Global Journal of human-social science: a
Arts & Humanities - Psychology
Volume 20 Issue14 Version 1.0 Year 2020
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-460x & Print ISSN: 0975-587X

The use of Technologies of the Fourth Industrial Revolution in Arab Press Institutions: An Exploratory Study of Opportunities and Challenges

By Dr. Amira Mohammed Ahmed

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GJHSS-A Classification: *FOR Code: 190299*

Strictly as per the compliance and regulations of:

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I. Introduction

In the context of the increasing use of artificial intelligence technologies in various fields, media institutions in various countries of the world have witnessed a major change in recent years; As a result of the knowledge explosion and the information and communication revolution, as the technologies of the fourth industrial revolution entered the media field, represented in artificial intelligence techniques, and the news-elded newsrooms in most of the international news and press institutions have passed many programs, the most prominent of which are: algorithms, chatbots, big data, sources Open and content management in the field of news, stories, economic, sports, financial, scientific, medical, weather forecasts, disaster news and epidemics, where these programs put news, stories, reports and articles into a ready and diversified program structure; Which contributed to creating a rapid media boom, and even the emergence of modern digital technologies in the field of news and reports industry, publishing and enriching the digital content provided, by analyzing big data and developing different statistics, and anticipating some news, such as high stocks and stock and vice versa, and others.

As it has changed the traditional logic of journalism by implanting computational thinking in newsrooms, these technologies have provided a modern style in telling stories, news, and reports in an automated way through cloud computing, which has led to several changes in the ways news and reporting are syntactically, stylistic and formal, which can Algorithms from automatically creating economic news and reports on the basis of statistical information without human intervention from journalists, as well as converting written texts into visual, pictorial, audio, and graphic segments, etc. It can also be used to create multiple templates that handle the same news in multiple ways according to the quality of the audience consuming the content, but it has difficulty programming Stylistic style, and its creative craftsmanship in offering and handling.

Well-established news organizations are automating the production and writing of news, stories and reports using robots and algorithms, such as Thomson Reuters, BBC, CNN and the newspaper "L.A." Times, the Washington Post, the USA Today, the Associated Press, the Los Angeles Times, the Chinese News Agency (Xinhua), the New York Times, the Guardian, the British newspaper Daily and others, despite the accreditation of some of the media institutions in the Arab world, especially the press ones. On the techniques of data analysis in the work of many investigative reports, some of which employed the course media technology in telling news and news stories such as the homeland and the seventh day and the constitution, and the Arab and foreign channels, however the media institutions in our Arab countries are still in urgent need to employ the tools and techniques of the industrial revolution Fourth in the newsrooms, taking advantage of the technologies of that revolution according to professional and ethical standards appropriate to the Arab media work environment, which requires strengthening the professional capabilities of media professionals to suit these innovative technologies, big data, open platforms, cloud computing and natural language processing technologies (NLP), as it requires the necessity of providing A media work environment that is supportive of the requirements of that revolution, so that we can benefit from it on a large scale Press standards and media legislation, and expanding the field of automated journalism from simple descriptions to the richest and most creative narratives, and studying the challenges

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faced by press institutions for applying these technologies, the problem of the study in setting A future vision of opportunities and challenges for the possibility of employing artificial intelligence techniques and tools in developing the journalistic work environment in Arab press institutions; To enrich the information content provided by reformulating the structure of newsrooms in a way that is compatible with the possibility of employing artificial intelligence techniques such as algorithms programs, robots, open source, big data and its analysis, cloud computing and automation in all stages of news production; To enhance efforts to transform these rooms into the ranks of the world news elders, which requires developing the skills of journalists with the new press situations and concepts that these technologies require, so that they can be employed in an optimal way, in addition to monitoring challenges and obstacles to implementation

II. Literature Survey

In this section, we are going to discussed some past research that have been done:

1. (Waleed Ali, Mohamed Hassoun,) The study aimed at giving an insight into the impact of artificial intelligence technologies on changing the practice of journalism, identifying the potential and implications of these technologies for the future of journalists, and extrapolating ethical and professional challenges that may disturb the practices of the journalistic profession. The study found the following: In the digital age, in addition to its ability to overcome the basic problems facing contemporary journalism, combating false news, and editorial policy, it also concluded that artifical intelligence techniques in journalism may raise professional and ethical issues, especially undermining creativity, lack of oversight, bias, transparency, Equity, data use and quality .
2. (Seth C. Lewis, et al,) An experimental study of a sample of the press sites of American institutions indicated that those sites had formed in response to an increasing number of artificial intelligence (AI) technologies - such as chat bots, social robots, and algorithms; To be employed in building and writing news and news reports, she concluded that these programs had a role in news writing, and had become a de facto central and humanitarian component of journalism, reinforcing an upcoming era of employing artificial intelligence techniques in journalistic work on a large scale .
3. (Daewon Kima & SeongcheolKimb,) It sought to monitor the position of journalists on automated journalism and automated news writing, as it identified three trends toward automated journalism and employed them in writing news, reports and articles, using the Q methodology applied to a random sample of journalists from South Korean newspapers, the study found: The first type shows that automated journalism has exceeded the capabilities of robots, as the term refers to "elite journalism", while the second type shows greater interest in introducing robots based on bleak scenarios, while the latter type has formed a relatively different viewpoint, focused on a positive scheme for this type of journalism and writing Automatic news, despite acknowledging some of the threats surrounding journalists and writing news in professional ways .
4. (Yue Zhenga, et al,) It sought to monitor the media transformation of the twenty-first century skills represented in the use of algorithms in writing news and news reports in American and Chinese newsrooms, how well they are accepted by news users, how they perceive the quality of machine news, and how much they like and trust them in these news, using the comparative approach, and the study found that American and Chinese users expressed their opinions that there are more shared and not different perceptions of automatic news, and users did not realize the automated content in a linear fashion, but watched it by looking at the interaction of the authors (i.e. journalists or algorithms), the media, and the cultural background of the users .
5. (David Caswell & Konstantin Dörr,) It provided an exploratory algorithmic approach to expanding the field of machine journalism from simple descriptions to the richer and more complex narratives, based on original applied research through a review of the practice of machine journalism, and identifying a major impediment to the possibility of automating journalistic writing, namely the lack of sufficient data models to encode journalistic knowledge necessary for news writing and stories that are automatically driven by events, and using the exploratory approach, the study presented a detailed proposal that addresses this limitation, based on the representation of journalistic knowledge as an organized event and organized narrative data through a model database of events and structural stories>
6. (DaewonKima & Seongcheo lKim,) discussed identifying the editor-in- chief's determinants of automated journalism in newsrooms, where the analytical hierarchy process was used as a methodology, and the data required to be analyzed were obtained from editor-in-chief surveys from newspapers, and according to the results, the expected business performance resulting from the introduction of the press The mechanism and the desire of news consumers to read machine-written news is one of the most important elements in the criteria for considering whether press institutions

plan to introduce automated journalism or not, on the other hand, the position of journalists on automated journalism lies behind considerations of commercial performance and changes in the external market environment.

7. (Neil Thurman, et al,) It endeavored to uniquely analyze professional journalists' experiences with technology and related opinions in automatically writing news releases and reports, as participants were selected from a range of news organizations - including BBC, CNN, and Thomson Reuters, who have first hand experience working with the automated writing program Provided by a leading technology supplier, and the results revealed that journalists have concluded that there are restrictions imposed on automation, including the nature of its sources and its sensitivity to news, however, journalists believe that automated journalism will become more popular, which increases the depth, breadth, breadth, privacy, and timeliness of the information provided.
8. (Carl-Gustav Linden,) sought to take a quick look at the commercial operations of automated news in the United States, in addition to five European countries, to explore how the logic of press news has been interpreted and translated into software, and how industry experts anticipate the future using a case study approach, and drawing on the codified interview with data journalists, news managers and scientists The computer, academics, and industry experts who produce this new ecosystem for journalism, the study found that: There are many forms of friction that create barriers to increasing automation news, and there is a belief that the development of learning algorithms leads to more advanced forms of machine news, however, Journalists have demonstrated a strong ability to adapt and mitigate the effects of this new technology.

- Commenting on the LITERATURE SURVEY

From the previous factual monitoring of studies, it can be said that:

1. Studies indicated the work of artificial intelligence techniques as an assistant to the journalist in order to collect and analyze standard information, but it does not replace a human journalist; Missing the advantage of creativity.
2. The tools varied between codified interviews, qualitative content analysis of stories, machine news and questionnaire.
3. The approaches varied between the case study approach and the experimental approach, the Q methodology, the qualitative approach, the exploratory approach, the comparative approach, and the analytical hierarchy methodology for analyzing the surveys.
4. Studies varied between exploratory, experimental, comparative and analytical studie
5. The previous studies also differed with the current study in several points represented in the sample, the time period, the environment.

III. Method/Experimental work

a) The Importance of the Study

- Every scientific study has its importance which the researcher urges to conduct, and its importance stems from several basic points, represented in
- It deals with a recent trend in the fields of applications of the techniques of the fourth industrial revolution in the media field, which is the application of artificial intelligence techniques in newsrooms in press institutions -The results of that study will raise the efficiency of newsrooms in press institutions from all aspects, whether technical, technical, professional, informational, ethical, etc., and then qualify them to achieve leadership and competition.
- Achieving the maximum benefit from the field of artificial intelligence techniques that are developing in journalistic institutions and developing the capabilities of journalists.
- Its importance also stems from identifying the professional, technical, ethical and legal requirements that must be met in media institutions, in order to be able to benefit from the techniques of the fourth industrial revolution.

b) Goals of the study

The study aimed at exploring the requirements of the possibility of employing artificial intelligence technologies and tools in media institutions in the Arab world, especially the press, in an attempt to improve the status of newsrooms by re-configuring them to allow the use of these applications, in order to form a forward-looking vision for a comprehensive picture of the challenges and opportunities of employing digital technologies Of all kinds, in a manner that is compatible with the Arab media work environment, by identifying.

- Artificial intelligence techniques that can be employed within Arab press institutions.
- The nature of the tasks and functions performed by artificial intelligence techniques in newsroom.
- Monitor the experiences of international news organizations in the application of artificial intelligence techniques.
- Requirements for employing artificial intelligence techniques in journalistic institutions in the Arab world.
- Challenges facing the application of these technologies in the Arab newsrooms.

c) *Type of-the study*

This study belongs to the quality of descriptive and exploratory research, which adopts a future view from the study of the opportunities offered by the techniques of the Fourth Industrial Revolution for media institutions, especially newsrooms and their evaluation, to reach the requirements necessary to employ them in journalistic work in Arab press institutions, and to identify challenges as well.

d) *Curricula of the study*

In the light of the nature of the study and the goals it seeks to achieve, the study relies on several integrated approaches, which are:

The inductive approach: It is based on adopting a future exploratory vision of the reality in which it is hoped to enrich the Arab digital content - benefiting from the data of the Fourth Industrial Revolution.

Analytical Hierarchy Approach: To define requirements for employing AI techniques in Arab newsroom.

The Anthropological Approach: To reveal the features of the work environment within the international newsrooms by monitoring the nature of the technologies used within them, and the nature of the tasks and functions that they perform in the news work

e) *Data collection tools*

The study relies on collecting data on several tools, which are the standarized interviews.

With a number of specialized experts and practitioners of media and technology work, represented in: (10) newsroom chiefs in press institutions, (10) contactors in press institutions, (10) media academics, (10) experts of artificial intelligence technology, To find out the nature of the requirements for employing artificial intelligence technologies within Arab newsrooms, and the aspects of the challenges they face.

f) *Examination of documents*

Associated here with studies and sources that deal with the use of media institutions in the techniques of artificial intelligence within them; To learn about the most prominent technologies used and the nature of the tasks and opportunities provided by news organizations, and monitor the experiences of international news organizations

The Study population and its sample:

It is represented in the media institutions that employed the techniques of artificial intelligence, and a random sample was chosen from those institutions; To get acquainted LP with the techniques used and the nature of the tasks that you perform in journalistic work, which facilitates the process of identifying the tools that can be employed in Arab press institutions in a manner that suits their capabilities.

IV. Results, Discussion

a) *The proposed perception of the study*

The visualization process went through several stages, some of which relied on the comprehensive survey of research, studies and scientific sources that dealt with the applications of artificial intelligence in media institutions, and some relied on the work of a codified interview with experts and specialists, and is represented in

The first stage: Monitoring the techniques of artificial intelligence that can be used in media work from the reality of examining documents for studies, research and scientific sources.

The second stage: Monitoring the tasks and roles of artificial intelligence techniques in media work from the reality of examining documents for studies, research and scientific sources.

The third stage: Examples of international news organizations that employ artificial intelligence technologies, and the news tasks they perform from examining documents for studies, research and scientific sources.

The Fourth stage: Monitor the requirements for employing artificial intelligence techniques in Arab journalistic institutions from the viewpoint of media experts, academics and experts in artificial intelligence technology.

The Fifth stage: Monitoring challenges that hinder the possibility of employing artificial intelligence techniques, from the point of view of the study samples.

These stages can be dealt with in some detail, as follows

The first stage: Monitoring the tools and techniques of artificial intelligence that can be used in the media work.

Any press relies on the products of the Fourth Industrial Revolution, such as: open platforms, D printing, Internet of things, big data analysis, smart phones, and new tools in montage and photography, (Mohamed, 2019:11). These tools can be displayed as follows:

- Robots: Voice chat programs, such as the chat bot, can be used in voice interaction with news and social media surfers, and to respond to their inquiries.
- *Advanced algorithms programs:* These programs contribute to the automation of newsrooms, in terms of automatically collecting news, raising journalists awareness of important issues, listening to and responding to conversations, and making conten (Francesco Marconi@ https://insights.ap.org).

Cloud computing: Provides the journalist with more interactive means to influence the target audience, in

addition to faster access to smart information sources. (Mohamed, 2019:66).

- *Big Data*: It is the raw material that feeds the artificial intelligence algorithms, and helps the journalist to collect several information from various sources.
- *Open platforms*: Accelerate the use of artificial intelligence; Because it allows less time spent on routine programming. (Mohammed Bin Rashid Al Maktoum Knowledge Foundation Report, 2019: 9).
- *Social Media,* which provides superiority to the news published on it and provides search engines and digital maps. (Ehab, 2017:62).
- *Automatic Text Generation Platforms* (NLG), as these techniques rely on selecting content and automatically the structure of the text, as they allow deeper articles and text that are similar to the articles produced by the journalist, in a way that is difficult to differentiate between them, and was developed to generate more diverse text, (Hille & Emiel @ https://ajr.org/2019/10/24) and among the templates based on it (Word smith) It is already able to write articles, reports and analyzes using the information technology NLG, a platform for generating the natural language that transforms the data into narration My story. (David & Konstantin, 2018:491-492).
- *News Whip:* This tool facilitates maintaining the accuracy of the data collected.
- *SAM Program*: It is used in creating news stories based on the scenario of Mechanism Script, where it translates the original text into an internal text independent of the surface form of the language, and it creates a summary in different natural languages from this internal representation of the language and a scenario for news stories (Alain, 1993:88-89).
- *BAOBAB Program*, to conduct live interviews with website users.
- Reality Augmented: It is a combination of actual direct reality with other virtual elements, such as sounds and two-dimensional and three-dimensional images as well as video clips in a harmonious way. (Samia, et.al, 2018:15).
- *Fact Mata*: A tool used to verify the authenticity of the content published on the site, and thus improve the quality and accuracy of news on the other hand.
- *Internet of things platforms:* supports continuous communication between various media tools, whether computers, robots, camera, satellites and technical tools for digital content. The media can remotely control these tools in communicating with the public and transferring the submitted content. (Mohamed, 2019:64).
- *Expert Systems* are used in imitating the human element, automatic machine learning, and it requires you with a large amount of data to be effective. (Samia, et al, 2018:10).

As this software allowed the production of informational materials such as articles and reports that became more interactive than the journalist produced and were designed specifically to accomplish routine news and publish it based on the information in the data sources; In turn, it becomes able to automatically tell stories, news, and articles that can be published, highlighting the role of big data in journalism. (Jonathan, et al, 2015:40-64).

It is clear to us from the former subtraction of polytechnic tools and techniques that can be used in the media, allowing media institutions an opportunity to benefit from that move to identify the tools that can be employed - in line with their potential and infrastructure To become dining and intelligent newscasts of international newspapers, but keep pace with the fourth industrial revolution and techniques.

The second stage: Phase Monitor the nature of tasks performed by artificial intelligence tools and techniques in media work (monitoring opportunities and benefits of employment of these technologies in media work), multiplicity and roles of technology and intelligence techniques.

Transfering the events are taken by taking and transferred images in the most dangerous places. The media can not do, such as: wars and places where epidemics, infectious diseases, seafood and space, and the analysis of black fund data.

Collecting data and analyzing them from several sources: as social networking, email sites, sites and others, by searching for large data and open platforms on various forms using algorithms, building news and news reports and writing in several forms less Interaction with the public through interactive Android tools, where it is used to respond to public inquiries, and work live encounters with the public by employing interactive programming languages, (the so-called chat BOOT).

The visual action for the complicated big data and introducing them simply in the form of Infographic attractively, quickly and to be easy for reading and understanding where these technologies allow a massive cababilities in displaying the visual drawn ontentt in a high quality which immitate the reality especially data and complicated digits as stock market and the medical terms etc…. .

Enhance the quality of news resolution, design and industry media content through automated data classification, and delivery to the public in various ways, such as the content conversion of written text for visual text, photographer or text-related text.

Exchange of experiences, information and achieving sustainable freedom There is no government restrictions on the freedom of transfer, as they reduced the obstacle to media.

The media consumer is aware of the kind of privacy and intimacy directly, providing intimate and unique content by studying its behavior. The tools and techniques have contributed to the enrichment of digital content, and bring a revolution in the world of news and strategic change in the industry of the news story, and contributed to accelerating journalism and losing, and therefore can be taken advantage of that stage.

The third stage: Presenting the experiences of the international media institutions that employ the techniques of artificial intelligence.

This phase includes the presentation of examples from media organizations, which employed artificial intelligence technologies, and are represented in:

The New York Times

It relied on the method of processing the algorithm data to determine the articles that it hopes will be most important to each reader, based on this user's reading record. (Mohamed, 2019:125).

The Washington Post

She developed her own techniques, using the robotic reporter program, called (Heliograph), and this program has produced nearly articles, mainly used in the formulation of political and sports news, it was used during the Summer Olympics. (Waleed & Mohamed, 2019:43).

British Broadcasting Corporation

It relied on the (juicer) tool to collect news and extract content, from articles from BBC and other news sites, then automatically analyze and classify them with information entities, grouping them into four categories: people, places, organizations, and things. (Mohamed, 2019:126).

It is clear from that stage that the international media in its various forms - newspapers - radio and agencies - sought to take advantage of these technologies in their work, and they became an essential component in the newsrooms indispensable, as the nature of the tasks varied.

Fourth stage: Monitor the requirements for employing artificial intelligence techniques in media institutions.

In this step, it was relied upon to monitor the most prominent expert opinions after merging them, and they were divided into several requirements, which are represented in the following form:

Professional =>Technology=>Ethical=>legal.

Indicators for each requirement can be presented, based on the opinions of experts and specialists, as an imperative and competitive strategic advantage, as follows- :

First: Professional requirements

In other words, to determine the professional skills that a journalist must have in order to deal with smart newsrooms, keep abreast of those digital technologies and how they are used and applied in journalistic work, these requirements are- :

- *Possessing* the skills of a whole team of tools for digital analysis, designing and analyzing data and collecting them from its various sources, and understanding the way in which different application software can be used and dealing with data in all fields of journalistic work, and using them to collect, produce and edit media material in its various forms.
- Learn how to use digital programs in researching open data and big data platforms, analyzing them, and drafting news and reports.
- To be a journalist specializing in data analysis, so that he can benefit from big data in writing reports backed by stocks and statistics.
- Knowledge of journalists with many skills, including the skill of emotional intelligence, emotional, social and creative, programming skills, skills of flexibility in the media work, digital interaction and digital culture, competitive intelligence skills and good awareness to employ these tools and techniques in journalistic work.
- Enhancing the skills of big data analysis, open platforms, languages, science and algorithms for journalists, which requires an organized mechanism and methodology for data analysis governance, and the presence of data experts and information security experts, because journalists under these technologies become analysts and coordinators of data.
- Journalists acquire many technical and practical digital skills, programming learning of these technologies, and employing them in media work with high qualifications, and how to use them in the correct way to take advantage of their great capabilities in enhancing their career path.

Second: The technical requirements

Media institutions must pay attention to the security and technical aspects alike, and develop the organizational and technical environment technically for newsrooms, that is, provide programs and tools to employ them inside newsrooms in the press work, and they are:

Developing programs and tools capable of dealing with the intricacies of journalistic work, by providing them with the latest programs for data analysis and linking.

- *Developing* software and technical skills, conducting data analysis, and creating interactive tools and news applications within newsrooms; To build and design special software and tools that assist journalists in their work inside the newsroom.
- *Arabicization* of the language, as the digital techniques used in the programs are not Arabized

or keep pace with the Arabic language for the developments of the techniques of the Fourth Industrial Revolution and virtual linguistic space.

- *Developing* the speed of the Internet, modern programs and applications that the press industry needs.
- *Re-create* the newsroom architecture to allow the use of AI applications.
- Providing technical support from digital components, advanced devices, an information revolution, platforms for producing ideas and generating meaning, and G technology to enrich media content.
- Developing programs by providing them with logical inference mechanisms, as well as the symbolic language that relies on converting human experiences and experiences into that language in which artificial intelligence techniques are programmed, to be more clear than natural language in the process of communicating with the public.

That is, it can be said that we need to apply AI techniques in media organizations to:

Algorithmic programs: To show how information is used and analyzed.

Data systems: To obtain information and data from their celebrated sources.

In other words, providing newsrooms with technology related to artificial intelligence from hardware, programs and algorithms, and merging between media and technical specializations, to create automatic and dynamic media content.

Third: The ethical requirements

These requirements are in compliance with media professional standards and ethics, and can be monitored as follows:

The data entry of the ideological ideology is not affected by the journalist, so that a balanced media material can be presented, away from the journalistic bias, and thus the media establishment, especially when dealing with the most sensitive issues and topics, such as elections, political debates and others.

- The need to adhere to the ethical principles of artificial intelligence, which assumes the creation of a safe environment that permits the exchange and storage of information.

Maintaining the national and information security of states, not spying, and violating the systems of institutions and states.

- That the behavior of the techniques of the industrial revolution employed in the media work reflects societal values and takes into account the social responsibility of the media towards society.

Observing honesty, truthfulness, and alignment with the truth in covering events, not overstating coverage, and avoiding excitement, bias, and misinformation.

- Utilizing these technologies to achieve communication between peoples and governments, and to form an effective and positive public opinion, in order to improve the use of the digital information weapon.

Taking into account commitment to the ethical and professional style in telling stories, reports and news articles.

- Although artificial intelligence techniques mimic human intelligence, they are ultimately just a machine that depends on its learning and intelligence on the information provided to it; Therefore, the responsibility to ensure that the information is correct, accurate and unbiased towards a specific aspect rests with the media practitioners who supply the machine with data.

Fourth: *The legal requirements*

It consists of adhering to media laws and legislations regarding the use of this method, and is represented in

- Media institutions should develop appropriate policies, regulations and strategies for digital transformation, in light of the virtual openness.

Achieving cooperation at all local, regional and international levels to maintain the information security of countries.

- Develop comprehensive security plans within an international cooperation system, to protect the issue of digitization and use it in media work.

To enact comprehensive, accurate legislation appropriate to resisting crimes that result from the misuse of these technologies and tools.

- Strengthening the policy of international cooperation in the field of enacting international legislation and legal regulations, so that associations are formed to develop such legislation.

Where opinions embodied the need to develop a comprehensive strategy professionally, legally, ethically and technically; To employ these technologies in Arab press institutions

Fifth stage: Monitoring challenges

These challenges can be monitored by monitoring the most prominent opinions of experts and specialists - the study sample - after incorporating them, as there is a new media reality that is taking shape, and is represented in

First: professional challenges

Lack of credibility in the published data and manipulation of the results of opinion polls, especially in

matters related to elections or sports matches, among others.

Journalists' unwillingness to switch to new systems, and their unwillingness to use the new tools of artificial intelligence in the belief that it undermines their importance and also their expertise.

- The lack of skills required to keep pace with these technologies, among many journalists present in the Arab world, digital training in the use of these technologies is not available in the newsrooms of the institutions due to the lack of availability of these programs and devices.
- Bias in publishing news and stories, because they are related to the way in which they were programmed, where there can be biased data feeds for materials that are entered by the media, leading to biased results, as the inputs and outputs of these programs may not guarantee objectivity at all times.

Lack of technical knowledge, lack of, and lack of cultural awareness in the areas of artificial intelligence on the part of media professionals, dealing with the techniques of the fourth industrial revolution, and employing them in media work, and a lack of skills for media workers dealing with the analysis of big data and open platforms.

Failure to comply with media professional and ethical standards in the production and formulation of media materials.

A limitation of the many jobs performed by the media, and the psychological anxiety that this causes among the media professionals to employ these techniques.

Media jobs overlap and change the nature of professional descriptions of some of these jobs.

Second: material challenges

- The large financial requirements needed to provide digital infrastructure to employ these technologies in newsrooms in institutions.
- The lack of clarity on the economic benefits and value of these technologies on journalistic institutions.

There is a digital technology gap in the press institutions in the Arab world, compared to international newsrooms.

Third: technical challenges

These challenges are represented in many elements, and are

- Breaching the security of data and its privacy for states and institutions, and infringing the intellectual property rights of institutions, individuals and countries regarding covering some events; Which may raise ethical and societal issues.
- Disclosing important secrets to countries, institutions, organizations, and individuals, which may result in exhaustion and confusion of society and state institutions, if these technologies are used incorrectly, which may cause crises and challenges for press institutions.

Failure to take a strict approach to data security in the open virtual space.

- Lack of appropriate digital technologies for big data analysis.
- There are no Arabized programs that suit the media work environment in Arab press institutions.
- Focusing solely on telling stories without focusing on higher-order thinking skills and alternative critical analysis.
- Misuse of the voice chat service (ChatBoot).
- Utilizing these technologies to spread false news.
- Speaking specifically of Arab media, Arabic is one of the most difficult languages to address in the areas of artificial intelligence; Due to the rich nature of their compositions.

V. Conclusion

Despite the opportunities offered by AI technologies for media organizations, which lie in facilitating some tasks that require time and effort, especially routine work, such as ease and speed.

Deep analysis of the data in a few seconds, providing dynamic, interactive and real-time content, and carrying out daily routine activities such as collecting news from multiple sources, such as electronic magazines, social media sites, news sites, news agencies, and providing news using text-to-video or audio files or Geographical drawings, etc. The machine cannot replace the human element in general and the professional journalist in particular, but rather be used as an aid to them in their work; The possibility of the machine occurring in some errors that in turn causes us to get inaccurate results according to the data given, and there are a set of disadvantages to these technologies, which are: Algorithms lack creative and critical thought, and as a result, we find that automated journalism has its limitations in its ability to monitor society And accomplishing journalistic tasks, such as directing and forming public opinion, in addition to its ability to fragment public opinion. (Noam, 2015:65-80) as well as the lack of transparency, legal accountability and difficulty in developing software; Because it is expensive and slow.

VI. Recommendations and Further Research

Based on the previous presentation, the study proposes a number of recommendations and proposals, which are:

- Media organizations must prepare and train workers in the newsrooms psychologically and technically on the skills required to use the techniques of

artificial intelligence and automate the news automatically and how to deal with it, that is, professional, technical and psychological rehabilitation for media professionals.

- Institutions must restructure them in line with keeping pace with the techniques of artificial intelligence, and changing their media system, starting with the fact that the technological development is not waiting for anyone, and whoever has not developed will not continue with the requirements of the times and all that this technology imposes.
- Media institutions should embrace the distinguished media talents and creations, which are able to compete with the techniques of artificial intelligence.
- Media institutions should take advantage of the opportunities offered by the techniques of artificial intelligence in the best possible way to keep pace with the techniques of the Fifth Industrial Revolution.

Conducting more suggested future research on

- How automation changes the roles of journalists and the skills required.
- How automated digital content affects public opinion and the formation of public opinion in a virtual society.
- Attitude of the public towards the automated content of news and stories.
- How to take advantage of these techniques in storytelling and news writing in a more quality way.
- The future of Arab media in light of these current digital transformations.

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