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Challenges of Employing Artificial Intelligence Technologies in Iraqi Media Institutions (A Field Study)

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Abstract

Objectives: The study aims to uncover the professional, ethical, and strategic challenges facing the employment of artificial intelligence technologies in Iraqi media institutions from the perspective of Iraqi media elites. It also aims to assess their knowledge and awareness of the importance of employing these technologies in media institutions. Methodology: The study is classified as descriptive research that examines the reality of events, positions, and opinions, describing and analyzing them. The survey method was adopted using a questionnaire distributed to a purposive sample of Iraqi media elites, totaling 322 respondents. Results: The overall average score of the assessment of the professional challenges facing the employment of artificial intelligence technologies in Iraqi media institutions from the perspective of media and academic elites was 4.010, with a percentage of 80.2%, indicating a high level. The category (Weakness of technical capabilities related to artificial intelligence among workers in Iraqi media institutions) ranked first with a weighted percentage of 85.5%, followed by (Neglecting newly emerging roles in the era of artificial intelligence and clinging to traditional roles) ranking second with a weighted percentage of 82.5%. The overall average score of the assessment of the ethical challenges facing the employment of artificial intelligence technologies in Iraqi media institutions from the perspective of media and academic elites was 3.858, with a percentage of 77.2%, indicating a high level. The category (Difficulty in verifying the credibility of data sources used by artificial intelligence algorithms in producing media content) ranked first with a weighted percentage of 81.4%, followed by (Difficulty of artificial intelligence algorithms in dealing with unstructured or unorganized data to create automated content) ranking second with a weighted percentage of 79.4%.

Keywords:

Introduction

The developments in technology across various fields, including the realm of media, have led to the emergence of a new reality for media institutions to deal with artificial intelligence technologies. Artificial intelligence technologies have contributed to changes in media work, particularly with the increased reliance on technologies such as robots and algorithms to handle vast amounts of data. These technologies have been utilized in research to gather information, produce media content, and distribute it. Additionally, they play a role in communicating with the audience, identifying their trends and interests, converting texts to audio or video, and vice versa. Furthermore, these

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technologies aid in translation and uncovering misleading or fake information, thus reducing time and effort.

Several global and Arab media institutions have already adopted artificial intelligence technologies in various aspects of media work. However, Iraqi media institutions are lagging behind in this regard due to several challenges hindering their adoption of technological advancements in the media field.

Given that artificial intelligence is one of the most significant technological innovations in recent decades, it has brought about a significant transformation in the media and journalism sectors. The integration of artificial intelligence technologies into media has notably impacted information collection, content production, and media institutions' interaction with their audience. However, the employment of these intelligent technologies in media institutions presents several challenges. These challenges include ensuring accuracy and credibility in news and generated information. Despite artificial intelligence's capability to analyze vast amounts of data and generate content, it could be prone to errors or biases if not programmed and trained correctly. Additionally, challenges related to individuals' privacy arise, requiring the establishment of policies or rules to safeguard such data. There are also challenges related to the potential loss of jobs for media personnel, replaced by these technologies. Therefore, effectively employing these technologies necessitates addressing these challenges to ensure optimal utilization without compromising accuracy, credibility, and individual rights.

Chapter One: Research Methodology

First Section: Research Problem

As technological advancements reshape the media landscape, relying on data and machine learning, and considering the utilization of artificial intelligence technologies in various global and Arab media institutions, Iraqi media institutions still lag in adopting these technologies. Thus, the research problem lies in assessing the Iraqi media elite's evaluation of the potential employment of artificial intelligence technologies in Iraqi media institutions, their awareness of their importance, and the challenges they face in their implementation. The main research question is: What are the challenges facing the employment of artificial intelligence technologies in Iraqi media institutions, and what are the main professional, ethical, and strategic challenges facing their utilization in media institutions from the perspective of Iraqi media and academic elites? This primary question branches into several sub-questions that the research seeks to answer using a systematic and methodical approach.

Second Section: Research Significance

The significance of this research lies in the increasing adoption of artificial intelligence technologies in media institutions, addressing their positive and negative impacts, and considering the future of employees in those institutions. Furthermore, it offers a valuable contribution to media research by exploring the potential use and employment of artificial intelligence technologies in Iraqi media institutions. This study provides Iraqi media professionals with insights into the role played by artificial intelligence journalism technologies in information gathering, production, and distribution, as well as assists Iraqi media authorities in assessing the potential adoption of artificial intelligence technologies to keep pace with technological advancements and diversify the media's impact on various social environments.

Third Section: Research Objectives

The research aims to understand the evaluation of the Iraqi media elite regarding the main challenges facing the employment of artificial intelligence technologies in Iraqi media

institutions and the proposed methods for their utilization. The specific research objectives are as follows:

1. To reveal the extent of awareness among Iraqi media and academic elites regarding the importance of using artificial intelligence technologies in Iraqi media institutions for information collection, content production, and distribution.

2. To assess the confidence of Iraqi media elites in the credibility of content produced by artificial intelligence algorithms.

3. To identify the professional, ethical, technical, and strategic challenges related to the use of artificial intelligence technologies in Iraqi media institutions, as perceived by Iraqi media and academic elites.

Fourth Section: Previous Studies

1. Study (Ali & Hassoun, 2019) titled "Artificial intelligence and automated journalism: Contemporary challenges and new opportunities" aimed to describe the current state of technology and its role in revitalizing and updating journalism. It provided insights into the impact of artificial intelligence on changing journalism practices, identified potential effects on the future of journalists, and discussed ethical and professional challenges that might affect the journalism profession. The study conducted a systematic literature review and concluded with several findings, including: a. Artificial intelligence technologies add value to digital journalism by addressing fundamental challenges, combating fake news, editorial policy alignment, and content customization. b. Ethical and professional issues arise in journalism due to artificial intelligence, including creativity reduction, lack of oversight, bias, transparency, fairness, data usage, and data quality. c. Artificial intelligence technologies enhance journalists' work without replacing them and don't pose a threat to professional journalism.

2. Study (de-Lima-Santos & Salaverría, 2021) titled "From data journalism to artificial intelligence: challenges faced by La Nación in implementing computer vision in news reporting" aimed to provide a comprehensive view of challenges faced by newsrooms in adopting artificial intelligence. The study used an ethnographic approach, observing the newsroom of La Nación (Argentina) for three months in early 2020. It identified four major challenges in implementing AI, particularly for projects involving satellite imagery and automated content creation.

3. Study (Jamil, 2021) titled "Artificial intelligence and journalistic practice: The crossroads of obstacles and opportunities for Pakistani journalists" aimed to understand Pakistani journalists' perceptions of AI technology and its limitations, opportunities, and challenges in Pakistani media. The study used survey and in-depth interviews with Pakistani journalists and identified concerns about AI's impact on audience engagement and journalists' roles, AI's contribution to fast information dissemination, and obstacles to AI adoption in newsrooms.

4. Study (Al-Zahrani, 2022) titled "Adoption of Arab journalists for artificial intelligence applications in media institutions" aimed to understand Arab journalists' adoption of AI tools and technologies in journalistic practices. The study used a quantitative descriptive approach, including surveys, and found that some Arab journalists are experienced with AI applications, mostly related to content editing.

5. Study (Ashfaq & Nabi, M. Z., 2023) focused on the future of the Indian media industry in the age of AI. It analyzed the current state of AI in Indian media, emphasizing cost efficiency, news production, and challenges. The study suggested that AI has the potential to revolutionize news consumption and production, though challenges related to misinformation and oversight must be addressed.

The current study agrees with previous research in terms of being descriptive and using survey methods, and differs in the choice of research community, sample, and methods

from certain studies, showing how each study contributes to the broader understanding of AI in journalism.

Fifthly: Questions The study aims to answer a main question, which is to evaluate the perception of the Iraqi media elites regarding the challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions. From this main question, several subsidiary questions arise as follows:

1. To what extent are the Iraqi media elites and academics aware of the importance of employing artificial intelligence techniques in Iraqi media institutions?

2. How confident are the Iraqi media elites in the credibility of content produced by AI journalism?

3. What are the ethical challenges of using artificial intelligence techniques in Iraqi media institutions from the perspective of the Iraqi media elites and academics?

4. What are the professional challenges of using artificial intelligence techniques in Iraqi media institutions from the perspective of the Iraqi media elites and academics?

5. What are the strategic challenges of using artificial intelligence techniques in Iraqi media institutions from the perspective of the Iraqi media elites and academics?

Hypotheses:

1. There is a statistically significant correlation between the perception of the Iraqi media and academic elites regarding the importance of artificial intelligence techniques and their stance on employing these techniques in Iraqi media institutions.

2. There are statistically significant differences regarding the expected effort to employ artificial intelligence techniques in Iraqi media institutions based on gender.

3. There are statistically significant differences regarding the voluntary utilization of artificial intelligence techniques in Iraqi media institutions based on the level of experience.

Sixth: Research Type and Method:

The research is classified as descriptive studies, which involve studying the reality of events, positions, and opinions regarding the challenges of utilizing artificial intelligence techniques in Iraqi media institutions. This includes describing, analyzing, interpreting, and reaching conclusions that provide the researcher with essential information and data. The survey method was adopted for the research, which helps describe the phenomenon or problem and obtain the necessary information to answer the research questions.

Seventh: Research Population and Sample:

The research population consists of Iraqi media and academic elites, including media professionals working in managerial and editorial positions, as well as technicians and information technology experts in media institutions. The sample was purposefully selected from the media and academic elites with experience in the field of media and information technology. The sample size reached 322 individuals, distributed among 212 media professionals and journalists in Iraqi media institutions, and 110 academics working in media colleges and departments in Iraq.

Eighth: Research Scope and Limitations:

1. Geographical Scope: The geographical scope of the research includes media institutions in Baghdad and professors from media colleges and departments in Baghdad, Anbar, Tikrit, and Najaf.

2. Time Scope: The time scope of the research covers the period from April 5, 2023, to April 30, 2023. This period includes distributing the questionnaires to participants, collecting them, and fully processing the data.

3. Human Scope: The research involves Iraqi media and academic elites.

Ninth: Research Tool and Methods:

The researcher employed the questionnaire method as a suitable scientific approach for the nature of the research. The questionnaire was used as the main tool to gather information for the research. It consists of a set of questions distributed across multiple axes to ensure answering the main and subsidiary research questions.

Tenth: Validity and Reliabilit

1. Validity: To establish face validity, the researcher presented the questionnaire to nine experts in the field of media to ensure its suitability for the research objectives. The questionnaire was modified based on their opinions until it reached its final form. The questionnaire gained approval from experts by a percentage of 90.1% or higher, which was used as a criterion for the validity of the questionnaire's questions.

2. Reliability: The split-half method was used to calculate the reliability of the scale. This involved calculating the correlation coefficient between the scores of individual items in the first half of the scale and the paired items in the second half, followed by conducting equivalence between the individual scores in the two halves using the formula provided (Kabisi, 2010, page 64).

$$\text{equivalence} = \frac{X1 \quad 2}{X2 \quad 2}$$

When represented:

X2 1 = Variation of individual item scores.

X2 2 = Variation of paired item scores.

To establish the reliability of the scale, a random sample of (50) questionnaires was drawn from the research sample, after performing the equivalence between individual and paired item scores. The reliability coefficient using the split-half method was found to be (0.993), and after correction using the Spearman-Brown formula, the reliability coefficient was determined to be (0.997). This reliability coefficient can be relied upon as shown in Table (5), calculated using the following equation:

$$\text{reliability} = \frac{2 \quad \times .993}{1 + .993} = .997$$

Table (1) explain it

Dimensions	**Individual Item Scores**	**Paired Item Scores**	**Correlation Coefficient Before Adjustment**	**Correlation Coefficient After Adjustment**
Scale	14	14	0.993	0.997

Eleventh: Research Interests:

1. Challenges: Challenges refer to developments, variables, problems, difficulties, or social, economic, developmental obstacles, or others in various aspects of life. They often stem from the local or regional environment and represent a threat or danger to the future of individuals or society (Al-Amaraat, 2021, page 176).

2. Technologies: Technologies encompass all machines, devices, control systems, assembly and storage methods, energy and information transfer, all of which are used for production and research purposes based on electronic computing devices (Wahab, 2011, page 6).

3. Artificial Intelligence: Artificial Intelligence is a term used to describe any computer system that is trained to simulate human-like intelligent behavior. The term refers to systems and devices that mimic human intelligence to perform tasks and can improve their performance based on gathered information (Al-Sharif, 2022, pages 7-8).

Twelfth: The Used Theory

The research is based on the "Unified Theory of Acceptance and Use of Technology (UTAUT)", which is one of the modern theoretical approaches that focus on studying what happens in individuals' minds when they seek to use and employ applications or technological technologies in the organizational and professional context. It tests the impact of internal individual components such as beliefs and attitudes, as well as external components represented by the surrounding social environment and available capabilities, and studies the effect of some mediating variables such as gender, experience, and voluntariness of use.

The Unified Theory of Acceptance and Use of Technology (UTAUT) studies information systems and technology in institutions or businesses and aims to explain the intention and behavior of technology use. The theory employs behavioral intention as an indicator of technology use behavior. It suggests that performance expectancy, effort expectancy, social influence, directly influence the intention to use. Furthermore, available facilitating conditions directly affect usage behavior along with intention to use. The UTAUT also seeks to clarify whether individual differences (such as gender, age, experience, voluntariness of use) influence technology acceptance (Al-Sumayli, 2016).

Elements of the UTAUT Model:

The UTAUT model consists of two dependent variables: behavioral intention and usage behavior, along with four independent variables: performance expectancy (also referred to as perceived usefulness), effort expectancy, perceived ease of use, and social influence, which directly influence the intention to use the system. However, age, experience, gender, and voluntariness act as moderating variables, meaning that if their values are higher, the value of behavioral intention to use technology increases, as well as individual technology acceptance. This is as follows (Khan & Qudrat-Ullah, 2021, pp. 35-36):

1. Performance Expectancy: It refers to the degree to which individuals perceive that using technology will help them achieve benefits from functional performance (Hamzat & Mabawonku, 2018).

2. Effort Expectancy: This term refers to "the degree of ease associated with using the technology or system, reflecting the efficiency of expending energy in building the effort perceived when adopting a new system" (Choudrie, Pheeraphuttharangkoon, & Ojiako, 2018, p. 334).

3. Social Influence: Social influence includes the social pressure exerted on an individual through the beliefs of other individuals or groups. It represents the degree to which an individual perceives the importance of others believing that they should use the new system or technology.

4. Facilitating Conditions: This term refers to the degree to which an individual believes there is an infrastructure and technology available to embrace or use specific technologies in their lives (Albattat, 2022, p. 152).

Chapter Two: Artificial Intelligence and Media

Section One: Concept of Artificial Intelligence

Firstly, the concept of Artificial Intelligence (AI), often abbreviated as (AI), encompasses the study of intelligent behavior in humans, animals, and machines. It is an attempt to find ways to introduce such behavior into artificial machines. AI is considered one of the most challenging and controversial subjects for humanity (Yatby, 2008, p. 15).

The field of Artificial Intelligence involves efforts to develop computer systems that simulate human thinking. It utilizes both physical components (hardware) and software components to perform tasks that resemble human actions (Qandeelji & Aljanabi, 2005, p. 464).

Artificial Intelligence, being a simulation of human thinking, possesses three main attributes as follows (Khalifa, 2019, pp. 40-41):

1. Learning capability, the ability to acquire knowledge and build rules for utilizing that knowledge.

2. Data collection and analysis, creating links between data and information, facilitated by the rise of Big Data.

3. Decision-making based on information analysis, not solely reliant on algorithms to achieve specific goals.

Section Two: Artificial Intelligence and Media

The Fourth Industrial Revolution has necessitated a critical reassessment of manufacturing strategies, particularly for advanced nations. This is to ensure their leadership in the coming years. With the rapid technological advancements led by smart technologies like the Internet of Things and Artificial Intelligence, major industrial countries have adopted new strategies to maintain their edge (Khalifa, 2019, p. 19).

This transformation has also impacted the media industry, including journalism. Many media organizations are turning towards digital transformation to find solutions for challenges posed by digital developments in news production. Consequently, investing in Artificial Intelligence technology has become imperative. Companies such as Google, Facebook, Microsoft, and Minecraft have incorporated AI technologies to redistribute content and reach their target audiences. Thus, Artificial Intelligence has introduced a new media concept, known as Robotic Journalism, Algorithmic Journalism, Automated Journalism, or AI Journalism. These terms refer to programmed algorithms that transform data into textual news (Alzahrani, 2022, pp. 15-39).

Several media institutions are now utilizing AI technologies to extract data, predict topics, interact with audience comments, improve search methods, combat fake news, and even entirely compose news texts. These endeavors aim to provide more intelligent and rapid tools for conveying news to the audience (Aldallu, Abu Hashish, & Ismail, 2020).

Section Three: Concept of AI Journalism (AIJ)

AI Journalism (AIJ) represents a new concept that describes the entire spectrum of media content production and channels, employing technologies and tools of the Fourth Industrial Revolution. AI Journalism encompasses traditional journalism, radio and television, social media, smartphone applications, fake content production, and fake content combating. Any content relying on Fourth Industrial Revolution technologies qualifies as AI Journalism (Abdulzaher, 2021, pp. 39-40).

The concept of AI Journalism implies utilizing Fourth Industrial Revolution technologies to reshape and structure media functions innovatively. This encompasses AI, blockchain, big data analysis, the Internet of Things, 3D printing, and robots (Almunif, 2021).

AI Journalism can be defined as "a new era of media that synergizes with Fourth Industrial Revolution technologies, creates new media tools, shapes impactful media content, sustains audience diversity, meets their aspirations, and establishes continuous interactive channels for opinions and reactions around the clock" (Albadri, 2021, p. 83).

Fourthly: Areas of Artificial Intelligence in Media: Artificial intelligence techniques are used in various areas within media institutions, including discovering, presenting, enhancing, and distributing stories, as well as accessing and analyzing more data to better understand readers, identify trends, or enhance the efficiency of content distribution (Gómez-Diago, 2022). AI tools can be employed by media outlets and journalists at different levels, including content production, news distribution channels, and report preparation. The use of AI techniques in media institutions, including print and electronic media, news agencies, private media, and broadcasting sector, has been explored (Helberger, Eskens, van Drunen, Bastian, & Moeller, 2019).

Sixthly: Challenges Facing the Media Industry in the Age of AI: Digital media faces several challenges, with ethics being a prominent issue. Instances of copyright infringement have increased, and the credibility of much of the circulated news and information is questionable. Consequently, there is a need for regulatory measures to preserve the journalism profession, its value, and content quality. Ethical considerations in digital media work are subject to differing opinions among specialists, with varying perspectives on the necessity of a new ethical framework for media work (Belqassem, Bernat, & Attabi, 2020, pp. 198-199).

Traditional media institutions worldwide face numerous challenges due to the radical digital transformation of the publishing industry. This includes the increased availability and access to data, which journalists find challenging to handle and use effectively for news reporting (Leppänen, Munezero, Granroth-Wilding, & Toivonen, September 2017). Challenges associated with the use of AI technologies in media institutions or journalism include ethical challenges, professional challenges, and strategic challenges. These challenges can be categorized as follows:

1. Ethical Challenges: A. Transparency: Transparency primarily refers to openness about data collection and usage, avoiding unnecessary data collection. Transparency is crucial for building reader trust, involving providing basic data to allow individuals to interact with it. Transparency is defined as "trust in the system that turns data into an article," and it is crucial for building trustworthy AI systems in newsrooms (Leiser, 2022, p. 29).

B. Fact-Checking and Verification: Readers should have information about how primary data was selected, the logic used for data selection, how data was verified, whether readers' personal data is processed, and the credibility and objectivity of the sources used (Ali & Hassoun, 2019).

C. Data Security: Data usage currently presents ethical problems in the field of automated journalism due to the lack of laws and regulations (Hermann, 2022).

D. Data Quality and Safety: Automation cannot be applied to domains lacking data, making automation challenging in situations where data quality is poor (Monti, 2018).

2. Professional Challenges: Media institutions, especially journalism, face several professional challenges when employing AI technologies, including: A. Undermining Creativity: AI algorithms cannot think outside the conceptual framework created by their designers, limiting their ability to achieve the highest level of creativity (Al-Badri, 2021, p. 214).

B. Lack of Oversight: AI algorithms cannot anticipate and comprehend concerning or unexpected developments, lacking human capacity for unprecedented communication. Lack of oversight and content validation is one of the most dangerous aspects of automated journalism (Monti, 2018).

C. Bias: Bias is a crucial challenge in automated journalism systems, including gender and racial bias. AI algorithms are not devoid of human influence and are thus influenced by their designers' values (Diakopoulos, 2019).

3. Technical Challenges: Technical challenges include the following: A. Data Availability: AI requires significant amounts of data to determine the correct response. Without appropriate data, AI's capabilities are limited (Hall, 2018).

B. Understanding Unorganized Data: A significant limitation of automated journalism is its reliance on organized data. Modern algorithmic solutions heavily depend on organized information to generate articles (Kotenidis & Veglis, 2021).

C. Lack of Self-Awareness: AI cannot explain its outputs, the reasoning behind them, or how it arrived at certain conclusions, making it challenging to translate data into specific narratives (Break, 2020).

D. Verification of Authenticity: Software cannot verify the accuracy of input data, particularly if it is digital. Consequently, if the software receives questionable data, its outputs are likely to be incorrect and may raise issues regarding authenticity (Drouiche, 2021, p. 149).

E. Redefined Copyright and Fair Use: AI technologies can inadvertently infringe on copyright and distribution rights, inadvertently penetrating the original sources' copyrights (Center for Social Media, 2018).

F. Ensuring Company Accountability: One of the most crucial legal challenges is AI's ability to generate defamatory content, posing a significant challenge for legal institutions during court proceedings in such cases (Gikis, 2021).

G. Exacerbating Imbalanced Power: Large media outlets possess their own AI software, while local and small media lack the financial capacity to develop their own software. This situation perpetuates the dominance of large institutions over the media market (Al-Zahrani & Attia, 2020, p. 289).

44. Strategic Challenges: A study conducted by the Google News Initiative in collaboration with the International Journalism Research Centre at the London School of Economics and Political Science in 2019, involving 71 news organizations from 23 different countries, revealed several strategic challenges facing the adoption of artificial intelligence technologies in media and news institutions, as follows (Beckett, 2019, p. 47):

1. Lack of Financial Resources or Willingness to Invest Available Resources: Many media organizations face financial constraints or are hesitant to invest in available resources.

2. Lack of AI-Related Skills and Difficulty in Attracting and Hiring Talent: A shortage of skills related to artificial intelligence, along with the challenge of attracting and hiring AI talent.

3. Lack of Knowledge and Understanding of AI Capabilities: Many institutions lack sufficient knowledge and understanding of the capabilities of artificial intelligence.

4. Skepticism of New Technologies Coupled with Fear of Job Loss: There is skepticism about new technologies, often accompanied by fear of job displacement.

5. Structural Issues, Including Technical Gaps Between Departments: Structural problems include technical gaps between different departments within organizations.

6. Lack of Specific Strategy at the Management Level: Some organizations lack a dedicated strategy for implementing AI technologies at the management level.

7. Time Constraints and Difficulty in Prioritizing AI Projects: Limited time and challenges in determining the priorities of AI projects pose significant obstacles.

Chapter Three: Study Results

Table (1) illustrates the significance of employing artificial intelligence technologies in Iraqi media institutions from the researchers' perspective.

Rank	Response	Frequency	Percentage	Degrees of freedom	Chi-squared value	Significance level
First	Important	147	45.7%	4	217.2	9.49
Second	Very important	98	30.4%			
Third	Medium	57	17.7%			
Fourth	Not important	16	5.0%			
Fifth	Very not important	4	1.2%			
Total	322	100%				

The results of the analysis of Table (1) indicate that the significance of employing artificial intelligence technologies in Iraqi media institutions is as follows: "Important" occupied the first rank with a percentage of 45.7%, followed by "Very Important" in the second rank with a percentage of 30.4%. "Moderate" response came in the third rank with a percentage of 17.7%, while "Not Important" response ranked fourth with a percentage of 5%. Finally, "Not Very Important" response came in the last rank with a percentage of 1.2%.

By conducting Chi-Square Tests, the study results showed statistically significant differences in the importance of employing artificial intelligence technologies in Iraqi media institutions. The calculated chi-square value was $\chi^2 = 217.2$ at a significance level of (0.05), which is statistically significant. This indicates that there are statistically significant differences in the responses of the research sample regarding the importance of employing artificial intelligence technologies in Iraqi media institutions.

These results reflect that the media elite and academic participants in the study, who have experience in the field of media and possess the knowledge and expertise, are capable of evaluating the importance of employing artificial intelligence technologies in Iraqi media institutions. This is due to the positive impact of these technologies on the operations of these institutions, including keeping up with technological advancements in the media field, as well as recognizing the importance of these technologies in increasing media content production and reducing effort and time for those working in Iraqi media institutions.

Table (2) illustrates the researchers' level of confidence in the content produced by artificial intelligence technologies.

Rank	Responses	Frequency	Percentage	Degrees of freedom	Chi-square value	Significance level
First	Medium	148	46.0	4	238.506	9.49
Second	Large	112	34.8			

Third	Weak	35	10.8			
Fourth	Very large	19	5.9			
Fifth	Very weak	8	2.5			
Total	322	100.0				

It is evident from the results of the analysis of Table (14) that the level of confidence of the researchers in the content produced by artificial intelligence technologies is (moderate) and ranked first with a percentage of (46%). This was followed by the response (high) in the second rank with a percentage of (34.8%). Meanwhile, the response (low) came in the third rank with a percentage of (10.8%), followed by the response (very high) in the fourth rank with a percentage of (5.9%). Finally, the response (very low) came in the last rank with a percentage of (2.5%).

By conducting Chi-Square Tests, the study's results showed statistically significant differences in the researchers' confidence level in the content produced by artificial intelligence technologies. The calculated value of Chi-Square was $\chi^2 = 238.506$ at a significance level of (0.05), which is statistically significant. This indicates that there are statistically significant differences in the respondents' perceptions regarding the level of confidence in the content produced by artificial intelligence technologies.

These results can be interpreted as the media and academic elites' level of confidence in the content produced by artificial intelligence technologies is ranked as (moderate) in the first place and (high) in the second place. This can be attributed to their realistic expectations about the capabilities of these technologies to produce acceptable and useful content based on their exposure to the experiences of global and Arab media institutions that have employed such technologies.

Scale Questions The level of challenges in employing artificial intelligence technologies in Iraqi media institutions from the perspective of the media elites can be determined using the arithmetic mean. The five-point scale categories are as follows: Strongly Agree (five points), Agree (four points), Neutral (three points), Disagree (two points), and Strongly Disagree (one point). The data were encoded and entered into the computer. To determine the length of the five-point scale cells (lower and upper limits), the range was calculated = highest value - lowest value (5 - 1 = 4), then it was divided by the number of scale cells to obtain the corrected cell length (4 / 5 = 0.8). This value was then added to the lowest value in the scale or the starting point, which is one, to determine the upper limit of this cell. Thus, the length of the cells became as follows (Al-Eid et al., 2007):

Table (3) illustrates the verbal estimation of weighted average levels.

Mean of statement or dimension	Rating
1 to less than 1.8	Very low
1.8 to less than 2.26	Low
2.6 to less than 3.4	Medium
3.4 to less than 4.2	High
4.2 to less than 5	Very high

Table (4) presents the researchers' assessment of the professional challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions. N = (322).

Rank	Statements	Respondents' responses	Weighted mean	Standard deviation	Percentile weight	Level
1	Weak technical capabilities of artificial intelligence in Iraqi media workers	Strongly agree (43.5%), Agree (44.1%), Neutral (8.7%), Disagree (3.7%), Strongly disagree (-%)	4.273	0.773	85.5	Very high
2	Ignoring the newly emerging jobs in the era of artificial intelligence and sticking to traditional roles by media institutions	Strongly agree (36.6%), Agree (44.1%), Neutral (14.6%), Disagree (4.3%), Strongly disagree (0.4%)	4.124	0.837	82.5	Very high
3	The Iraqi media environment lacks competition in the use of artificial intelligence technologies	Strongly agree (33.9%), Agree (47.2%), Neutral (14.0%), Disagree (3.1%), Strongly disagree (1.8%)	4.080	0.875	81.6	Very high
4	Weak financial resources of Iraqi media institutions	Strongly agree (37.3%), Agree (42.2%), Neutral (12.1%), Disagree (7.5%), Strongly disagree (0.9%)	4.074	0.934	81.5	Very high
5	Lack of institutional recognition of the roles of these technologies due to the lack of clarity of their roles in Iraqi media institutions	Strongly agree (30.1%), Agree (50.0%), Neutral (13.4%), Disagree (5.3%), Strongly disagree (1.2%)	4.024	0.880	80.5	Very high
6	The absence of feasibility studies for the employment of artificial intelligence technologies in Iraqi media institutions	Strongly agree (30.7%), Agree (48.1%), Neutral (15.5%), Disagree (3.7%), Strongly disagree (1.9%)	4.021	0.884	80.4	Very high
7	The nature of the administrative orientations of media institutions that hinder the transition to the use of artificial intelligence	Strongly agree (30.4%), Agree (48.1%), Neutral (15.8%), Disagree (3.7%), Strongly disagree (1.9%)	4.015	0.884	80.3	Very high

	technologies					
8	The difficulty of dealing with artificial intelligence technologies due to the lack of understanding of artificial intelligence technologies for human emotions and social values	Strongly agree (28.3%), Agree (41.9%), Neutral (20.5%), Disagree (7.8%), Strongly disagree (1.6%)	3.875	0.961	77.5	High
9	General orientations of the media policy of Iraqi media institutions	Strongly agree (18.6%), Agree (40.7%), Neutral (28.3%), Disagree (8.1%), Strongly disagree (4.3%)	3.611	0.617	72.2	Medium
Total			4.010	0.849	80.2	Very high

It is evident from Table (4) that the researchers' assessment of the professional challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions shows that the category (Lack of technical capabilities in artificial intelligence among workers in Iraqi media institutions) ranked first with a weighted mean of (4.273) and a percentage weight of (85.5%). Following that, the category (Neglecting new job roles introduced by artificial intelligence era and sticking to traditional roles) ranked second with a weighted mean of (4.124) and a percentage weight of (82.5%). Then, the category (The Iraqi media environment lacking competitiveness in the use of artificial intelligence techniques) ranked third with a weighted mean of (4.080) and a percentage weight of (81.6%). Lastly, the ninth ranking was for (General media policy orientations of Iraqi media institutions) with a weighted mean of (3.611) and a percentage weight of (72.2%).

The results from the previous table indicate that the overall average for the researchers' evaluation of the professional challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions was (4.010), with a percentage of (80.2%), which is a high level.

From the results of Table (4), we can conclude that the researchers' evaluation of the professional challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions highlights the weakness of technical capabilities in artificial intelligence among workers in these institutions, neglect by media institutions of newly introduced job roles in the era of artificial intelligence and the adherence to traditional roles, as well as the Iraqi media environment's lack of competitiveness in the field of utilizing artificial intelligence techniques.

Table (5) illustrates the researchers' evaluation of the ethical challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions. N = (322).

Rank	Statements	Respondents' responses	Weighted mean	Standard deviation	Percentile weight	Level
1	Difficulty of verifying the credibility of the data sources used by artificial intelligence algorithms in producing media content	Strongly agree	114	0.897	35.4%	High
2	Difficulty of artificial intelligence algorithms to deal with unstructured or	Strongly agree	110	0.964	34.2%	High

	non-structured data to create content automatically					
3	Domination of large media organizations over artificial intelligence technologies and the inability of small media organizations to purchase them due to their high cost, which prevents the diversity of opinions and imposes a single opinion	Strongly agree	87	0.916	27%	High
4	Difficulty of verifying the accuracy and safety of the data used to create media content	Strongly agree	105	0.912	32.6%	High
5	Inability to protect data in terms of copyright or authorship in the information available to artificial intelligence technologies	Strongly agree	95	0.706	29.5%	High
6	Artificial intelligence technologies cannot verify the authenticity of the data provided to them, so their outputs may be wrong	Strongly agree	88	0.996	27.3%	High
7	Artificial intelligence technologies cannot explain their outputs, i.e. what they have written or done, which makes them lack the human aspects in the produced media content	Strongly agree	68	0.955	21.1%	High
8	Inability to distinguish between topics written by a human journalist and those written by artificial intelligence algorithms	Strongly agree	66	0.945	20.5%	High
9	Artificial intelligence technologies cannot be held legally accountable for the ethics of the content they provide	Strongly agree	75	0.860	23.3%	High
10	Violation of individuals' privacy due to the reliance of artificial intelligence on large amounts of information and data that it collects from people's accounts without their consent	Strongly agree	60	0.840	18.6%	High
11	The use of artificial intelligence technologies to create biases and build harmful stereotypes for a segment of the population	Strongly agree	55	0.718	17.1%	High
12	Total		3.858	0.882	77.2%	High

It is evident from Table (5) that the researchers' assessment of the ethical challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions shows that the category (Difficulty in verifying the credibility of data sources used by artificial intelligence algorithms in producing media content) ranked first with a weighted mean of (4.068) and a percentage weight of (81.4%). Following that, the category (Difficulty of artificial intelligence algorithms in handling unorganized or unstructured data for automated content creation) ranked second with a weighted mean of (3.972) and a percentage weight of (79.4%). Then, the category (Dominance of large media institutions over artificial intelligence techniques and the inability of small media institutions to afford them due to their high cost, hindering diversity of opinions and imposing a single viewpoint) ranked third with a weighted mean of (3.913) and a percentage weight of (78.3%). Lastly, the eleventh ranking was for the category (Use of artificial intelligence techniques in creating biases and harmful stereotypes about certain groups) with a weighted mean of (3.437) and a percentage weight of (68.7%).

The results of the analysis of Table (5) show that the overall average of the researchers' evaluation of the ethical challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions was (3.858), with a percentage of (77.2%), which is a high level.

We conclude from the results of Table (5) that the researchers' assessment of the ethical challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions indicates the difficulty in verifying the credibility of data sources used by artificial intelligence algorithms in producing media content, the challenge of artificial intelligence algorithms in handling unorganized or unstructured data for automated content creation, the dominance of large media institutions over artificial intelligence techniques and the inability of small media institutions to afford them due to their high cost, hindering diversity of opinions and imposing a single viewpoint.

Therefore, we deduce that there are significant ethical challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions. Addressing these challenges is essential to ensure a balance between technological advancement and media credibility, as well as guaranteeing the public's right to access reliable and diverse information. This can be achieved by developing an ethical framework that guides the use of artificial intelligence techniques in Iraqi media institutions and mitigates these challenges.

Table (6) illustrates the researchers' evaluation of the strategic challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions. N = (322).

Rank	Statements	Respondents' responses	Weighted mean	Standard deviation	Percentile weight	Level
1	Lack of knowledge and understanding of the capabilities of artificial intelligence in the field of media	Strongly agree	142	0.918	83.4%	Large
2	Lack of skills related to artificial intelligence, in addition to the difficulty of attracting talent and employing them	Strongly agree	133	0.884	83.3%	Large
3	Weak infrastructure in Iraqi media institutions to employ and introduce these technologies	Strongly agree	120	0.885	82.5%	Large
4	Weak desire of Iraqi media institutions to invest in the available resources in the field of artificial intelligence	Strongly agree	122	0.892	81.7%	Large
5	Lack of a specific strategy at the management level to employ artificial intelligence technologies in Iraqi media institutions	Strongly agree	112	0.888	81.4%	Large
6	Doubting new technologies accompanied by the fear of job loss	Strongly agree	108	0.896	80.2%	Large
7	The inability of Iraqi media institutions to integrate with other advanced technologies such as the Internet of Things, blockchain, cloud computing, virtual reality, and augmented reality	Strongly agree	100	0.819	77.9%	Large
8	Structural issues in Iraqi media institutions, including gaps between administrations	Strongly agree	77	0.938	76.4%	Large
Total		4.044	0.89	80.9%	Large	

It is evident from Table (6) that the category (Lack of knowledge and understanding about the capabilities of artificial intelligence in the field of media) ranked at the forefront of researchers' evaluation of the strategic challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions, with a weighted mean of (4.170) and a percentage weight of (83.4%). Following that, the category (Lack of skills related to artificial intelligence alongside the difficulty of attracting and employing talents) ranked second with a weighted mean of (4.167) and a percentage weight of (83.3%). Then, the

category (Weak infrastructure in Iraqi media institutions for the deployment and integration of these technologies) ranked third with a weighted mean of (4.127) and a percentage weight of (82.5%). Lastly, the eighth ranking was for the category (Structural issues in Iraqi media institutions, including gaps between departments) with a weighted mean of (3.822) and a percentage weight of (76.4%).

The results of the analysis of Table (6) indicate that the overall average of the researchers' evaluation of the strategic challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions was (4.044), with a percentage of (80.9%), which is a high level.

We conclude from the results of Table (6) that the researchers' evaluation of the strategic challenges facing the utilization of artificial intelligence techniques in Iraqi media institutions emphasizes the lack of knowledge and understanding about the capabilities of artificial intelligence in the field of media. This leads to a lack of skills related to artificial intelligence, along with difficulties in attracting and employing talents, as well as a weak infrastructure in Iraqi media institutions for the deployment and integration of these technologies.

Therefore, there is a need to increase awareness and knowledge among the media elite and academia about the capabilities and benefits of artificial intelligence techniques in the field of media. This confirms the necessity of developing the capabilities of the workforce in Iraqi media institutions to understand and apply artificial intelligence techniques. Moreover, it highlights the importance of attracting and employing skilled talents in this field, thereby enhancing the technical and technological infrastructure of Iraqi media institutions to enable them to efficiently and effectively use and apply artificial intelligence technologies.

Hypothesis One: There exists a statistically significant correlation between the perception of the media and academic elite regarding the importance of artificial intelligence techniques and their stance on the utilization of these techniques in Iraqi media institutions.

Table (7) illustrates the correlation between the perception of the media and academic elite regarding the importance of artificial intelligence techniques and their stance on the utilization of these techniques in Iraqi media institutions.

Variable	Attitude towards the employment of these technologies in Iraqi media institutions
Perception of the media and academic elites of the importance of artificial intelligence technologies	Significant at the 0.01 significance level
Degrees of freedom	320
Pearson's value	0.808
Calculated	0.232

The data in Table (7) demonstrates the existence of a significant correlation between the perception of the media and academic elite regarding the importance of artificial intelligence techniques and their stance on the utilization of these techniques in Iraqi media institutions. The Pearson correlation coefficient value was .808, which is greater than the tabulated value (0.232) at a significance level of 0.01, with degrees of freedom (320). Thus, the first hypothesis has been validated.

Hypothesis Two: There are statistically significant differences concerning the expected effort for the degree of employing artificial intelligence techniques in Iraqi media institutions according to gender.

Gender: To verify the second hypothesis based on the social variable of gender to ascertain the significance of differences in the expected effort for employing artificial

intelligence techniques in Iraqi media institutions among male and female researchers, the researcher utilized the independent samples t-test. The results indicated that the mean for males was 3.3380 with a standard deviation of .58416, while the mean for females was 1.6335 with a standard deviation of .53020. The degrees of freedom were 320, and the calculated t-value was 3.950, which is greater than the tabulated value (1.96).

This result demonstrates a statistically significant difference at a 0.05 significance level, as shown in Table (8).

Table (8) shows the t-value for the significance of the difference between males and females in the means of expected effort for employing artificial intelligence techniques in Iraqi media institutions.

Gender	Number	Mean	Standard deviation	Degrees of freedom	T-value	Verdict
Male	251	3.3380	0.58416	320	3.950	Significant
Female	71	1.6335	0.53020			

This result indicates the presence of statistically significant differences between males and females regarding the means of expected effort for employing artificial intelligence techniques in Iraqi media institutions at a significance level of 0.05. The mean for males was 3.3380, confirming the validity of the sixth hypothesis.

Hypothesis Three: There are statistically significant differences concerning the willingness to employ artificial intelligence techniques in Iraqi media institutions according to the level of experience.

Years of Experience: To verify the fifth hypothesis based on the variable of years of experience, the researcher employed one-way ANOVA to determine the significance of statistical differences among the four categories of years of experience within the current research sample regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions. The results are illustrated in Table (9).

Table (9) shows the results of one-way ANOVA analysis to determine the significance of differences among years of experience in the research sample concerning the willingness to employ artificial intelligence techniques in Iraqi media institutions.

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	Proportion of Variance	F	Significance Level	Verdict
Between Groups	215.634	3	71.878	3.758	2.6	0.05	Significant
Within Groups	39.338	318	19.124				
Total	254.972	321					

The results of the analysis of Table (9) reveal statistically significant differences among the average responses of the research sample in terms of willingness to employ artificial intelligence techniques in Iraqi media institutions, according to the variable of years of experience. The calculated F-ratio was 3.758, which is greater than the critical F-ratio of 2.6 at a significance level of 0.05, with degrees of freedom (3, 318). Thus, the validity of the fifth hypothesis has been confirmed.

Table (10) illustrates the LSD (Least Significant Difference) test for pairwise comparisons of years of experience within the research sample regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions.

Years of experience	Less than 5 years	5 to 10 years	11 to 20 years	More than 20 years
Willingness to employ artificial intelligence technologies in Iraqi media institutions	Less than 5 years	-	-1.7910 *	-1.00000 *
5 to 10 years	1.7910 *	-	-0.82090 *	-2.08340 *
11 to 20 years	1.00000 *	0.82090 *	-	-1.26250 *
More than 20 years	2.26250 *	2.08340 *	1.26250 *	-

Table (10) illustrates the following:

1. The presence of statistically significant differences in years of experience within the study sample between the category of (less than 5 years) and the categories (5-10 years, 11-20 years, more than 20 years), regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions, at a significance level of (0.05).

2. The presence of statistically significant differences in years of experience within the study sample between the category of (5-10 years) and the categories (less than 5 years, 11-20 years, more than 20 years), regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions, at a significance level of (0.05).

3. The presence of statistically significant differences in years of experience within the study sample between the category of (11-20 years) and the categories (less than 5 years, 5-10 years, more than 20 years), regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions, at a significance level of (0.05).

4. The presence of statistically significant differences in years of experience within the study sample between the category of (more than 20 years) and the categories (less than 5 years, 5-10 years, 11-20 years), regarding the willingness to employ artificial intelligence techniques in Iraqi media institutions, at a significance level of (0.05).

Results

1. It is evident from Table (3) that the importance of employing artificial intelligence techniques in Iraqi media institutions, from the perspective of media and academic elites, is considered (important), ranking first with a percentage of (45.7%), followed by the response (very important), ranking second with a percentage of (30.4%).

2. The confidence level of media and academic elites in the content produced using artificial intelligence techniques is perceived as (moderate), ranking first with a percentage of (46%), followed by the response (high), ranking second with a percentage of (34.8%).

3. The overall average assessment by media and academic elites of the professional challenges facing the employment of artificial intelligence techniques in Iraqi media institutions is (4.010), representing a percentage of (80.2%), indicating a high level. The category (lack of technical capabilities related to artificial intelligence among employees in Iraqi media institutions) ranked first with a weighted percentage of (85.5%), followed by (neglect of newly emerging positions in the era of artificial intelligence and clinging to traditional roles), ranking second with a weighted percentage of (82.5%), followed by (the Iraqi media environment lacking competitiveness in using artificial intelligence techniques), ranking third with a weighted percentage of (81.6%).

4. The overall average assessment by media and academic elites of the ethical challenges facing the employment of artificial intelligence techniques in Iraqi media institutions is (3.858), representing a percentage of (77.2%), signifying a high level. The category (difficulty in verifying the credibility of data sources used by artificial intelligence algorithms in media content production) ranked first in the assessment by researchers of the strategic challenges facing the employment of artificial intelligence techniques in Iraqi media institutions, with a weighted percentage of (81.4%), followed by (difficulty in handling unstructured or non-organized data by artificial intelligence algorithms for automated content creation), ranking second with a weighted percentage of (79.4%), then the category (dominance of large media institutions over artificial intelligence technologies and the inability of smaller media institutions to afford them due to their high costs, hindering diversity of opinions and imposing a single narrative), ranking third with a weighted percentage of (78.3%).

Recommendations

1. Media institutions should utilize artificial intelligence techniques for information gathering and identifying public trends as an initial step toward gradually employing them in various fields.

2. The integration of technology experts within Iraqi media institutions should contribute to bridging the gap between them and journalists, enabling collaborative production of media content.

3. Well-funded Iraqi media institutions should initially adopt these technologies through collaboration with global and Arab media institutions that have already employed such technologies, to benefit from their experiences in this field.

4. Efforts should be made to provide financial and material resources to Iraqi media institutions for the utilization of artificial intelligence techniques in media work.

5. Provision of technical and technological infrastructure should create a conducive environment for the employment of artificial intelligence techniques in both state and private media institutions.

6. Organizing workshops, seminars, and scientific conferences about the role of artificial intelligence in the media field should contribute to enhancing knowledge and ideas about these technologies in the realm of media.

7. Training journalists and media personnel in various media institutions to use artificial intelligence tools and techniques would refine their talents and enhance their professional capabilities in dealing with such technologies.

8. Establishing ethical and professional frameworks or legislation that regulate the use of artificial intelligence techniques in all fields in general, and media in particular, is crucial.

9. Introducing artificial intelligence subjects into the curricula of journalism colleges and departments should graduate a generation of journalists with the ability to interact with artificial intelligence technologies.

10. National institutions should adopt an integrated national strategy for artificial intelligence, enhancing its role in all fields, gradually employing it for its positive impact on the operation of such institutions.

References

Abdel Zaher, Mohammed. (2021). Globalization 4.0 and the Future of Media in the Era of Seventh Generation Journalism: The Model of Interactive Public Relations. Cairo: Badayel Publishing, Printing, and Distribution.

Al-Amrat, Fares Mohammed. (2021). The Role of Jordanian Women in Public Life. Amman: Dar Al-Khaleej for Publishing and Distribution.

Al-Badri, Rafat Mohammed. (2021). Artificial Intelligence Journalism: Does It Help Journalists or Threaten Their Existence? Cairo: Al-Nokhba for Printing, Publishing, and Distribution.

Albattat, A. (2022). Handbook of Technology Application in Tourism in Asia. Springer Nature Singapore Pte Ltd.

Al-Dallou, Jawad Ragheb, Youssef Yahya Abu Hashish, and Ahmed Abdullah Ismail. (2020). Attitudes of Media Experts Towards Employing Artificial Intelligence Techniques in Palestinian Journalism. Al-Risala Journal of Human Studies and Research, 7(3), 53-90.

Ali, W., & Hassoun, M. (2019). Artificial intelligence and automated journalism: Contemporary challenges and new opportunities. International journal of media, journalism and mass communications, 5(2), 40-49.

Al-Kubaisi, Wihab Majid. (2010). Psychological Measurement: Between Theory and Application. Beirut: Marstal for Iraqi Books.

Al-Manif, Amjad. (February, 2021). Journalism in the Age of Data and Artificial Intelligence. SMT Center for Studies, 2.

Al-Saifi, Hassan Nyazi. (2016). The Adoption of Public Relations Practitioners for Social Media in Saudi Governmental Organizations: A Survey Study within the Unified Theory of Technology Acceptance and Use. Arab Journal of Media and Communication (15), 143-182.

Al-Sharif, Ayman. (2022). Artificial Intelligence and the Internet of Things. Cairo: Iqra' Publishing.

Al-Zahrani, Ahmed Ali. (2022). Arab Journalists' Adoption of Artificial Intelligence Applications in Media Institutions. Algerian Journal of Media and Public Opinion Research, 5(1), 15-39.

Ashfaq, R., & Nabi, M. Z. (2023). Artificial Intelligence and the Indian Media Industry: the Future is now. Journal of Media. Culture and Communication, JMCC, 3(01), 14-21.

Barak, Ayman Mohamed Ibrahim. (2020). Attitudes of Communication Managers Toward Using Artificial Intelligence Techniques in Egyptian and Saudi Press Institutions. Journal of Media Research (53), 447-526.

Beckett, C. (2019). New powers, new responsibilities: A global survey of journalism and artificial intelligence. London: The London School of Economics and Political Science.

Ben Belqasem, Habib, Barnat, Hala Ben Ali, and Al-Taba'i, Faten Ben Lagha. (2020). Media Ethics in the Digital Age. Riyadh: Dar Al-Rushd.

Canavilhas, J. (2022). Artificial intelligence in journalism: Automatic translation and recommendation system in the project" A European Perspective",EBU. Revista Latina de Comunicación Social, 80, 1-13.

Choudrie, J., Pheeraphuttharangkoon, S., & Ojiako, U. (2018). Social inclusion and usability of ICT-enabled services. (J. Choudrie, P. Tsatsou, & S. Kurnia, Eds.) New York.

Darwish, Ahmed Adel. (2021). Robotic Journalism: Ecology and Hacktology. Cairo: Alam Al-Kutub.

de-Lima-Santos, M. F., & Salaverría, R. (2021). From data journalism to artificial intelligence: challenges faced by La Nación in implementing computer vision in news reporting. Palabra Clave, 24(3), 1-40.

Diakopoulos, N. (2019, October 8). The use of AI in data journalism: what are the ethical implications. Retrieved September 6, 2022, from European Science-Media Hub: https://sciencemediahub.eu/2019/10/08/the-use-of-ai-in-data-journalism-what-are-the-ethical-implications/

Gikis, S. (2021). Artificial Intelligence and Journalism Prospects Challenges, and Problems. In E. G. Popkova, & V. Ostrovskaya, Meta-Scientific Study of Artificial Intelligence (p. 96). North Carolina: Information Age Publishing Inc.

Gómez-Diago, G. (2022). , Perspectives to address artificial intelligence in journalism teaching. A review of research and teaching experiences. Revista Latina de Comunicación Social, 80, 29-45.

Hall, S. B. (2018, Jan 15). Can you tell if this was written by a robot? 7 challenges for AI in journalism. Retrieved September 6, 2022, from World Economic Forum: https://www.weforum.org/agenda/2018/01/can-you-tell-if-this-article-was-written-by-a-robot-7-challenges-for-ai-in-journalism

Hamzat, S. A., & Mabawonku, I. (2018). Influence of performance expectancy and facilitating conditions on use of digital library by engineering lecturers in universities in south-west, Nigeria. Library philosophy and practice, 1-16.

Helberger, N., Eskens, S., van Drunen, M., Bastian, M., & Moeller, J. (2019). , Implications of AI-driven tools in the media for freedom of expression, Artificial intelligence–Intelligent politics: Challenges and opportunities for media and democracy. Council of Europe, Ministerial Conference (pp. 1-39). Cyprus: Institute for Information Law (IViR).

Hermann, E. (2022). Artificial intelligence and mass personalization of communication content—An ethical and literacy perspective. New Media & SocietY, 24(5), 1258-127.

Jamil, S. (2021). Artificial intelligence and journalistic practice: The crossroads of obstacles and opportunities for the Pakistani journalists. Journalism Practice, 15(10), 1-23.

Khalifa, Ehab. (2019). Post-Information Society: The Impact of the Fourth Industrial Revolution on National Security. Cairo: Al-Arabi Publishing and Distribution.

Khan, R. A., & Qudrat-Ullah, H. (2021). Adoption of LMS in Higher Educational Institutions of the Middle East. Springer Nature Switzerland.

Kotenidis, E., & Veglis, A. (2021). Algorithmic journalism—Current applications and future perspectives. Journalism and Media, 2(2), 244-257.

Leiser, M. R. (2022). Bias,journalistic endeavours, and the risks of artificial intelligence. In A. Alén-Savikko, T. Pihlajarinne, T. Pihlajarinne, & A. Alén-Savikko (Eds.), Artificial Intelligence and the Media: Reconsidering Rights and Responsibilities. Cheltenham: Edward Elgar Publishing Limited.

Leppänen, L., Munezero, M., Granroth-Wilding, M., & Toivonen, H. (September 2017). Data-driven news generation for automated journalism. Proceedings of the 10th International Conference on Natural Language Generation (pp. 188–197). Santiago de Compostela, Spain: Association for Computational Linguistics.

Monti, M. (2018). Automated journalism and freedom of information: Ethical and juridical problems related to AI in the press field. Opinio Juris in Comparatione, 1(1), 1-17.

Qandilji, Amer Ibrahim, and Alaa Al-Din Abdulqadir Al-Janabi. (2005). Administrative Information Systems. Amman: Al-Maseera for Publishing, Distribution, and Printing.

SMT Center for Studies. (October 21, 2018). Robotic Journalism: Professional and Ethical Challenges Facing the Journalism of the Future. Retrieved September 9, 2022, from SMT Center for Studies

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 27(3), 425-478.

Wahab, Asaad Mohammed. (2011). Computerized Techniques in Auditing Financial Data. Amman: Dar Al-Yazouri Al-Ilmiyya for Publishing and Distribution.

Whitby, Blay. (2008). Artificial Intelligence. (Translation Department, Dar Al-Farooq, Translators). Cairo: Dar Al-Farooq for Cultural Investments.

Whittaker, J. P. (2019). Tech Giants, Artificial Intelligence and the Future of Journalism. Taylor & Francis.