | The company uses automated bots to respond to customers in customer service. | 3.86 | 0.83 | -0.743 | 0.522 |
| | Intelligence applications developed marketing through communication sites. | 4.00 | 0.91 | -0.934 | 0.746 |
| Expert systems | The company realizes the importance of e-marketing in achieving a competitive advantage. | 4.14 | 0.79 | -1.032 | 1.838 |
| | The company understands the importance of artificial intelligence to achieve a competitive advantage. | 4.02 | 0.70 | -0.624 | 1.162 |
| | Artificial intelligence applications have increased the opportunity to reduce the cost of products. | 3.91 | 0.85 | -0.700 | 0.612 |
| | E-marketing has achieved excellence for the products in the company. | 4.00 | 0.81 | -0.845 | 1.301 |
| | Artificial intelligence has effectively contributed to increasing product quality. | 4.03 | 0.86 | -0.993 | 1.300 |

- The mean of the independent variable dimension (natural language processing) ranges between 3.96 and 4.09. As a result, the sample agrees that this dimension has an impact on e-marketing. In addition, the skewness coefficient ranged between -0.692 and -1.000, thus, indicating that the frequency distribution curve is skewed to the left with a kurtosis coefficient ranging between (1.194 and 2.031), as the arithmetic mean is more diminutive than the median.
- The mean of the independent variable dimension (motion navigation) ranges between 3.86 and 4.00. Then, the sample agreed that this dimension affected e-marketing. However, the skewness coefficient value ranged between -0.934 and -0.647, which is a negative value indicating that the frequency distribution curve is

skewed to the left, with a kurtosis coefficient ranging between 0.522 and 1.788, as the arithmetic mean was more diminutive than the median.

- The mean for the independent variable dimension "automated bots" ranges between 4.14 and 3.74; thus, the sample agrees that this dimension affects e-marketing. However, the item "The use of automated robots by companies" has the lowest arithmetic mean between paragraphs and a standard deviation of more than 1, and this indicates the dispersion of answers around this axis. Therefore, some companies do not use automated robots to respond to customers. This is understandable, given that this technology is not widely available in Iraqi businesses. The skewness coefficient ranged between -1.187 and -0.566, which is a negative value indicating that the frequency distribution curve is skewed to the left, with a kurtosis coefficient ranging between -0.468 and 2.809, as the arithmetic mean is smaller than the median.
- The mean for the independent variable dimension in expert systems ranges between 4.14 and 3.91, which indicates that the sample agrees that this dimension affects e-marketing. The skewness coefficient ranged between -1.032 and -0.624, a negative value indicating that the frequency distribution curve is skewed to the left with a kurtosis coefficient ranging between 0.612 and 1.838, as the arithmetic mean is more diminutive than the median.

Dependent Variables - Mean and Standard Deviation

Table 7 shows the mean, standard deviation, skewness and kurtosis of the dependent variable (e-marketing). The values are explained as follows:

Table 7: Descriptive statistics for the dependent variable

| E-marketing Statement | Mean | Standard Deviation | Skewness | Kurtosis |
|--|------|--------------------|----------|----------|
| The company uses e-marketing for its marketing campaigns. | 4.03 | 0.93 | -0.934 | 0.746 |
| E-marketing has contributed to improving customer experience. | 4.06 | 0.78 | -0.931 | 1.788 |
| The company's use of e-marketing reduced customer complaints. | 3.81 | 0.85 | -0.647 | 0.532 |
| The company realizes the necessity of e-marketing via (search engines, email, and content) to achieve the company's competitive advantage. | 3.91 | 0.86 | -0.878 | 0.902 |
| The company's use of e-marketing has increased the percentage of customers. | 4.02 | 0.80 | -0.743 | 0.522 |
| The company's use of e-marketing has increased sales. | 4.07 | 0.79 | -0.904 | 1.522 |
| The company's use of e-marketing improved its level of satisfaction. | 4.14 | 0.79 | -0.743 | 0.665 |

According to Table 7, the mean of the dependent variable (e-marketing) ranges between 4.14 and 3.81. As a result, with a standard deviation of less than one, the answers' agreement is dominant. The responses are centered on the mean, indicating that marketers are aware of the importance of e-marketing in their organizations. According to the previously mentioned indicator, gaining a competitive advantage and utilizing artificial intelligence applications have a significant impact on e-marketing success. While the skewness coefficient ranged between -0.934 and -0.743, indicating that the frequency distribution curve is skewed to the left, the kurtosis coefficient ranged between 0.522 and 1.788, indicating that the arithmetic mean is more diminutive than the median.

Linearity and normal distribution

Figure 3 shows the P-P plot of the dependent variable (e-marketing). It confirms the linearity of the equation. The normal distribution of the dependent variable is illustrated in Figure 4. These figures prove the correctness of using the regression line equation.

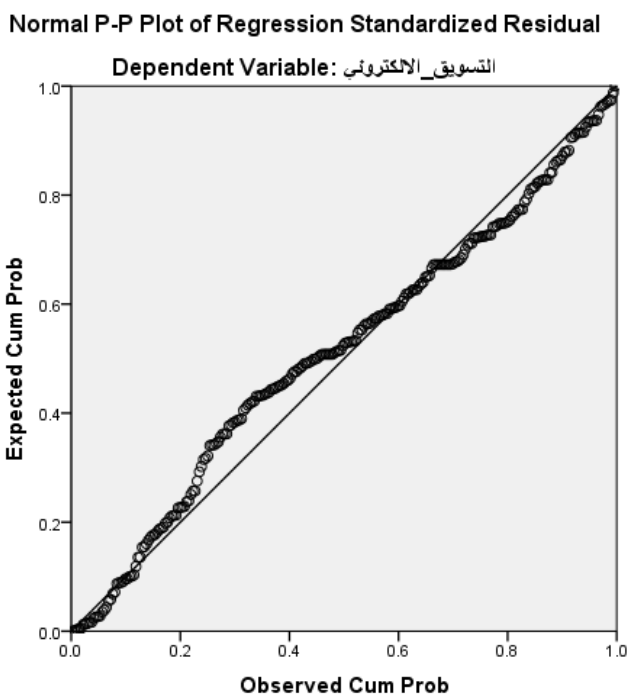


Figure 3: Linear relationship between the variable and the independent variables

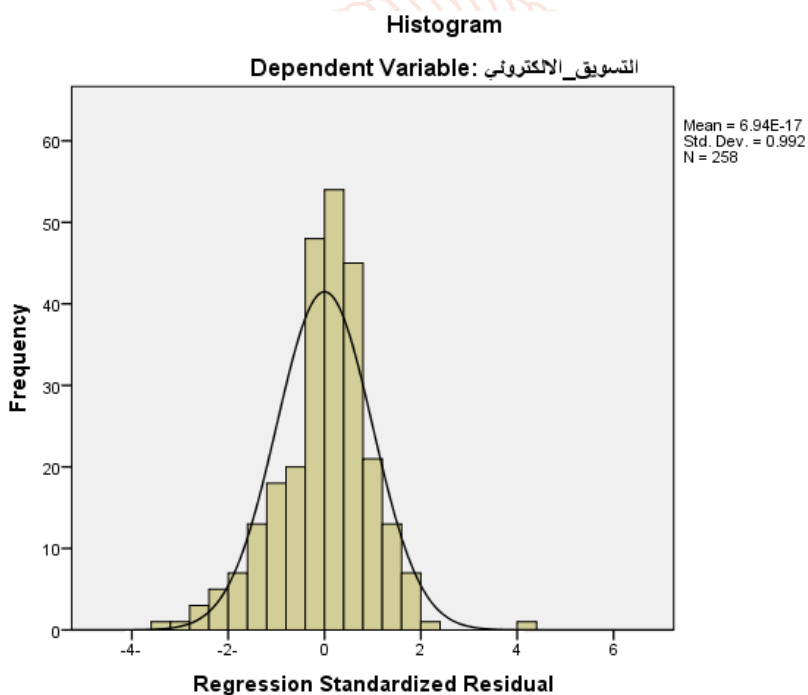


Figure 4: The graph shows the normal distribution of the variables

Variables Correlation

Table 8 shows the correlation between the dependent and independent variables with their dimensions. As illustrated in this table, all correlation values are positive and sig values are less than 0.05.

Table 8: Correlation analysis between the dependent variable and the independent variables

| Dependent Variable | | Artificial Intelligence Applications | | | |
|--------------------|---------------------|--------------------------------------|--------------------|--------|----------------|
| | | Natural Language | Kinetic Navigation | Robot | Expert Systems |
| E-marketing | Pearson Correlation | 0.70** | 0.66** | 0.74** | 0.69** |
| | Sig. (2-tailed) | 0.00 | 0.00 | 0.00 | 0.00 |

** Correlation is significant at the 0.01 level (2-tailed)

Therefore, there is a direct positive correlation between the dependent variable (e-marketing) and the independent variables and its dimensions with 95% confidence:

- Pearson correlation between E-marketing and Natural language processing is 0.7. The correlation between these variables is strong and variables change in same direction. Thus, the hypothesis H01 is proved.

- Pearson correlation between E-marketing and motion navigation is 0.66. The correlation between these variables is strong and variables change in same direction. Thus, the hypothesis H02 is proved.
- Pearson correlation between E-marketing and Automated bots is 0.74. The correlation between these variables is strong and variables change in same direction. Thus, the hypothesis H03 is proved.
- Pearson correlation between E-marketing and Automated bots is 0.69. The correlation between these variables is strong and variables change in same direction. Thus, the hypothesis H04 is proved.

Study Hypotheses Verification

Table 9 show the (VIF) values. These values are less than 10. Thus, there is no correlation between the independent variables.

Table 9: Correlation analysis between the dependent variable and the independent variables

| Variants | Natural Language | Kinetic Navigation | Robot | Expert Systems |
|----------|------------------|--------------------|-------|----------------|
| VIF | 2.94 | 2.63 | 3.00 | 2.97 |

Table 10 presents the results of the multiple linear regression equation related to the effect of using artificial intelligence applications (natural language, motion navigation, automated robots, expert systems) on e-marketing in marketing companies in Iraq.

Table 10: Multiple linear regression results (Standard)

| Independent Variable | Beta | T | T | R | R-square | F | f |
|----------------------|---------------|------|------|------|----------|-------|------|
| Natural Language | 0.29 | 3.31 | 0.00 | 0.79 | 0.63 | 109.4 | 0.00 |
| Kinetic Navigation | 0.19 | 2.47 | 0.01 | | | | |
| Robot | 0.37 | 5.39 | 0.00 | | | | |
| Expert Systems | 0.22 | 2.52 | 0.01 | | | | |
| Dependent Variable | Constant Beta | | | | | | |
| E-marketing | 4.53 | | | | | | |

The results of Table 10 show a statistically significant effect at a significant level (0.05) for the model. The value of (F) is 109.4, at a significant level of 0.000. The correlation coefficient is (R = 0.79), indicating a high direct correlation. Regarding the quality of the explanatory model, the interpreted coefficient of variance reached (R2 = 0.63), indicating that the variables explained about 63% of the variance in e-marketing.

The effect at a significance level of less than 0.05

All applications show a significant effect on the dependent variable. The (T) indication shows that all applications have an influential impact on the development of e-marketing at a level of significance less than (0.05).

- Beta value explains the relationship between e-marketing and the natural language application with a value of 0.29 with statistical significance. It can be deduced from the value T and its significance, which means that whenever the natural language application is used with a value of one unit, e-marketing develops by 0.29 units.
- Beta value explains the relationship between e-marketing and the kinetic mobility application with a value of 0.19 with statistical significance. It can be deduced from the value T and its significance, which means that whenever the

kinetic mobility application is used with a value of one unit, e-marketing develops by 0.19 units.

- Beta value shows the relationship between e-marketing and an automated robot application with a value of 0.37 with statistical significance. It can be deduced from the value T and its significance, which means that whenever an automated robot application is used with a value of one unit, e-marketing develops by 0.37 units.
- Beta value shows the relationship between e-marketing and the application of expert systems with a value of 0.22 with statistical significance, as this can be deduced from the value T and its significance.

Accordingly, the previous results lead to the acceptance of the main hypothesis with its proven text. Thus, the multiple regression line equation can be formulated in the standard way as follows:

$$E_marketing = 4.53 + 0.29n + 0.19r + 0.37l + 0.22e$$

where *n* denotes natural language, *r* denotes automated robot, *l* denotes locomotion, and *e* denotes expert systems.

Discussion

Based on the above results, the main hypothesis is accepted due to the significant effect between the

combined applications of artificial intelligence and e-marketing. The first sub-hypothesis is accepted due to the significant effect between using natural language applications and developing e-marketing through the search engine. The second sub-hypothesis is accepted because there is a significant effect between using the kinetic mobility application and developing e-marketing via email. The third sub-hypothesis is accepted because there is a significant effect between the use of the automated robot application and the development of e-marketing via social networking sites. The fourth sub-hypothesis is accepted because there is a significant effect between applying expert systems and developing e-marketing to achieve competitive advantage.

In addition, based on the previous analysis, it is essential to mention the following:

1. The importance of using information technology and artificial intelligence applications in marketing companies in Iraq to develop e-marketing
2. The need to use e-marketing technology by Iraq's marketing companies to lead a global position in the markets and achieve a competitive advantage

VII. Conclusion

This paper studied the impact of using artificial intelligence in e-marketing. The authors started with a small review of e-marketing and artificial intelligence technology. They represented some AI tools used in the e-marketing field. Afterward, the primary and sub hypotheses articulated in this study were discussed. A descriptive-analytical method was employed: a questionnaire was designed, and answers were collected from employees of e-marketing companies in Iraq. The study hypotheses were proven using statistical tools. The result showed the impact of artificial intelligence through its considered four dimensions on the Iraqi e-marketing.

After performing this study, the authors concluded the followings:

- Marketing companies should start hiring e-marketing specialists. Indeed, marketing is a profession, not a talent.
- Marketing should start adopting more artificial intelligence applications in e-marketing.
- Marketing companies should start training their employees on using more recent AI applications in their work.

In addition, the authors recommend the followings as future work:

- Collecting information relating to consumers and following their online behavior is more

accessible. Marketers can thus easily detect the centers of interest, see the behaviors, and analyze the specificities of the different individuals who make up the target group. Without segmentation, the risks include wasting time and money because the return on investment will inevitably suffer.

- Thanks to more advanced segmentation, consumers must remain at the center of the e-marketing strategy, where marketers can know consumers' locations. The personalization of the message in digital strategy should be simplified and, therefore, taken into account to optimize its effectiveness.
- Choosing the right platform to reach targets means finding the right prospect. Marketers can have an inventory of the age, sex, geographic location, and languages online shoppers and Internet users speak. Meanwhile, web administrators can identify the type of visitors to a given site using information obtained from tools such as Google Analytics. Social networks also allow increasingly targeted advertising, using all the information the users provide. The more the advertising is targeted, the more likely it is to be noticed and to engage the Internet user.
- Marketers should offer a smoother shopping experience by allowing Internet users to resume their purchases after they come back online. They should follow up on final products viewed in the Instagram catalog, products added to the wish list from the mobile app, and products added to the cart when visiting from a desktop computer.
- Asking visitors to subscribe to the newsletter is not enough. There are other ways to interact with them in the online store. For example, websites could redirect your visitors to social media profiles. actively promote an e-commerce blog. Every e-commerce store should blog regularly to inform shoppers.

Marketing companies should use the automated robot application to ensure better marketing performance that may increase the sales value, volume, and market share of companies through general recommendations and direct recommendations on the subject of the study.

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