The Mechanisms for Employing Artificial Intelligence in Saudi Journalisms and its Impact on the Development of Journalistic Content

Ali Mohammed Almania[1]

Abstract

This study examined the mechanisms of employing artificial intelligence in the Saudi press and its implications for the development of journalistic content. It aims to identify the extent to which artificial intelligence techniques are employed in the Saudi press, the most prominent techniques used, measure the extent of journalistic leaders' awareness of the role of artificial intelligence techniques in the development of journalistic content, and reveal the most important Challenges facing the use of artificial intelligence techniques in Saudi journalism, and how to overcome them. The importance of the study is highlighted by the fact that it examines the extent to which Saudi newspapers keep up with modern technologies to develop their journalistic content, and the extent of clarity of vision among Saudi press leaders regarding artificial intelligence technologies, and their importance in media transformation, especially in light of the technical challenges and rapid developments in the media industry. The researcher relied on the survey method to monitor the opinions of journalistic and technical leaders in the newspapers of the study sample through in-depth, unstructured interviews, to obtain deeper knowledge about the variables of the study. The study concluded that the use of artificial intelligence techniques in the Saudi press is very limited, and thus its weak reflection on the development of journalistic content. The results of the study revealed that there is a disparity in the level of awareness and knowledge of the role of artificial intelligence techniques in journalistic work, among editors-in-chief on the one hand, and between editors-in-chief and technology managers on the other hand, in addition to the lack of a clear vision and future strategies for Saudi press institutions in benefiting from artificial intelligence, which created a gap between the content presented in these newspapers and what the public is looking for. Moreover, the results of the study also showed that there are many challenges facing the use of artificial intelligence techniques in the Saudi press, the traditional way in which Saudi newspapers operate the inefficiency of applications in supporting the Arabic language, and the danger of fake information.

Keywords: *Artificial Intelligence, Saudi Journalism, Journalistic Content.*

Introduction

Recent years have witnessed major developments and an unprecedented digital revolution, especially artificial intelligence, which has led to major transformations in the journalistic industry, necessitating the need to pay attention to these technologies and benefit from them in developing journalistic work, and in providing attractive journalistic content to the public, which has prompted many international press institutions to adopt these technologies and benefit from them in media transformations, creating journalistic content, reaching the target audience, and investing in these technologies, since relying on artificial intelligence technologies provides a set of benefits to media outlets. The media, and brings about changes on at least three levels, including the role of journalists in producing texts, their replacement in carrying out certain activities, and interacting with the public (Gomez-Diago, 2022), hence, artificial intelligence will also enhance the capabilities of journalists by saving time, increasing the efficiency of the news-making process, and thus increasing media productivity (Noain-Sánchez, 2022).

Additionally, artificial intelligence technologies are at the forefront of new technologies that hold a promising future for journalism, and that most content will be produced via artificial intelligence by 2026, which requires journalists and news organisations to think about their role and goals (Newman, 2024), so this study comes with the aim of identifying the mechanisms for employing artificial intelligence in Saudi journalism and its implications for the development of journalistic content.

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[1] Assistant Professor of Journalism & New Media, College of Media & Communication, Imam Mohammed Ibn Saud Islamic University, 2024, Email: Alimanee@hotmail.com

Problem Statement

The world is witnessing rapid technical developments, and digital technology and data have become the most influential in the media industry, most notably artificial intelligence, which has been adopted by many international newspapers in recent years by employing artificial intelligence techniques in creating journalistic content, as it allowed processing big data in a limited period of time, creating news stories from structured data and presenting them automatically, in addition to providing more diverse coverage, and this can be seen in new journalistic practices such as data journalism, drone journalism, algorithms, automation, analytics, etc. (Harvard 2020 , Kang et al. 2019, Ferrer-Conill and Tandoc 2018, Linden 2017b, Lewis et al. 2019), which requires the press to keep pace with and adopt these technological developments to develop its journalistic content and achieving sustainability, as the future of journalism is linked to digital transformation (de-Lima-Santos & MesquitaK, 2021), and in light of the challenges facing the Saudi press that require employing modern technologies in developing journalistic content, this study seeks to identify the mechanisms for employing artificial intelligence in journalism. Saudi Arabia and its implications for the development of its journalistic content.

The Significance of the Study

The importance of the study stems from a number of factors:

The scarcity of studies that addressed the use of artificial intelligence applications, especially in the Saudi press.

The study constitutes a scientific addition to the field of research, as it monitors the mechanisms of employing artificial intelligence in the Saudi press, which contributes to providing scientific insights that are useful in employing artificial intelligence applications in developing journalistic content.

The importance of evaluating the extent to which Saudi newspapers keep pace with modern technologies to develop their journalistic content.

The study is important because it reveals the extent of clarity of vision among the leaders of the Saudi press regarding artificial intelligence technologies, and their importance in media transformation.

The seriousness of the crisis facing Saudi press institutions in light of the technical challenges and rapid developments in the media industry, which requires them to keep pace with rapid technical developments.

Research Objectives

This study seeks to achieve a main goal, which is to identify the mechanisms for employing artificial intelligence in the Saudi press and its implications for the development of journalistic content. From this goal emerges a set of sub-objectives:

Identify the extent of employing artificial intelligence techniques in the Saudi press, and the most prominent techniques used.

Identify the implications of employing artificial intelligence techniques in developing journalistic content.

Measuring the extent of journalistic leaders' awareness of the role of artificial intelligence technologies in the development of journalistic content.

Uncovering the most important challenges facing the use of artificial intelligence technologies in Saudi journalism, and how to overcome them.

Research Questions

To what extent are artificial intelligence techniques employed in Saudi journalism? What are the most prominent technologies used?

How has the use of artificial intelligence techniques been reflected in journalistic content?

To what extent are communicators aware of the role of artificial intelligence technologies in the development of journalistic content?

What are the most prominent challenges facing the use of artificial intelligence techniques in Saudi journalism? How can these be overcome?

Literature Review

Recent years have witnessed major developments and an unprecedented digital revolution, especially artificial intelligence, which has led to major transformations in the journalistic industry, necessitating the need to pay attention to these technologies and benefit from them in developing journalistic work and in providing attractive journalistic content to the public. The study by Efthimis & Andreas,(2021), indicated that these developments have changed the way journalism is practised, and that automation and technological developments have brought about major changes in a number of areas of journalistic work, represented in the production of automated content, data extraction, news publishing, and content development, but it may have an impact on the jobs of journalists, as some professions can be replaced by modern technologies. On the contrary, the study by Ali & Hassoun, 2019, indicated that artificial intelligence technologies will enhance the work of journalists rather than replace them, so it does not pose a threat to professional journalism. The study concluded that artificial intelligence technologies are the added value of journalism in the digital age, especially in their ability to overcome the fundamental problems facing contemporary journalism, combat fake news, edit news according to editorial policy, and customise content, but at the same time raises professional and ethical issues such as the lack of creativity Monitoring, transparency, fairness, data use and quality.

The study by Ufarte-Ruiz, & et al, (2023) examined four artificial media outlets as an analytical sample, represented by JX Press Corp (Japan); Reuters News Tracer (United Kingdom), News Republic (France), and Videre AI (Spain). The study concluded that the media's reliance on artificial intelligence has become increasingly evident, and that telecommunications companies are the first companies to invest in the development and distribution of artificial content. Although it is still limited, it is the latest step in the process of gradually integrating artificial intelligence into news production. The study confirmed that artificial intelligence is a double-edged sword. Despite the work of technology experts to detect fake content, there is also work on programs to protect fake news from fact-checkers, which requires finding a clear concept of the different areas in which artificial intelligence can be applied in order to be able to produce effective frameworks and guidelines that guarantee the quality and ethics of artificial intelligence applied to journalism and journalists, as the social, professional, and ethical context will be essential for the successful application of artificial intelligence in the profession.

The study by Pavlik (2023) examined the effects of generative artificial intelligence on journalism and media, as the research focused on the use of journalists around the world of one of the prominent generative artificial intelligence platforms, ChatGPT, which was made available for free to the public in 2022. ChatGPT allows users to enter text prompts and create quick responses derived from knowledge acquired through machine learning, which can help journalists simplify and develop their work system. The study concluded that ChatGPT can help journalists write articles and news, especially those based on opinions rather than facts, but it does not do the work alone, as it still requires some kind of human intervention before and after editing texts. It also helps collect information and images, and design multimedia. The study (Lewis, et al, 2019, Series, 2019) also indicated that artificial intelligence technologies provide the opportunity to produce news faster and on a larger scale, and that artificial intelligence algorithms have a positive impact on content and its improvement, and this is consistent with the study by Beenish (2020)

concluded that the use of artificial intelligence will make journalistic work more effective and attractive to the public, and that journalistic institutions that do not adopt artificial intelligence technologies will face a bleak future.

The study of Metwally and Farhat (2022) dealt with artificial intelligence techniques and their reflections on the content of the media message on the websites of foreign newspapers, namely The New York, The Wall Street Journal, The Washington Post, The Guardian, and the Times. The study showed that the study sample newspaper websites used some artificial intelligence techniques equally in presenting their media content, but the techniques used in each newspaper differed. The study confirmed that these sites are the richest and most beneficial to artificial intelligence techniques. In the Arab world, a study by Al-Zahrani (2022) discussed the adoption of artificial intelligence applications by Arab journalists in media institutions. The results of the study showed that the study sample had experience in dealing with artificial intelligence applications attached to smartphones, but media institutions limited their use to tools available on the Internet to verify information by more than 90%, and by 84% in using map applications to monitor the locations of events. The study indicated that the use of artificial intelligence applications comes as a personal effort by journalists to develop their performance, and not as a result of these institutions adopting artificial intelligence technologies.

The study by Abbas (2023) also concluded that Egyptian news websites do not rely sufficiently on artificial intelligence technologies and multimedia tools, and that they need to develop their capabilities in this regard. This is supported by the results of the study by Abdel-Baqi and Adel (2020), which showed that 88% of Egyptian journalists and press leaders emphasise the importance of employing artificial intelligence technologies in newsrooms, but they indicated that a large percentage of them are not ready to employ these tools due to the lack of updating their organisational structures, the lack of adoption of quality systems, and the lack of algorithms for editing texts in the Arabic version, in addition to the decline in investment. And financing in these technologies, and the study Brick (2020) examined the trends of those in charge of communication in press institutions in Egypt and Saudi Arabia towards the use of technologies related to artificial intelligence, and the results of the study showed a decrease in the study sample's use of artificial intelligence technologies in Egyptian and Saudi press institutions. The study by Al-Ashry (2023) discussed the reality of Arab and foreign media studies in the field of the impact of artificial intelligence on journalistic practice during the period 2018-2022 AD. The study concluded that artificial intelligence has brought about a transformation in journalistic practice, which has affected all aspects of journalism, whether in journalistic content and the work of journalists, or the relationship of journalism with the public. However, the results of the study confirmed that the impact of artificial intelligence on journalism as a profession and on journalistic practice is still in its early stages, and is dominated by conflicting viewpoints and unstable results.

Comments on Previous Studies

After discussing the relevant previous studies, it appears that artificial intelligence represents a qualitative development and a major shift in the technical field, and that it constitutes an added value for journalistic work. There is a growing interest in artificial intelligence, but there is a discrepancy in studying it, and unstable results regarding its impact on journalism and the production of journalistic content. Therefore, we find that Western studies focus on the importance of these technologies and their types, the production of journalistic content, the impact of their use on professional practice and journalistic ethics, and its impact on the human element in journalistic work. While in Arab studies, the focus is noted on newspapers adopting artificial intelligence technologies and journalists' attitudes towards them. However, the mechanisms for employing these technologies and their impact on the production of journalistic content have not received in-depth studies in the Arab world, according to the researcher's knowledge; so this study seeks to identify the mechanisms for employing artificial intelligence in Saudi journalism, its repercussions on the development of journalistic content, the extent of journalistic leaders' awareness of the role of these technologies, and the challenges facing their employment.

Methodological Framework of the Study

Type of the Study

This study belongs to exploratory and descriptive research, as it contributes to providing facts for a specific phenomenon or situation, by relying on collecting facts, analysing them, interpreting them, and deducing their implications. This study seeks to reveal the mechanisms for employing artificial intelligence in Saudi journalism, and its repercussions on the development of journalistic content, and to determine the extent of journalistic leaders' awareness of the importance of employing artificial intelligence to develop journalistic content, and their attitudes towards employing it, and the challenges facing this.

The Methodology of the Study

The study relied on the survey method to monitor the opinions of journalistic and technical leaders in the newspapers of the study sample through in-depth, non-standardised interviews to learn about the mechanisms for employing artificial intelligence in Saudi journalism and its repercussions on the development of journalistic content, and to know the extent of awareness of its importance in the development of journalistic content, and to monitor the most prominent challenges facing the employment of artificial intelligence technologies, and how to overcome them.

The Population and Sample of the Study

The study community is represented by journalistic and technical leaders in many Saudi journalistic institutions. The study sample was determined by journalistic and technical leaders in four Saudi journalistic institutions, which represents 45% of Saudi newspapers, namely Al-Riyadh, Okaz, Al-Youm, Al-Watan to represent the various regions of the Kingdom. This study conducted 6 interviews with editors-in-chief and technical leaders in the newspapers of the study sample, with the exception of Al-Youm newspaper, where the editor-in-chief and technical director apologised for participating after their initial approval and review of the questions.

The Research Tool

This study uses semi-structured interviews as a means of collecting data. DeMarrais, K., & Lapan, S. (2004) indicate that interviews are a process in which the researcher and the participant engage in a conversation that focuses on the questions related to the study. It reveals the participants' opinions, ideas, views, and perspectives on certain experiences. It also provides a deeper understanding of the participants' knowledge (Brinkmann, 2014), based on their perceptions and experiences (Roulston, 2013).

Interviews were conducted with journalistic and technical leaders in the newspapers of the study sample using a set of questions prepared as a guide according to the objectives of the study, ensuring that all important areas were covered regarding the mechanisms of employing artificial intelligence in Saudi journalism, its implications for journalistic content, and the challenges it faces. The researcher asked follow-up questions and requested clarification based on the respondents' answers, as open-ended questions allowed respondents to answer the questions in the way they best understood (Brinkmann, 2014), and some respondents provided further explanations for their answers without hesitation. Given the different areas of expertise of the participants, the interview guide was modified in order to collect more relevant and valuable information from each participant. During the interviews with technicians, more technical issues related to artificial intelligence were discussed, while aspects of the impact of employing artificial intelligence on journalistic content and media innovations were discussed more comprehensively with journalistic leaders.

The Validity and Reliability of the Study

The Validity of the Study

Regarding the validity of the semi-structured interviews, an in-depth analysis of the questions asked was provided by some academics in order to determine the clarity and flexibility of the questions. The pilot interviews allowed the researcher to prove the validity of the semi-structured interviews. The researcher also ensured that the semi-structured interviews covered all the points being investigated. The researcher also contacted the offices of the interviewees and sent them information about the purpose of the interview, in addition to the information they needed to know about the study. The interviews were approved, appropriate times were determined, full details of the study were provided, and interviewees were convinced that their responses would be used only for the purposes of the study.

The Reliability of the Study

Reliability is assessed on the basis of whether the same results can be obtained if the same study is repeated by the same or other researchers, as this consistency determines the reliability of the scales used in the study, moreover, the scale used in the study can be relied upon as long as it provides the same results after testing the same items and retesting them. The reliability of the results indicates whether the scale used is reliable (Bryman, 2016), and in this study, interviews were conducted face-to-face or over the phone with those who could not be met directly.

The researcher used procedures known to be reliable in social research, so that if the same measures are applied to the same study at different times, identical or relatively similar results will be obtained, and this is an acceptable degree of reliability for researchers (Marshall, 1999). This study confirmed that the measures used were free from bias, and as Saunders, M., Lewis, P., & Thornhill, A. (2012) argue, reliability is primarily about avoiding bias, and the researcher avoids bias in the tools used by asking the same questions to the respondents, building trust with them by following the same steps, and ensuring the confidentiality of their answers.

The Findings of the Study

The interviews consisted of (11) questions for editors-in-chief, and (8) questions for technology managers in the newspapers of the study sample. The interviews were recorded and then transcribed for analysis. The data were coded thematically, then the data were analysed according to relevant topics using the Brown and Clark (2006) guide, according to the following steps:

Repeated readings to identify the data.

Systematic coding using notes on data features.

Searching for main themes through codes and subtopics.

Verifying the validity of themes through the data.

Identifying data themes.

Identifying important parts of the data and linking them to the research questions and previous studies.

Then the names of the participants were deleted and replaced with Editor-in-Chief 1 and Technology Manager 1, and the interview number (1-3).

The data included words and phrases such as (generative artificial intelligence, monitoring and follow-up, quality, media content, time and effort, limited experiences, training courses, human element, target

audience, fake news, content development, accuracy, credibility, bias, Arabic language support, linguistic review, GPT, rapid development, cost).

The extent of the use of artificial intelligence technologies in Saudi journalism and the most prominent technologies used

There is a discrepancy in the participants' answers regarding the use of artificial intelligence technologies in Saudi journalism, and the participants used phrases such as (limited experiments), (yes, there is increasing use of artificial intelligence technologies), (there is no use of artificial intelligence tools currently), (they are used in the daily work cycle). Regarding the use of artificial intelligence in journalistic work, the results of the interviews show that one newspaper out of the three employs artificial intelligence technologies. Editor-in-Chief 2 indicated that the newspaper relies on several advanced and diverse technical applications in a somewhat extensive manner on its digital platforms and official websites, in addition to benefiting from them in the daily work cycle, whether in output or production, as well as in the process of monitoring, follow-up, research and investigation, and obtaining information with high efficiency and speed, such as generative artificial intelligence technologies that the newspaper is keen on the accuracy of their outputs, in addition to many systems and applications that have contributed to improving the quality and efficiency of journalistic work, and saving a lot of time and effort, while maintaining high ethical and professional standards in the media industry.

Technology Director 2 confirmed that there is an increasing use of artificial intelligence technologies, most notably production and linguistic review programs, and preparing search engines for articles, as some technologies are employed by technically linking with the newspaper's CMS system to manage the newspaper's content so that the journalist editor can use a single system interface for the journalistic material with linguistic review options, and keyword suggestions generated by artificial intelligence programs, and the interface of special programs is also used. With service providers in the production of visual materials. While Editor-in-Chief 1 indicated that their experiences are limited in employing some artificial intelligence technologies such as (GPT - Emini, AI), by summarising journalistic materials, transcribing audio content into written text, and work is underway to develop them and measure their effectiveness, he was disagreed with Technology Manager 1 who indicated that there is currently no use of artificial intelligence technologies, and Editor-in-Chief 3 agreed with that, who indicated that there is no employment of artificial intelligence in journalistic work, but only with regard to scheduling publication on social media platforms, through tools that work by artificial intelligence to know the appropriate times for publication, but they have shortcomings with regard to the Arabic language, and Technology Manager 3 agreed with that that there is no employment of artificial intelligence technologies, but there is a trend from the newspaper to employ artificial intelligence technologies in the field of formulation and editing, to reach the target segment of the audience, and in the field of creating visual content scripts, due to the ability of artificial intelligence tools to simplify this by analysing the target groups to reach audience segments using the latest methods.

The Impact of Employing Artificial Intelligence Technologies on Journalistic Content

The results of the interviews showed the limited impact of employing artificial intelligence technologies on journalistic content in Saudi newspapers, as the results of the interviews revealed that two-thirds of the newspapers in the study sample do not use artificial intelligence technologies in journalistic content, as the interview data with newspaper (1) and newspaper (3) showed that there is no employment of artificial intelligence technologies in their newspapers, and therefore it has no effect on journalistic content, and Editor-in-Chief 1 confirmed that: "The real value is in what the journalist writes, and these technologies cannot develop content without the intervention of a professional journalist who has the ability to carry out a real employment process to benefit from these technologies." On the contrary, interview data with newspaper (2) showed that the use of artificial intelligence technologies had an impact on journalistic content, as it contributed to developing journalistic content in the newspaper. Editor-in-Chief 2 confirmed that artificial intelligence technologies have a role in shedding light on precise aspects of journalistic material, and contributed to finding unexpected angles to address journalistic material, and feeding it with what enriches it, attracts the reader and satisfies his desires with its beautiful form and enjoyable content, in addition to enhancing media content on all platforms and news sites, as it was reflected noticeably and

according to the numbers and classifications of global sites that it attracted large categories of the target audience and followers, as well as advertising companies. Technology Manager 2 added that the use of artificial intelligence technologies was reflected in the development of content in the newspaper in all its forms, but the most beneficial were photo and video reports. The extent of awareness of journalistic leaders of the role of artificial intelligence technologies in developing journalistic content. The results of the interviews showed a difference in the level of awareness among journalistic leaders in Saudi newspapers of the role of artificial intelligence technologies in developing journalistic content, as the interview data with newspaper (1) revealed the lack of a clear vision and awareness of the role of artificial intelligence technologies, as the answers were general such as (the role cannot be ignored, but it requires a real employment process to benefit from it, the real value in what the journalist writes and these technologies cannot develop content without journalistic intervention, we seek to benefit from them within the limits of what suits the newspaper's needs..), while Technology Manager 1 indicated that the newspaper plans to benefit from artificial intelligence in editorial work and in archiving work.

The interview data with Editor-in-Chief 3 and Technology Manager 3 showed that they have a clearer vision, and there is a trend in the newspaper to benefit from artificial intelligence technologies in developing journalistic content, as the Editor-in-Chief indicated that the newspaper is updating and keeping up with technologies, and in the field of artificial intelligence, the challenge is more fierce with competitors in the field, and the newspaper has a trend to benefit from artificial intelligence technologies in analysing the media reality, reaching all target groups in the shortest time, and providing the content they are looking for, and in the field of content marketing, and benefiting from linking content via search engines through artificial intelligence, and the Technology Manager confirmed this, and that there is communication with companies to benefit from their expertise in the field of artificial intelligence, and its optimal uses in the field of journalistic work, such as formulation and editing, to reach the target audience using analysis tools in the field of artificial intelligence, and in the visual content industry, due to the ability of artificial intelligence tools to simplify the (script) of visual content, by analysing the target groups, and also in following the news trend, and choosing the most appropriate and interactive publishing times. While the interview data with the leaders of the newspaper (2) showed that there is a clear vision and awareness of the role of artificial intelligence technologies in developing journalistic content, the editor-in-chief confirmed that the use of artificial intelligence and its various technologies is a qualitative leap in the world of journalism, news and platforms, as it relies on several advanced technical applications such as generative artificial intelligence technologies, which in turn contribute to improving the quality and efficiency of journalistic work, and in shortening time and effort, and presenting it in innovative templates and designs that are compatible with the nature of new media, and that there are no limits to the type of journalistic materials in which artificial intelligence is used, but the brief content on social media platforms that does not compromise the information is the most appropriate and suitable for journalistic production, and he said: "Artificial intelligence has a role in shedding light on precise aspects of journalistic material, and contributes to finding unexpected angles to process journalistic material, and feed it with what enriches it, and attracts the reader, in addition to enhancing media content on all platforms and news sites, but it also increases the assumptions of spreading rumours and fake and misleading news". Technology Director 2 also confirmed that the newspaper seeks to make optimal use of artificial intelligence applications, keep pace with the rapid development of these technologies, and train employees to use them.

Most Important Challenges Facing the Employment of Artificial Intelligence Technologies in Saudi Journalism, and How to Overcome Them

The data of interviews with editors-in-chief and technology managers on the most important challenges facing the employment of artificial intelligence technologies in Saudi journalism, and how to overcome them, confirmed the results of the first axis of the study, the extent of employment of artificial intelligence in journalism, and the third axis, the extent of awareness of newspaper leaders of the role of artificial intelligence technologies, in the disparity in the employment of artificial intelligence technologies among Saudi newspapers, as the answers of newspaper leaders that employ artificial intelligence focused on the details of these technologies and their challenges, and the answers were represented by the following phrases (efficiency of applications in supporting the Arabic language, rapid development in technologies,

inaccuracy, credibility and false or anonymous information, bias according to inputs), while the answers of others focused on general challenges, such as (those who lead Saudi newspapers are over sixty years old, reliance on traditional tools, journalism itself is a challenge).

The interview data with Editor-in-Chief 2 indicated that the media field in general and journalism in particular faces multiple challenges, including inaccuracy and lack of credibility, and fake or anonymous information, which greatly affects the media product, which is based on real information, and the use of artificial intelligence technologies should contribute to verifying the accuracy of the information and its source, to build bridges of trust between the newspaper and the reader. He added that there is no absolute trust in generative artificial intelligence and language models, as they are subject to or biassed according to the inputs they were trained on or fed, while Technology Manager 2 confirmed that the most prominent challenges are the efficiency of applications in supporting Arabic language content, which requires caution and constant review of the outputs, in addition to the rapid development in technologies, which requires continuous and updated training processes, in addition to its impact on the human element and their loss of skills when constantly using models, which calls for investing in training journalists continuously to use technologies effectively and develop their basic skills. The interview data with Editor-in-Chief 1 and Technology Manager 1 about the challenges facing the use of AI technologies showed general answers. The Editor-in-Chief 1 stated: "Journalism is a challenge in itself, so we look at the use of AI technologies as a stage option, within a package of options.. and AI is a supporting factor that cannot be activated or benefited from without a skilled journalist." While the Technology Manager indicated that the most prominent challenges are the abundance of technologies provided by companies in this field, and their material cost. While the answers of the leaders of the newspaper 3 differed regarding the challenges, as the editor-in-chief confirmed that credibility is the biggest challenge facing the use of artificial intelligence technologies, and there is a fear of being carried away by artificial intelligence tools and relying on them without reviewing the content provided, but this can be overcome by employing specialists in improving the content, and training them on the optimal use of these tools. On the other hand, Technology Manager 3 indicated in his answer to the challenges that there is a large gap between what is published and what the audience is looking for, and he indicated the following: "Saudi media still relies on traditional tools, from the reporter to publication, and the style of Saudi media must be changed to keep pace with the language of the era and young generations, as the majority of those who currently lead the media are from the age group of over sixty, and the recipients are from the youth group, so you find a large gap between what is published and what young people are looking for, as young people have turned to social media to search for satisfaction of their desires and hobbies, and this is a result of the very large age gaps".

Discussion

The employment of artificial intelligence technologies represents a qualitative shift in journalistic work, content creation, developing journalists' skills, and facing the challenges facing the Saudi press. Therefore, this study sought to identify the extent of the employment of artificial intelligence technologies in the Saudi press, its repercussions on the development of its journalistic content, and the awareness of those in charge of journalistic institutions of the role of these technologies, and the challenges facing their employment. The study came out with many results, as follows:

The results of the study showed that the employment of artificial intelligence technologies in the Saudi press is very limited, as there is one newspaper from the study sample that employs artificial intelligence technologies in its journalistic work, which shows a great disparity in the extent to which the Saudi press keeps pace with modern technologies. This is consistent with the study (Al-Zahrani, 2022) that the use of artificial intelligence applications in the Arab press comes as a personal effort by journalists, and it is not a result of these institutions adopting Artificial Intelligence technologies, It is not a result of these institutions adopting artificial intelligence technologies, and this result makes the Saudi press face major challenges regarding its future and sustainability, as the study (Beenish, 2020) indicates that journalistic institutions that do not adopt artificial intelligence technologies will face a bleak future. The results of the study showed the weak reflection of the use of artificial intelligence technologies in developing journalistic content in the Saudi press, due to the limited use of these technologies, and the failure of the Saudi press to benefit from

these technologies in providing competitive and attractive content to the public. The study by Lewis, et al (2019) also indicated that artificial intelligence technologies provide an opportunity to produce news faster, and on a larger scale, and that artificial intelligence algorithms have a positive impact on content and its improvement. The results of the study revealed a disparity in the level of awareness and knowledge of the role of artificial intelligence technologies in journalistic work, between editors-in-chief on the one hand, and editors-in-chief and technology managers in the Saudi newspapers in the study sample on the other hand, which indicates a crisis facing the Saudi press, and the lack of a clear vision and future strategies for Saudi press institutions to benefit from artificial intelligence, which will make them face the challenge of survival in light of the huge technical revolutions. The results of the study also showed that most Saudi press institutions operate in a traditional way, and have not benefited from technical developments and artificial intelligence applications, which created a gap between the content provided in these newspapers and what the public is looking for.

Conclusion

The results of the study show that the jobs of workers in Saudi newspapers are not affected by the threats of artificial intelligence technologies, as the use of these technologies is very limited, in addition to the need for these technologies for the human element, which necessitates the importance of journalists keeping pace with technical developments to benefit from them in their practical tasks, and this differs from the study by Efthimis & Andreas, (2021), which indicated that these developments have changed the way journalism is practised, and may have an impact on the jobs of workers in the press, as some professions can be replaced by modern technologies. The results of the study showed that there are many challenges facing the use of artificial intelligence technologies in Saudi journalism, some of which are related to the traditional way in which Saudi newspapers operate, most notably the limited knowledge and awareness of artificial intelligence technologies among some journalistic leaders, and other challenges related to artificial intelligence technologies, the most important of which are the inefficiency of applications in supporting the Arabic language, the danger of fake information, and bias in inputs. This is consistent with the study by Ufarte-Ruiz, & et al (2023) which confirmed that artificial intelligence is a double-edged sword. Despite the work of technology experts to detect fake content, there is also work on programs to protect fake news from fact-checkers, which requires finding a clear concept of the different areas in which artificial intelligence can be applied in order to be able to produce effective frameworks and guidelines that guarantee the quality and ethics of artificial intelligence applied to journalism and journalists. Based on the findings of the study, the researcher recommends the following:

Saudi press institutions must be aware of the importance of artificial intelligence technologies, and accelerate their adoption, and develop supporting legislation and regulatory policies.

Educational institutions must develop their curricula for artificial intelligence applications, which contributes to developing the skills of their graduate journalists.

The importance of developing software and algorithms for artificial intelligence applications that support the Arabic language and develop its efficiency is highlighted.

Attention must be paid to conducting interdisciplinary studies and research companies to identify the effects of artificial intelligence technologies on journalistic work.

The need for researchers in the Arab world to use the qualitative approach to deepen their understanding of the study variables, as most Arab studies have focused on using the quantitative approach in their studies on artificial intelligence in journalism.

The need for future research to focus on studying the role of artificial intelligence technologies in developing journalistic content, and the technical and ethical challenges facing this.

Expanding the study of Saudi journalism, and the gaps between its reality and modern technical developments, and the needs of the public.

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