Human responsibilities of investigative journalists in the digital age

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Abstract The rapid development of information and communication technology has resulted in the disappearance of many professions globally, particularly as machines have nearly supplanted humans across various job sectors, including journalism and media. Investigative journalism (IJ) stands as a significant domain impacted by the age of digitization, marked by the surge in open information sources, remote communication technologies, data leaks, and the emergence of programs and applications capable of processing information faster, more accurately, and at a lower cost than human labor. Consequently, this has led to successive waves of employee dismissals in information production sectors, causing journalists and information workers to grapple with anxiety concerning the stability and security of their professional future. This study aimed to investigate the responsibilities and tasks that human journalists can still effectively fulfill within the realm of IJ amidst the advancements in information and communication technology. Through a qualitative approach, in-depth email interviews were conducted with nine journalists specializing in IJ, employing thematic coding analysis. The findings revealed five areas in which human journalists can outperform machines in conducting IJ, including decision-making, storytelling, report planning, information and data analysis, and investigation direction. Moreover, the study proposed five essential measures to safeguard the human role in investigative reporting. These measures encompassed journalist training initiatives, a focus on younger cohorts, the implementation of paid experimental work, the establishment of dedicated pathways for investigative work within press institutions, and the amplification of competitions and awards centered on IJ.

Keywords: Investigative journalism, digitization, multiskilled journalist, distance employment, artificial intelligence.

1. Introduction

The amazing development in communication and information technology during the past two decades has led to fundamental changes in journalistic work in general, where various journalistic practices have been affected, especially with the development of digital journalism, which now bears different names with one meaning, such as virtual journalism, internet journalism, online journalism, electronic journalism, and digital journalism (Bakirmekik, 2022). The increased reliance on digitization has led to a massive expansion in the size of media networks, which are now providing journalists with greater opportunities to access information, to possess the necessary tools to access various sources and to increase their ability to publish and reach the public (Anderson, 2012).

The spread of the COVID-19 pandemic has increased the reliance on distance employment and raised the value of online work (Digital Transformation, 2020), especially in the journalistic sector, which opened the door to new job opportunities for journalists in the production and dissemination of digital journalistic content (Bakirmekik, 2022). However, the world eventually adapted to the pandemic, and those who had shifted to remote work were badly affected. For instance, Elon Musk had given his order, late November 2022, to lay off half of 7,500 Twitter employees (Heath & Sato, 2022). In late November 2022, Elon Musk decided to lay off half of 7,500 Twitter employees (Heath & Sato, 2022). Around the same time, Meta eliminated 11,000 workers on Facebook, which is owned by the same company (Avelar, 2022). In addition, not far ago, the giant search engine Google decided to lay off 12,000 employees at once in January of 2023 (Pichai, 2023). In its second round of layoffs in four months, Meta, the parent company of Facebook, announced on March 14, 2023, that it plans to lay off an additional 10,000 employees. The company will also close approximately 5,000 vacancies for which workers were not employed at that time (Heath & Roth, 2023). In any case, the most recent estimates indicate that the development of artificial intelligence (AI), which represents the most advanced wave in the development of digital technologies, will affect 80 percent of jobs around the world, where workers in the field of journalism will be among those most affected by layoffs (Eloundou et al., 2023).
Given that, it can be claimed that digital technology has provided various alternatives to the armies of journalists and media workers. The tasks that need a group of employees to be accomplished are now carried out by a single user called “the comprehensive journalist”, who is responsible for conducting multiple tasks starting from collecting, transmitting, and checking information, passing through other tasks of analyzing, processing and presenting news in attractive forms and templates suitably allocated for social media platforms with a high and influential human sense, away from traditional templates (Comprehensive Journalist, 2019). Here, the term comprehensive journalist is used to refer to the concept of a multitasked or multiskilled journalist, where Carr (2019) considered that the need for the role of the comprehensive journalist in journalism has been aggravated due to the continued shrinkage in the number of employees and newsrooms in exchange for the expansion of the use of new media, considering that journalists are now expected to perform multiple tasks at the same time, which requires mastery of many skills.

New media technology has positively affected many aspects of investigative journalism, including planning investigative reporting (Franco, 2009; Hahn & Stalph, 2018), improving narrative text production skills (Zakaria & Abdul Aziz, 2019), and analyzing the information gathered from interviewing human sources (Radcliffe, 2020). New media is characterized as digital, interactive, hypertextual, and global networked. It also matches the properties of virtual worlds and simulation (Thompson, 2018). These characteristics of new media help in providing insight into how journalists can effectively plan and execute investigative reporting in the digital age. This includes using digital tools to collect data, access sources, capture and analyze information. For example, the feature of digitization gives journalists the opportunity to access electronic applications of traffic, aviation, maritime navigation, digital maps, satellite images, digital libraries, and national and international archive centers. All of these missions are now achieved without the need to bear the burdens of travel, transportation, and obtaining entry and work permits. This has facilitated the journalist’s work of planning and implementing the investigative report by helping him identify sources of information he or she wants to use in advance and giving him or her opportunity to implement pilot works to predict the feasibility and effectiveness of the report he or she will prepare.

Moreover, new media technology affordances such as portability, availability, locatability, and multimodality (Schrock, 2015) help journalists overcome the barriers they might encounter while planning or implementing investigative reporting, such as accessing human information sources across borders or finding high-specification computers to prepare the report. In addition, highly advanced technology such as artificial intelligence has provided investigative report producers with the opportunity to dispense text and script human narrators by relying on automated voice generation technology such as Storyteller, which converts written text into spoken text. It also reduced the financial costs and time needed for business negotiation. Thus, new media grants investigative reports planner the opportunity to realize the requirements needed for report production beforehand.

With the influence of modern technology, communication and media organizations tended to use advanced artificial intelligence (AI) and machine learning technology to carry out multiple tasks, including creating hundreds of news stories at a lower cost with quicker performance and fewer errors compared to a human journalist (Turksoy, 2022). The work of artificial intelligence techniques is not confined to analyzing big data only; rather, it has become more capable of predicting the meaning of digital information (Kaput, 2021; Hancock et al., 2020).

Technology has introduced the media industry to a new era of transformation (Turksoy, 2022), including many areas such as the profession of journalism, which puts humans under real pressure to update their manual and traditional skills with advanced technological techniques to cope with the digital environment, which forces them to learn new digital capabilities (Panda et al., 2019). Thanks to the concept of affordances in understanding the highly effective communication properties provided by modern communication technology for journalists. Among those affordances are portability, availability, locatability, and multimediability (Schrock, 2015).

The term “affordances” was first coined by Gibson (1977) in his psychological works; then, Donald Norman transferred it in 2013 to the field of design before Ivan Hutchby (2001) used it in the context of information technology on the principle of taking advantage of the characteristics provided by tools to improve performance (Matei, 2020). However, integrating these techniques into daily professional practice requires highly qualified, skillful, and trained journalists (Ureta & Peña-Fernández, 2017).

Although the employment crisis under the influence of the development of media and digital communication technology has been affecting all journalistic work activities, this study focused on IJ in particular because it is involved in a kind of in-depth work of journalism that aims to uncover facts through careful investigations that present the truth to the public (Dejen, 2017). In this particular endeavor, open sources of information, digital data, and access to information through digital applications have become the most important tools used by journalistic organizations to bring documents and data that support the hypotheses of their investigative investigations (Sakkur, 2020). Accordingly, IJ has become the most significant place among many other types of media and journalism that is subject to digitization of sources, search processes and verification procedures (Gearing, 2014). However, this does not negate the optimistic fact that there are aspects of journalistic work in which machines cannot take the place of humans (Eksioglu, 2019).

Despite the abovementioned information about the positive role of the media digitization process, there are challenges and ethical considerations that arise with the use of digital technology in investigative journalism. Among these challenges are
violations of data privacy, online damage, and governmental control (Aude & Laura, 2021). Duncan and Culver (2020) showed that trust, technology, and privacy are positively associated with openness toward drone journalism. The quantitative survey conducted in the United States concluded that the participants welcomed the idea of drone journalism to be used in traffic coverage and investigative stories but not for violating the privacy of individuals such as celebrities and politicians. In fact, the characteristics of new media have led to the emergence of what has become known as citizen journalism, which broke the monopoly of official media systems on information (Pepe, 2016). However, from an ethical standpoint, it has increased the problem of the spread of misleading news and falsification of data and information, which have weakened the credibility of journalism and increased the need for techniques to examine information and verify the authenticity of news (Wilding et al., 2018).

Many research studies have discussed the impact of digitization on journalism from different angles. Some research has focused on the perspective that technology development has expanded journalistic fields of work by creating new tasks (Bakirmekik, 2022). Other research highlighted that the development of technology comes at the expense of the human role, reducing the workspace given to journalists and therefore affecting their job opportunities (Willnat & Weaver, 2014). Three main trends emerged as a result of the digitization of journalistic work. First, the sharp reduction in the number of workers in full journalistic positions in traditional media institutions; second, the increase in the employment of part-time journalists, including self-employed, temporary employees, part-time workers, and even contract employees; and third, the increasing demand for flexible and multiskilled employees (White, 2012).

A recent study, published by the University of Pennsylvania in partnership with the American organization (Open AI) for artificial intelligence research, revealed the depth of potential effects of artificial intelligence technologies on the labor market in the United States, with amazing results. The paper concluded that approximately 80 percent of the workforce in the United States would be affected by 10 percent of their work tasks due to artificial intelligence. The study stated that machine learning techniques would take over 49 percent of the main work tasks in these jobs. It identifies the professions of journalists and news analysts among the professions most affected by the development of artificial intelligence technologies, along with workers in accounting professions and tax officials (Eloundou et al., 2023).

In light of such situations, the question of the remaining roles that human journalists play, no matter how advanced media technology is, jumps to the fore. In a report about a group of pioneers of IJ published on the IJNET website under the title "Investigative Journalism in the Age of Technology and Rapid Development", Weiss (2018) shed light on a set of important notes and observations. These can be summarized in the fact that the development of communication technology has created a compulsory need for cross-border communication, working within participatory groups, and having the skills to deal with, analyze, and understand the techniques of exchanging images and digital maps.

The massive digital development in the field of journalism and media has placed new responsibilities on the shoulders of investigative journalists, especially those who are accustomed to doing their work in traditional ways such as gathering information through face-to-face interviews. A recent study conducted in China found that examining the news that information content creators flood the digital space with is one of the most important emerging responsibilities of investigative journalists in the digital age (Xu & Gutsche Jr, 2020).

1.1. Research Objective

Based on the previous data, the aim of this study is to explore the responsibilities and tasks that can be done more professionally and effectively by human journalists compared to machines in the field of IJ in light of the enormous development of information and communication technology. Accordingly, this paper raises the following question: what are the responsibilities and tasks that journalists can perform more professionally and effectively in comparison to new media technology?

While computational data analyses and AI products have been widely spreading these days, with so many tasks achieved more easily and quickly compared to traditional data analysis and production methods, so many limitations can be witnessed in new media technology and AI outcomes. For example, digital new media technology such as AI can sometimes achieve the same tasks usually performed by humans with a great degree of efficiency; however, humans can still surpass machines in producing certain aspects of distinguished features and specific fields that need subjective and emotional processing of given data and information, especially in contact with human sources and analyzing human feelings and senses, which is yet a great field of journalism.

Therefore, this paper delves in the areas of IJ in which human journalists overweigh machines. It sheds light on those responsibilities and tasks that are still performed more effectively and professionally by humans compared to machines.

This study gains its academic and research significance from providing important information about the human practice of IJ in the era of digital media technology. It also has practical importance by providing investigative reporters with the needed advice and recommendations they may want to follow to improve their skills and maintain their careers in challenge of the threat of being one day replaced by machines.

2. Materials and Methods

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This research was conducted following qualitative methodology of data analysis of in-depth interviews. Nine Arab journalists were selected based on homogeneous sampling strategy and were equally distributed to three groups with three participants in each group: Traditional media journalists, investigative journalists, and academic researchers of media and communication. For data collection procedures, this study was carried out through five stages: 1. Extensive reading on the subject under study. 2. Setting questions related to the objectives of the study. 3. Contacting the interviewees, obtaining their consent to participate in the interview, introducing them to the study and illustrating their roles in the study. 4. The questions were sent via e-mail, and the time for the interviewees to submit the answers was specified. 5. Receiving the answers by e-mail and social media accounts such as WhatsApp.

The process of analyzing the answers in this study was carried out through four stages based on Creswell (2014): first, reviewing the answers and making a preliminary reading to ensure that they are appropriate to the questions sent. Second, the information was translated into English; third, the main themes that were identified were coded; fourth, codes that were not related to the objectives of the study were excluded.

Finally, the themes were analyzed following a few steps: A. Writing an introduction to each theme, showing the level of frequency of its use and the interviewees' approval of it. B. Discussing the results by presenting and quoting the information provided by the interviewees and including their opinions. C. Including some quotes from studies and ideas consistent with each result. D. Setting a conclusion for each of the results that have been reached. E. Presenting the results with illustrative figures. Figure 1 below explains the four methodological procedures pursued in conducting this study.

3. Results and Discussion

As a descriptive explorative study, this research adopted the qualitative research approach using thematic analysis of in-depth interviews, particularly email interviews, for data collection. The in-depth interview method is followed because it is a qualitative technique of data collection that is good for exploring new issues through in-depth data analysis, which leads to a better understanding of certain phenomena and accordingly presents richer and deeper information compared to quantitative methodology (Boyce, 2006).

The email interview was used as an effective technique of data collection because it saves time, overcomes some logistical barriers, gives the interviewer more freedom in asking questions, guarantees preserving information in comparison to closed data collection such as questionnaires or surveys, allows for obtaining good quality answers through operations of expansion, omission, clarification and contextualization, flexibility in sending and receiving interviewee’s files of questions and answers over the internet via email, which increases the chance of positively controlling the quality of the interview (Fritz & Vandermause, 2017). Moreover, email interviews provide longer answers with a range of 3-8 pages of answers compared to face-to-face interviews and 6-12 pages compared to phone interviews (Roller & Lavarkas, 2020).

This study used a nonprobable sample of nine Arab journalists (n = 9) from five different countries. The respondents to the interviews were distributed equally into three categories: three journalists in the fields of traditional journalism (n = 3),
three investigative journalists (n = 2 = 3), and three academic researchers in the field of journalism who hold master’s and doctoral degrees and have published research on Arab IJ (n = 3 = 3). Homogeneous sampling was used as a strategy in selecting interviewees for this study. Distributing the nonprobable sample into 3 classifications helps in raising the level of validity and reliability by achieving data triangulation, which is a technique that depends on collecting data from three different sources of information (Creswell, 2014).

All interviewees meet the same criteria, as they all have practiced journalism in Arab media for at least five years; all of them have interest in and deep knowledge of IJ issues; all of them were selected to participate in this study through their accounts on the digital platforms of Arab journalism training networks; and all of them responded to the same three questions:

1. In light of the development of media technology, to what extent will the human role continue in IJ?
2. What is the role of the human journalist in investigative reporting in light of the development of media technology? And 3. What do you suggest for preserving and developing the human role in IJ?

Despite the great role that new media plays in providing journalists with access to information through open sources and other tools created by the development of media technology, this does not exempt journalists from using human resources (HR) and referring to these resources on many occasions. It cannot be claimed that new media has become the only source of information used in IJ. In contrast, the results of this study showed that HR was still a fundamental and decisive factor in IJ. Khaled Ma’ali, freelance field reporter in Palestine, described this role as “big and significant”, whereas Mounira Hajlaoui, Tunisian Reporter for Aljazeera Net website, considered the role of HR as “the cornerstone and the most important component of most investigative topics”.

This study identified five key human roles that have yet to be needed in conducting IJ despite the extreme level of media technology development. First, the human journalist is the journalistic decision-maker; second, the hero of the story or the narrator (storyteller); third, the planner of the investigative report; fourth, the analyzer of information and data; and fifth, the director of the investigative work.

3.1. The Decision Maker

The decision-making process represents an essential pillar of the completion of any journalistic work. The decision maker in the media process is responsible for determining whether the idea of a journalistic report is appropriate for publication. It is the one who defines the ethics that journalists should consider as inviolable red lines, especially in the field of ethics of research, investigation and information gathering. The decision maker also plays a role in determining the types of tools that should be used in the information gathering process and even in choosing journalistic processing and publishing methods.

Within all of these areas, five out of nine interviewees agreed that the human role in the decision-making process was indispensable in the field of IJ. They mentioned the human decision maker as the supreme manager, the director or even the referee of the investigative work. Thus, Khaled Ma’ali believes that HR is an irreplaceable factor in IJ. He claims that “there cannot be IJ without human resources; the human is the engine and thinker who links information and makes conclusions, and there is no investigation without enlightening, understanding, moving and contacting active HR within advanced scientific media foundations”.

At the time when the human was considered the hero of every investigative work, regardless of the role of such a hero, there was a great responsibility that fell on the shoulders of the investigative journalist to accomplish two combined tasks: first, reaching the hero, and second, determining his role in the investigative work. To achieve that, the investigative journalist needs to build a network of relationships with HR that puts him on a treasure trove of details and information and helps him determine his future success. To this end, Adel Abdulmoghni, Yemeni investigative reporter, and instructor, said that “IJ is essentially based on evidence; therefore, the journalist’s possession of a list of good and reliable sources is one of the most important reasons for his success”. However, starting to build relationships with HR alone may not be enough to ensure the success of the investigative journalist in producing good investigative materials; perhaps that is sufficient to access information, but the sustainability of the resources requires the fulfillment of two very important criteria: the first of which is to ensure the confidentiality of these HR and the second is achieving balance in the presentation of information between HR and open sources. In the first regard, Anas Radi, producer of Al-Hiwar TV, which broadcasts from London, UK, stated that “most investigative journalists depend on human sources: for leads or for verifying a story, or even both. These resources may be anonymous or confidential, or their identities may be publicly identified. In recent years, technology-led web publishers have pioneered new ways to protect anonymity and confidentiality, although technology can also make it easier to link journalists and their resources”. In the second regard, Anas Radi said that the investigative journalist has the role of the referee, adding that “HR are essential in journalistic investigation, but the investigative journalist should balance the resources and compare the statements of human sources with documents or witnesses”.

Despite the continued innovations associated with the development of information and communication technology, the nature of journalism sciences, which is often based on the humanization of the contents of coverage, requires the human role. This leads to contemplation of what can be described as human determinism. Yousuf Al-Junaidy, an academic researcher in media holding a PhD in journalism from University Putra Malaysia (UPM), said: “No matter how advanced technology is, it

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cannot take a decision on behalf of a person." He added, "Even when smart tools are assigned procedural tasks, there must be a human mind to program those tasks according to certain goals, standards, and plans".

Regarding the technical approach, Al-Junaidy considered the human role to be inevitable "when employing technology in terms of determining the type of camera, choosing lenses, switching angles to suit the best phototaking positions, and other examples". He presented an ethical approach to IJ and said on human determinism: "This is also related to ethical standards, the separation line between investigation and espionage is like a thin hair, if it is cut off, the journalist will be in violation of the rights of others, individuals, institutions, or even political entities". Al-Junaidy concluded by saying that "only the human being is the one who decides to prepare the investigative journalistic material".

Regarding the limitations of decision-making in IJ, Al-Junaidy said, "We are talking about the investigative journalist as an owner of an idea who wants to come up with an integrated work; and taking into consideration that IJ involves a difficult and a complex work, there is a need for a seasoned journalist, with a flexible team that is capable of responding to requirements".

Investigative work requires great flexibility in dealing with surprises, whether related to information, data, or circumstances (Kaplan, 2013). This also demands making different decisions from time to time that may sometimes appear contradictory due to diversity in data. In this context, Nidal Salah said, "It is the human who makes the detailed decisions; artificial intelligence, for example, may take technical or tactical decisions based on the programming it received and the calculations of scenarios. However, the one who is able to deal with surprises is the human being". Nidal Salah gave an example of his argument by saying: "During the filming of a documentary event, images, a document, or marginal information that may appear casually, the director or the producer may look at these data as an origin and a starting point of the investigative work; meaning that the human is the one who turns coincidence into an intended event with a conscious and deliberate decision". Figure 2 illustrates the role of journalists as decision makers in investigative reporting.

![Figure 2 The role of journalists as decision makers in investigative reporting.](https://www.malque.pub/ojs/index.php/msj)
vagueness and clarify the ambiguity of them when found. Therefore, Saraih said the human being “is always the first source in terms of importance”, particularly in the Arab world, where many journalists need HR because of their lack of technical qualification in dealing with open sources of information, and thus according to him, nothing can compensate HR to the IJ, at least in the short term because "in every story and in every hypothesis or investigation we are still looking for the hero, and our hero is always a human source, regardless of the human role as evidence or victim".

In fact, the role of the journalist in investigative work extends to two areas. First, the journalist is often the subject of investigative work, similar to the case of journalists who are killed in conflicts and wars or who are forcibly hidden to prevent their access to information. Second, the journalist is the first recipient of information, whether he or she obtained this information through a positive activity in which he or she spent energy and sought knowledge or related it negatively in various ways, such as leakage by well-informed parties such as whistleblowers. In this regard, Nidal Salah, an academic researcher who holds a PhD in media and communication from the Middle East University in Cyprus, said that “the journalist, whether an individual or representative of an institution, is the subject of a journalistic story”. Salah believes that journalists are among the categories of society’s most vulnerable to violations “because they do not stop digging and researching topics that the authorities want to hide”. He continued: “For this reason, they always pay the price, and we must not forget the story of Sherine Abu Aqelah, whose assassination at the hands of an Israeli sniper was revealed by Aljazeera Network’s investigative work”.

Aljazeera correspondent Sherine Abu Aqelah was shot dead while she was covering clashes between the Israeli forces and Palestinians in Jenin city in the Occupied West Bank on May 11, 2022. Initially, Israel denied responsibility for the killing of Abu Aqelah, but a series of investigative journalistic investigations and private investigations showed that she was killed by an Israeli sniper (Ayoub, 2023).

Wasef Al-Qadah, researcher in the field of media, holding a PhD degree from Arel University in Turkey, argued that the information that is hidden from the media is often related to cases of violations; and, if revealed, it would harm the perpetrators, “the ones who are mostly keen to keep this information confidential”. He added, "The journalist’s success in fulfilling a heroic role in accessing and revealing hidden information, may be achieved either by his own effort of chasing stories and resources or by receiving information from whistleblowers who pass him information based on the virtue of his reputation as an investigative journalist". Al-Qadah concluded that "in both cases, the journalist plays a heroic role, although he might be harmed". The heroic role of investigative journalists has changed the stereotypical view of journalists in societies that traditionally see media professionals as climbers and news merchants who always seek to profit from selling information to powerful authorities.

The starring role of journalists has risen exponentially in the digital age. In the case of news stories, the focus has shifted from the news story to the journalist himself because journalists, with the use of new media, have been able to publish stories as their own proofs of journalistic success on social media platforms in a way that relates pieces of journalistic works to their own personal achievements. This was evident in the investigative starring role played by Edward Snowden in 2013, when he leaked, through WikiLeaks in 2010, an enormous amount of digital data that turned him into a hero for the issue of the leak (Eldridge II, 2019). Figure 3 explores the heroic role of journalists in investigative reporting based on the cases of Edward Snowden and Sherine Abu Aqleh.

![Diagram](https://www.malque.pub/ojs/index.php/msj)

**Figure 3** The heroic role of journalists in investigative reporting.

### 3.3. The Narrator
An investigative report is a story, and a story needs a narrator whether narrated in a spoken or a written form. The narrator in the journalistic work, including JJ, is no one but the journalist. Thus, the investigative journalist needs to exert much effort in producing journalistic material because he plays the role of a director and must have photography skills and techniques in addition to the ability to structure the story in a narrative context that guarantees achieving suspense and excitement, clarifying ambiguity, and interacting with the audience.

Zakaria and Abdul Aziz (2019) have shown that integrating technology into the learning process contributes to improving learners’ narrative writing skills and textual production. The study found a significant difference in the level of textual narration among a group of participants, as their abilities to tell stories improved significantly when they were exposed to the use of technology in teaching storytelling. The study concluded that digital storytelling motivated the trainees to practice writing and improved their textual productivity. Other studies have also found that digital storytelling enhances creative textual writing (Sonmez & Dadandi, 2023).

Although recording techniques that are associated with communication technology, especially after the artificial intelligence revolution, easily provided digital methods for audio and written blogging (Saad & Issa, 2020), 4 out of 9 of the interviewees in this report still believe that the role of the human narrator cannot be fully compensated for by the machine in JJ.

According to Yousuf Al-Junaidy, "when telling the investigative story, the journalist undertakes the tasks of text structuring, template processing, scene directing (forward and backward), and diction tone controlling”. Al-Junaidy elaborated by saying that "the text is often read by the voice of the journalist himself, which requires beforehand script reading and storytelling preparing, in addition to cognitive ability possession reflected in careful examination of data in detail”.

Khaled Ma’ali asserted that “the producer of the investigative report can use a robot, an audio recorder, or even a digital typewriter, but all of them cannot prepare a narrative text that matches each word spoken with the way it is said and the appropriate audio-visual effects that surround it”. Ma’ali considered that this is exactly “the role of the human narrator, who has developed since the basics of the art of storytelling, passing through the narration of journalistic material, all the way to JJ in the digital age”. Mounira Hjajaoui said that one must not forget that “the method of presenting the material to the public is an essential and crucial element in evaluating the investigative work by the receptive audience, and here comes the role of the human skill in producing a persuasive discourse to the audience of JJ”.

For Zahir Bey Oglu, he argues from a stylistic point of view that even when technology intervenes in the various joints of the investigative report’s production process, the human footprint cannot be neglected in determining many factors responsible for the success or failure of the investigative work. He said: “I believe that the role of the narrator is a pivotal role in the investigative work, because the investigative report is a story, and in every story, there must be a narrator with a narrative style, and this style has a major role in making the investigative novel attractive or boring”.

The advancement of communication technology has changed many things in the profession of journalism, which, even though it is primarily concerned with conveying information to the public, is still based on storytelling. This is because journalists play an important role in narrating stories to the public and because communication technology has provided a public platform for journalists to promote their professions, news businesses and identities (Eldridge II, 2019).

Overall, digital technology has provided a range of advanced tools to automate journalistic stories, including Sudowrite, Jasper, Plot Factory, WriteSonic, Scalene, Copy A, Rytr, Shortly A, Novel A, and InferKit (McFarland, 2023). However, the automated textual products of these tools do not spare the reader from aesthetic and stylistic touches that distinguish one journalist from the other in reports that require humanizing the journalistic story and dealing with it from emotional angles, such as features or human interest stories related to suffering from difficult diseases and individuals suffering from conflicts and wars (Ali, 2021).

For text automation, it is suitable for indicative news such as instructions for dealing with natural disasters and weather damage and even informative reports such as financial reports and stock market movement reports. This means that automation is of great help to journalism, but it is not a standalone solution (Spagnuolo, 2020).

Thus, using technology to produce narrative texts has several strengths and weaknesses. The advantages of digitally generated texts are summarized by Hetler (2023) as follows: the efficiency and speed scalability of content creation and approaching recipients who speak different languages, cost-effectiveness, and building the reputation of the writer. The disadvantages include quality concerns, potential plagiarism, algorithms devaluing content, lack of creativity and customization, poor ability to generate new ideas, and the continued need for human editing. Moreover, the downside of relying heavily on automation to generate stories is that the produced news material appears unnatural. Automation-generated content also lacks comprehensiveness; sharing projects constantly requires clarification and examples and does not show the flow of human-written articles. In addition, heavy reliance on automation-based journalism could lead to significant unemployment among journalists (Spagnuolo, 2020). It can also contribute to making decisions based on false and incorrect data and to eliminating privacy and individual differences among journalists (Aldalkamoni, 2023). Figure 4 illustrates the role of journalists as narrators in investigative reporting.
3.4. The Planners of Investigations

Many studies consider planning to be one of the essential elements of investigative reporting (Forbes, 2005; Charles, 2018). Some 3 of the 9 respondents stated that planning investigative journalistic material is an essential part of the investigative journalist’s tasks and responsibilities that cannot be compensated by communication technology. The impact of new media technology on the planning process of investigative journalism can be understood by realizing that digital technology affects journalism at three main levels. The first is industry dynamics and data generation. The second is the provision of skills needed to maintain practices necessary for the media to survive and even thrive in the new digital environment. The third is developing traditional media (Franco, 2009). The study concluded that investigative journalism has increasingly taken advantage of the power of digital technology to raise the standards of journalism in general. One benefit is the variety of ways in which digital technology is used in investigative journalism, ranging from simple distribution of textual content to compiling complex databases and creating graphics that citizens and other journalists can understand and use.

Providing the planner of investigative journalism with these foundations and understandings is crucial because it contains accurate and detailed information and metadata that always opens new horizons for innovation in the field of journalism to professionals with distinguished skills (Hahn & Stalph, 2018).

The planning process of an investigative report begins with asking questions according to Adel Abdulmoghni, who claimed that an investigative journalist must obtain answers to a set of questions related to the documents or knowledge he obtained by HR before he would consider them as certified evidence. This is one of the forms of examination and investigation including: Does the human resource who disclosed the document have an interest in publishing it? Is he/she a responsible party? And does he have experience in the subject covered by the investigation? Abdulmoghni pointed out that answering these questions does not eliminate the need to examine the documents by experts and specialists and to follow tactics such as comparing information between more than one source to ensure their conformity and dividing the sources into primary and secondary sources as well as open and closed sources. Therefore, Abdulmoghni believes that “reliable human sources are the most important reasons for the success of the investigative report and that the investigative journalist must preserve his sources and not reveal them to any party; and he must work continuously to renew, update and expand the list of sources she/he owns”.

Wasef al-Qadah suggested that “investigative work is based primarily on an idea and does not turn into work with a systematic plan that takes into account all the circumstances changing from one moment to another”. He added by saying that “what was prohibited yesterday becomes permitted today and vice versa”. He considers that “planning how to manage the investigative work needs flexibility in human calculations more than digital programming that deals with data with the logic of algorithms”. He concluded that relying on digitization in planning investigations "may produce a lot of detailed information, but it does not lead to integrated and high-quality investigative work”.

A wide variety of characteristics are usually attached to the planning process in general, such as continuity, organization, and productivity, which gives planning many definitions according to various schools of thought. One definition of the process of planning reads “the tool which people and organizations use to manage their relationships with the future” (Victoria, 2019).

Anas Radi explained the role of the journalist as a planner for the investigative activity, saying that “If the investigative work is basically based on an idea, then the one who chooses the idea is the human being, and the one who creates interest is the human being, whether his motives for that are personal or related to his work or even to the institution itself. He suggested that planning investigative work must be based on the motive of carrying out the work, and "it is a motive that is often governed
by a changing agenda in accordance with the interests identified by the stakeholder.” Radi concluded that “successful investigative work is a result of a plan made by the human journalist”.

The planner of any investigative report today has to realize that new media technology has facilitated the electronic collection of journalistic texts, developed journalistic editing through the use of computers in newsrooms, facilitated current communication between editorial departments on the one hand and journalists and correspondents on the other hand, expanded the use of databases, facilitated the process of storing and retrieving materials, and increased the responsibility of each journalist for the content he provided (Abu Ras, 2011). Information technology has made the planning process for investigative journalism more aware of the size of information sources, data collection mechanisms, the method of communication with sources, the available data process technologies, and the best special styles and templates for data presentation. Figure 5 represents the role of journalists as planners in investigative reporting at the personal and institutional levels.

![Figure 5 The role of journalists as planners in investigative reporting.](image)

### 3.5. Data analysts

The importance of data journalism has increased in direct proportion to the continued development of digital communication technology, and more journalists have become dependent on these data as sources of information in what is known today as data journalism. However, much controversy remains about how to address these data to raise the level of reliability (Kalatzi et al., 2018). Thus, three out of nine of the respondents believe that the human role of journalists is still significant in analyzing data and information offered by digital open sources of media investigations.

Software programs offer a range of creative solutions for managing, digitizing and analyzing press interviews. Some of these programs are commonly used on smart mobile devices and computers such as Voice Memo, Anchor, and Google Voice and paid applications such as Ringr and Report-IT. There are other free and professional applications, such as Ferrite Recording Studio, Rev Call, and Tape A Call (Radcliffe, 2020). These applications are fast, accurate, easy to operate, remotely accessible, multilingual, available free or at affordable prices, able to process a wide variety of file formats, including Word, video, and audio files, and have the ability to process links, in addition to so many other features and characteristics that make these applications worthy to journalists who work on analyzing interviews.

The greatest value of most of these applications lies in the fact that they convert the audio material collected in journalistic interviews into written material; that is, they perform the process of transcribing collected data, which in most scenarios is the first stage of qualitative analysis of data. However, the role of technology in analyzing interviews is not limited to the process of transcription. There are programs such as Qualitative Media Analyzer, which is a computer program for analyzing interviews and notes. In this program, audio, digital or visual materials are stored with an enormous capacity. It is characterized by exempting the analyst from copying the material to save time. It is a very fast program that can organize data easily and does not require high technical skills by the user. The program can be used to analyze 300 interviews up to 18 hours.
Each interview can include one person or a group of people, as the program encodes the data in building an analysis tree of logical information (Negm, 2022).

In this context, Adel Abdulmoghni opines that the importance of sources in general, including open sources, lies in the fact that they provide information to journalists, arguing that "distinguishing between correct and wrong information and judging its plausibility requires a conscious analysis of its content". Abdulmoghni also believes that the content analysis process is deeply related to the journalist's awareness of the sequence and accuracy of information. He proposed that "many open sources present misleading data and are not suitable to be presented in the context of a journalistic process". He suggested that "the role of the human journalist in analyzing information will remain superior to that of the machine, and technology will not replace the human being in the analysis process".

Aseel Saraih acknowledged that "in no way can the human source be dispensed with as an analyst of information," because "investigative journalism is based on in-depth interpretation and reading between the lines". He added, "These are cognitive processes that yet, I think, require human effort more than relying on digital capabilities".

Zahir Bey Oglu also believes that "human touches are indispensable in the world of media". He said, "A qualitative material contains a very large and very important human aspect, whereas the reliance on technology has almost increased by multiple times recently". However, he argued that this in itself is subject to human employment and human analysis of information, especially when there is a need to access important and accurate information that is not previously known to the public. He demonstrated that access to this information "requires intelligence effort and human investigation operations, even if technology is employed as tools, in which the human role is indispensable in the process of analyzing the information that is collected". Figure 6 illustrates the role of journalists as data analyzers in investigative reporting.

![Figure 6](https://www.malque.pub/ojs/index.php/msj)

5. Conclusions

In conclusion, the importance of the human factor lies in the fact that it is the human who determines the right motive behind carrying out investigative activities, whether self-motivated, institutionally, or regionally motivated. It is also the human factor that determines the level of utilization of the capabilities provided by technology to achieve investigative work for the interest of the public. Therefore, it can be claimed that even though the world has greatly benefited from the development of technology tools in the field of media in general, including the field of IJ, the human factor is still an influential and decisive factor. This is because it is the foundation of the institution's vision and its starting point for addressing issues that require investigative research, while the technical factor remains an auxiliary factor in improving work.

The study showed that despite the great development in communication and information technology, human effort still plays the most important role in expanding the horizons of investigative work, eliciting ideas, and conclusions by dealing with information with the cognitive powers of the investigator. Ergo, promoting the human role of journalists in investigative reporting requires improving journalists' ability to use technological tools through continuous training on the use of these tools in the field of expanding the entrances to search for information and reducing the risks arising from the investigative work by understanding and adhering to the ethics of this work. Moreover, proper planning of investigative work is part of the
journalists’ tasks. The journalists’ possession of relationship networks, news verification skills, and access to investigative work platforms together contribute to creating highly qualified journalists whose roles in IJ are difficult to replace by technology.

This paper presents several important recommendations related to preserving and developing the human role in IJs. The most important of these recommendations are the training of journalists, focusing on young groups, opening the door to paid experimental work, allocating tracks for investigative work in press institutions, and intensifying competitions and awards related to IJ.

Ethical considerations

The study was conducted in accordance with the code of research ethics in the University of Malaya. Based on the ethical guidelines for research involving human participants, all informants gave their informed consent for participation in this study.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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