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Data journalism and its role in promoting transparency in public affairs

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Abstract :

Data journalism is an essential tool in enhancing transparency and accountability by transforming big and complex data into understandable stories that reveal hidden truths and monitor the performance of governments and institutions. This research aims to study the role of data journalism in establishing transparency in public issues in light of the accelerating digital transformation, revealing its effective working mechanisms and highlighting the impact of data journalism on public awareness and public decision-making. It has been concluded that data journalism contributes effectively to supporting transparency and accountability by analyzing open data and transforming it into simplified journalistic content that is easy for the public to understand. It enhances the supervisory role of the media. It helps uncover shortcomings and flaws in public policies.

Keywords: data journalism; transparency; accountability.

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1. Introduction

In light of the rapid digital transformation and the increasing reliance on data in managing public affairs, data journalism has emerged as one of the most important forms of contemporary journalistic work, due to its ability to analyze large volumes of information and translate it into content that the public can understand and interpret. Public issues are no longer understood through statements and speeches alone. Still, rather numbers, indicators and statistics have become a crucial element in revealing the reality of public policies, measuring the efficiency of institutions, and tracking public spending Monitoring manifestations of defect or corruption Data journalism contributes to enhancing transparency by making documented information available, linking it to its social and economic context, and presenting it using visual and analytical methods that facilitate citizens' comprehension and verification. It also plays an effective oversight role, supporting accountability and limiting the monopoly of knowledge by giving the public access to facts rather than being satisfied with ready-made narratives. However, the effectiveness of this type of journalism is linked to the accuracy of the data, the integrity of its analysis, and the professionalism of its use. This makes studying the role of data journalism in enhancing transparency in public issues a scientific necessity to understand its true impact on societal awareness and public decision-making.

2. The research problem:

Digital data is increasingly being relied upon to address public issues, while transparency remains a major challenge in many societies. Transparency is a concept built on clarity and openness in the exchange of information and decision-making, and is one of the fundamental pillars of good governance and accountability. This concept originated centuries ago in both political and economic contexts, and has evolved significantly with the Internet revolution. Transparency aims to combat corruption, enhance public trust, and improve the quality of policies by engaging citizens and enabling them to monitor public performance. This is particularly true with regard to the availability of government information and the ability to analyze and understand it by the public. Despite the emergence of data journalism as a modern tool capable of uncovering facts, analyzing public policies, and monitoring government performance, its use still faces challenges related to data accuracy, the credibility of sources, and the level of professional qualifications of journalists In addition to the limited societal awareness of the mechanisms for reading and verifying data, the research problem

is determined by the question of the extent to which data journalism actually contributes to enhancing transparency in public issues, and the limits and importance of this role. Explaining the nature of the relationship between this journalistic style and the level of transparency and accountability in public issues.

3. Research Significance

The significance of this study stems from its focus on one of the modern journalistic forms that has become highly influential in shaping public awareness and constructing public opinion, namely, data journalism. Its scholarly importance lies in its contribution to enriching Arab media studies, which remain relatively limited in scope.

From a practical perspective, the study highlights the role of data journalism in promoting transparency and accountability, and in empowering audiences to access verified information on public issues rather than relying solely on traditional media discourse. Furthermore, the research provides valuable insights for journalists and media institutions into the professional mechanisms of data use, thereby helping strengthen trust between the media and its audiences.

4. Controlling study concepts:

1- Definition of data journalism:

The term data journalism continues to generate controversy among journalists, with some arguing that it cannot be defined as journalism, while others claim that it is the beginning of a new era for journalism. There are many terms to describe it, such as data journalism, data driven journalism, database journalism, computer journalism, or visual presentation Accordingly, Simon Rogers, data editor at The Guardian, defines data journalism as having a wide range of methods, from visualization to long articles, and the main thing they have in common is that they are based on statistics, meaning they must aim to get a story from that. (Wehbe, 2023)

Data journalism is a new or specialized field in journalism that focuses on the increasing importance of digital data and infographics in producing and disseminating news in the digital age. This field shows how content creators (such as journalists) are increasingly collaborating with experts from other sectors, such as graphic designers, STEM fields, and statistical researchers. Data journalism represents a mix of talent from diverse fields, employed to make data easier to understand and more visually appealing to readers. (Thibodeaux, 2011, October 6)

It is also known as preparing newspaper stories by employing large sets of data using search and coding tools, statistics and graphs to extract information and numbers from between the folds of various databases, meaning that it transforms a large amount of information that is not clear into newspaper stories that are easy for the reader to understand and are not limited to the text only, but are often displayed in an attractive visual perception in cooperation between the newspaper, developers and designers. (Saed Saed, 2021)

Data journalism is a new way of using open data, which is digital data drawn from public and private sources, and available under open licenses that enable anyone to access it without any political, economic or legal restrictions, and users of open data can print, copy, share and use it however they want, provided that the source is indicated to preserve Its ownership, legitimacy and accuracy, and of course, this type of data has helped journalists write news reports based on facts. (Kalatzi, 2018)

Data journalism is a new, correct form born out of the digital environment and its characteristics and qualities. It combines journalism as a science, statistical sciences, and visual presentation to accurately access information and ensure its dissemination with complete transparency and credibility as a new means of oversight that supports good governance and democratic methods in societies.

2- Definition of transparency:

Transparency International defines it as a characteristic that distinguishes governments, companies, organizations, and individuals, based on the principle of openness and disclosure of information, including rules, plans, procedures, and work mechanisms. The United Nations Crime Office confirms that there is a consensus that transparency means making information related to the decision-making process available to the public, which enhances community oversight and reduces manifestations of corruption. In a broader sense, it indicates

Complete clarity in making decisions, drawing up plans, and presenting them to the authorities concerned with monitoring the government's performance on behalf of the people, and subjecting administrative practices to accountability and continuous monitoring. (Al-Rashidi, 2007)

It also means displaying and counting everything related to the economic, political, social, technical, and other movements of the state. There are some limited exceptions that are subject to complete and non-absolute confidentiality

due to the subject being related to the national security of the state, such as defense and security information, as well as alliances and their details. Transparency plays a major role in the process of forming the state's databases and statistics. Transparency also facilitates the application of the principle of accountability and makes it easier and more convenient to apply (Jumaa, 2019)

Transparency, then, is the contribution of data journalism in providing information and data related to decisions to everyone without ambiguity, and it is considered one of the most important pillars of good governance, as it is a means of enhancing trust, fighting corruption, and enabling accountability through freedom to circulate, obtain, and disseminate information in society.

3- Definition of accountability:

It is defined in the United Nations program as asking officials to provide the necessary clarifications to stakeholders about how to use their powers and discharge their duties, to take into account the criticism directed at them, to meet the requirements required of them, and to accept some responsibility for failure, incompetence, or deception and fraud. (Haroun Boualfoul, June 2017)

Accountability, then, is the accountability of rulers and officials using the most important means, including the media, the most important of which is data journalism, by disseminating information in a digital manner subject to credibility, research, accuracy, and speed in procedures to ensure integrity and transparency, eliminate administrative corruption, achieve the public good, and accomplish duties to the fullest extent, efficiently, and with high effectiveness. We find that accountability and transparency are two basic components of good governance, which represent a prerequisite for achieving development, and their combined presence contributes to achieving a just and equitable societal system.

5. The emergence and development of data journalism:

Computer-assisted reporting began to appear in the West in the 1960s. Where journalists began using computers to analyze data, the Freedom of Information Act (FOIA), which came into effect in 1967, is an example of this, as it requires federal agencies to make data available to the public, which is useful for journalists in newsrooms, but in Britain, the Freedom of Information Act did not enter into force until 2005. Many media organizations and news agencies around the world then sought to urge government organizations to abandon secrecy and increase transparency in the information they shared. The Freedom of Information Act is believed to be the primary reason behind the flourishing of data

journalism. At the turn of the century, open-source journalism began to loom as a new way for journalists to work. The Internet also represented a new way for them to work, enabling the building of a knowledge society through the collection and sharing of information (Lesage, 2014)

In this case, the governments of the United States and the United Kingdom have begun efforts to make administrative information publicly available, and the governments of Canada and Australia are moving quickly in this regard. Sites such as www.data.gov.uk, and most researchers consider the Data blog project of the British newspaper The Guardian in 2009 to be one of the most prominent experiments in the world, as this news institution has been able to address many journalistic topics by relying on huge news databases It was presented interactively, and among the topics addressed was the media treatment of the analysis of British parliamentarians' expenditures across more than 450,000 documents. However, the newspaper pointed out that its first attempts at data-driven journalism were in 1821, and it presented data tables specific to the Manchester Foundation, which included the number of registered students, the average annual expenditure on each student's education, and the number of students benefiting from free education. (Saed Saed, 2021)

The publication of datasets extracted from classified documents by WikiLeaks marked the beginning of modern, large-scale data journalism, beginning with the acquisition of records related to the Afghan and Iraqi wars and the US embassy since 2010, prompting many major news organizations around the world to engage in data journalism. (Uskali, Models and streams of data journalism, 2015)

The idea of data journalism is based on using general information and demographic data to produce a news story. For example, a writer might use graphs to display official crime statistics from the relevant authorities instead of tables or abstract numbers. This means transforming complex ideas, statistics, and information into easy-to-understand images and graphs. Another example of this is an interactive map that shows regions or countries with high rates of violence. Similarly, Data on unemployment, extreme poverty, and other issues can be used to suggest better policies or provide expert opinions rather than using traditional news methods. (Skowronski, 2013, April 2)

The term "data journalism" or "data-driven journalism" has become very popular in the news world since then, gaining widespread popularity in just five years. Many newspapers, news agencies, and newsrooms have wanted to expand

their work in this new style, alongside their regular journalistic work. In the United States, many newspapers have grown in this field, such as the New York Times and the Chicago Tribune. Finland's first data news office opened in the summer of 2012, known as Helsinki Sanomat. The Finnish Television and Radio Corporation (YVB) opened in 2013. Before that, Finnish journalists worked independently. (Uskali, Models and streams of data journalism, 2015)

Data journalism has become increasingly popular, with more than half of American and European media organizations now hiring a single data journalist to present their news. There are now more than 200 data journalism courses taught in journalism schools at universities around the world. These programs are designed to prepare journalists to tackle the next wave of analytical journalism based on a culture of accountability. (Saed Saed, 2021)

6. The importance of data journalism:

Data has been an essential part of newsrooms since its inception. However, with the abundance of data, its comprehension has become more important than ever. Data processing involves two stages:

• Filter and evaluate data to find a news story amid a flood of information.

• Analyze data and present the details and conclusions of the article uniquely and appealingly to the audience. (Gray, 2012)

Data journalism relies on three basic elements:

- Big data: which translates the human and aesthetic aspects of data.

- Open data: Free access to data is evidence of transparency in the conduct of public affairs and good governance.

- Crowdsourcing: Where the scope is opened for the contributions of the public users and their participation in data processing (Rabeh, pp. 309-311).

The emergence of new software and infrastructure over the past ten years has made it easier for news organizations to digitize a wide range of materials (such as printed newspapers, books, and photos). Computer engineering, computing science, and statistics have contributed to the emergence of these technologies, making the world more digital. This means that documents can be converted into data, and this process is very similar to the growth of digital platforms that collect a wealth of information about online behavior. As a result,

news organizations may now obtain more digital documents and data processing tools from the "data science" stakeholder group, which is a combination of computational biology and demography.

Data journalism is not a substitute for traditional journalism, but it is an addition to it. It serves two important purposes for news agencies: it works to create unique news materials that are far removed from the traditional method, and it also helps journalism perform its role as one of the tools of popular oversight of government policies.

7. Stages of Work in Data Journalism

Obtaining data and writing a report based on it represent only two steps in the production of quantitative news reports. The full process involves several stages, outlined as follows:

1. Data Collection

The first step in journalistic work is data collection. Data sources are diverse and include reports issued by specialized international organizations such as the World Bank, the World Health Organization (WHO), and the Food and Agriculture Organization (FAO), among others. It is essential that data be obtained directly from reliable sources, preferably in the form of open data. Various methods can be employed for this purpose, including advanced web search techniques and the conversion of documents into structured, analyzable datasets that can be effectively read and interpreted (Veglis & Brastas, 2017, p. 117).

2. Data Organization and Analysis

This stage depends largely on the source and temporal context of the data. Accurate documentation of sources and linking information to its original reference are critically important. After collection, data must be organized and analyzed. This process typically involves the use of specialized software, most notably Microsoft Excel, to standardize measurement units, remove duplicate entries, and structure the data into organized tables. Such procedures ensure clarity, consistency, and analytical reliability.

3. Data Presentation

The final stage begins with drafting and preparing the news report. There are various methods for presenting and disseminating data to audiences. For instance, raw databases may be published alongside news articles, or information may be visualized through interactive maps, static maps, animated maps, or static and dynamic infographics (Al-Madani, 2022, p. 45).

8. Characteristics of Journalists Working in Data Journalism

Data journalists must possess a set of essential skills and attributes, including the following:

1. Ability to Identify Relevant Information

The first stage of writing any news story involves selecting the topic. Journalists must then search for and gather the necessary information. Data often contains large quantities of numbers and facts; therefore, a competent journalist must be capable of extracting meaningful and relevant insights from complex datasets.

2. Data Analysis and Decision-Making Skills

A data journalist must know how to process information in a logical and coherent manner. When data are structured according to a clear analytical framework, the flow of information becomes smoother and more accurate, ultimately enhancing the credibility of the report.

3. Ability to Detect Errors in Data

Data often contains inaccuracies that may lead to erroneous conclusions if not properly identified. Therefore, strong data-filtering skills are required. Journalists should possess at least a foundational understanding of algebra and statistics in order to calculate measures such as mean, variance, range, and mode, and to interpret statistical distributions accurately.

Above all, it is crucial for the journalist to be able to transform data into a compelling narrative. Data-driven stories may take different forms, including explanatory journalism that simplifies complex datasets, as well as investigative reports that rely on data to construct meaningful and socially relevant narratives (Thibodeaux, 2011).

❖ Levels of Data Journalists

There are three recognized levels of data journalists:

- **Level One:** A writer who works with structured data and possesses basic knowledge of databases and statistics.
- **Level Two:** A journalist who has all the competencies of Level One, in addition to broader knowledge in computer science, computer-assisted reporting (CAR), and social sciences.
- **Level Three:** A journalist who combines the competencies of the first two levels and is also proficient as a data scientist with advanced programming expertise (Ibrahim, 2024).

9. The role of data journalism in enhancing transparency:

Transparency is a key element in achieving a range of political goals, including combating corruption, ensuring fair funding for election campaigns, strengthening democracy within political institutions, and reducing international conflicts. In business, transparency is a means of reducing corporate fraud, preventing organized crime or political interference, and reducing the risk of financial crises. Transparency is intended to be a means of deterring corrupt practices. When all aspects of the decision-making process are publicly visible, illegal activities are less likely to go unnoticed. Transparency also seeks to enhance inclusiveness by making information available to all, ensuring that diversity of viewpoints is taken into account, leading to more balanced and fair decisions. (Yu, 2012)

Transparency is the basis of the appropriate governance method to confirm the good management of the economy and achieve the hopes of overcoming problems. It is based above all on the rationality of the decision. A secret decision cannot be discussed, and hidden actions cannot be held accountable. Withholding information from those interested is sufficient to disrupt participation, without which it is difficult to reach sustainable solutions. The impact of transparency in preventing corruption is also evident through providing the public with the opportunity to obtain information, which is known as interactive disclosure and proactive disclosure. (Ahmed Khair, 2013)

Given the importance of transparency, we find that data journalism is one of the most important pillars and actual methods for achieving it, as the right to access information is considered one of the most important elements necessary for good governance and building an integrity system. It is a preventive strategy to confront the phenomenon of corruption. It is necessary for the citizen to be informed of the data of institutions in order to develop civil society and democracy. Information facilitates dialogue between segments of society, and openness and transparency in decision-making help maintain citizen trust. Through written and statistical data and visual presentation elements that support news stories, we achieve publicity, clarity, disclosure, credibility, empowerment, and legality, all of which are among the most important elements in building transparency. (Al-Sakarna, 2011).

Data journalism plays an important role, including enhancing the transparency of journalists themselves, as readers can now return to the original databases on which the stories were built to verify and confirm their veracity. The

main goal of the reported data is to provide people with news about important daily topics, which helps them understand them better. Therefore, journalists need to spend a long time studying the data and obtaining the appropriate tools to analyze it and select the most interesting aspects. Presenting it in a way that helps people see all sides of the problem and understand what's going on around them. Some believe that data journalism combines the numerical and the verbal by looking for anomalies and exploring new trends. The importance of these trends is often not limited to statistics alone, but also helps us understand and simplify the complex world we live in (Gray, 2012)

The importance and functions of data journalism in supporting transparency in public issues, according to Jenning and Thompson, can be summarized as follows: (Jeninigs Briyant, Susan Thompson: Fundamentals of Media Effects. Mac Graw Hill, New York, 2002)

- Fulfilling the public's right to know: Conveying news from various sources, and conveying different opinions on internal and external issues supported by real, interactive, written, and statistical data.

-Contributing to achieving communication democracy: as an arena for the free expression of various societal issues.

-Contributing to achieving political participation: by making all information available for making decisions on various societal political issues.

-Managing free discussion in society: bringing together all forces, trends, and ideas to reach the best solutions.

- Oversight of community institutions: by detecting deviations of authority and corruption of officials, thus protecting them from corruption.

-Assistance in decision-making: It is viewed as a measure of people's reaction to societal issues before making decisions.

- Influencing public opinion trends: This is achieved by providing citizens with information about public affairs, which serves as a measure of authority to determine public opinion trends and reduces the chances of public opinion being exposed to danger and rejection.

- Monitoring contemporary events: by publishing data that contributes to individuals' daily decision-making.

Data journalism makes journalism more responsible and accountable. In democracies, authorities are increasingly willing, and sometimes even forced, to

make their records available as digital data. Gray, Bounegru & Chambers (2012) found that data journalism enables journalists to use open data to monitor government performance, track public spending, and uncover shortcomings or corruption, making public information clearly and understandably available to the public, which is the essence of transparency. (Gray, 2012)

This is due to well-established trends in public administration, particularly the "new public administration" that began in the 1980s, and in academia, there are more recent movements, such as the "open data" movement, which has pushed public authorities to make their documents available as digital data that citizens can use. Thanks to this, news organizations can more quickly gather information about a wider range of social activities, such as policy choices, carbon emissions, education, and other factors and difficulties. (Yu, 2012)

Schudson acknowledges that data journalism is not just a digital censorship authority, but much more. It is an information space for power-making. It constitutes the arena that is decided in which power relations are decided between competing political and social actors. Therefore, all bodies must publish their data clearly to achieve public good goals. It does not represent neutral media, nor is it a direct tool in the hands of authority. That is why we see that there is an integrated relationship between the media and the freedom to circulate information, in accordance with the common saying, "Since the basis of governments and people's opinion, the first goal should be to preserve that right." (Filali, 2021)

News organizations' use of data processing tools has also allowed them to help uncover scandals and suspicious relationships, and the 2010 WikiLeaks leaks, which revealed US military violations against civilians in Iraq, and current studies conducted by the International Consortium of Investigative Journalists on tax evasion, are good examples of how governments and private entities are becoming more open. (Anderson, 2013)

Data journalism has strongly embodied the term "digital media censor" by protecting the freedom of the citizen who should follow what is happening in the society in which he lives, and his right to monitor and hold his representative accountable. It is originally decided for the benefit of society, and is only a representative of it in directing it and raising the level of its political and cultural awareness, in addition to its duties in monitoring the performance of the authorities and public institutions in the state, shedding light on the work of officials in the Department of Public Affairs, In criticizing them if they make

mistakes, and in guiding them to the reform methods required by the public interest, there is no doubt that this continuous oversight is a very important guarantee for individuals against the abuse of power and against bureaucracy that hinders the development of society. (Al-Falahi, 2017)

Data journalism enhances transparency on public issues by transforming raw government and institutional data into understandable and accountable knowledge. Instead of being satisfied with official statements, data journalism relies on analyzing public records, statistics, and digital documents to uncover what is behind political and administrative discourse. The Lewis and Westlund study (2015) showed that data journalism enhances transparency by linking multiple data sets, which allows for the detection of discrepancies between announced policies and actual results on the ground, especially on public issues such as health, education, environment, and social justice (Lewis, 2015)

Data journalism is basically linked to the cognitive model inspired by the fossil model, in what can be called fossil knowledge of reality resulting from the facts of events and digging into texts, news clippings and official documents, which makes it meet the citizen's need for knowledge with complete transparency, and realizing the secrets of what is happening by clarifying the truth and revealing the hidden, and with this cognitive fossil dimension of events and facts it gains its mark and effectiveness in society and brings the citizen closer to issues with complete transparency (Al-Raji M., Any role of investigative journalism in promoting democratic practice, n.d.)

In the Arab context, a study published in the Journal of Media Research entitled "Using Data Journalism in Investigative Journalism Coverage on Egyptian Websites" confirmed that the use of data in journalistic investigations contributed to raising the level of clarity and credibility, and helped the public understand public issues based on numbers and documents rather than a constructive narrative, which supports the principle of transparency and societal accountability. However, data journalism in the Arab world suffers from many difficulties, such as the lack of sufficient open sources to extract the necessary data, the difficulty and inability to access information about government agencies in many countries due to oversight and community security, and the lack of a contact person who can use data journalism effectively due to poor qualifications and training. This was supported by researcher Jihan Al-Shabini in 2018 on the reality of data journalism in 8 Arab countries (Egypt, Morocco, Jordan, Tunisia, Iraq, Syria, Lebanon, Oman), about the ignorance of a large segment of Arab

journalists about the laws of the right to obtain information, and that few journalists use qualitative programs such as Google Spreadsheets Ms Excel to analyze and sort data to produce a story supported by data. (Kamoush, 2024)

Within the framework of the relationship between data journalism and its achievement of transparency and accountability in societies, it is a relational and reciprocal relationship, as it is a product of the era of information and communication technology that accompanied the transition from the era of industry to the era of knowledge. It is necessary to ensure the accuracy, credibility, and transparency of information, as it is a decisive factor in determining the extent of the success of contemporary organizations and their ability to achieve their goals. This is what data journalism provides through data, interactive maps, and statistical results of government agencies Which requires a high degree of coordination, cooperation, accuracy, and speed in procedures, achieving the principle of equality, objectivity, justice, and bearing responsibility in performing its tasks and accomplishing its duties to the fullest extent, with high efficiency and effectiveness. Thus, data journalism does not just present information, but also deconstructs public issues, analyzes them digitally, and presents them in the form of interactive graphs and maps that facilitate understanding and give citizens a real capacity for monitoring and accountability, making it a pivotal tool for enhancing transparency in contemporary societies.

10. Conclusion

Data journalism represents a qualitative evolution in journalistic practice, contributing to the transition from simply narrating news to analyzing public issues based on documented and verifiable data. The results showed that the use of open data, charts, and interactive maps helped simplify complex issues such as corruption, public spending, poverty, health, and education, enhancing public understanding and accountability. The study also revealed that data journalism played an effective oversight role in exposing the contradiction between official discourse and actual reality, and contributed to raising the level of transparency within public institutions. The results also showed that the effectiveness of data journalism is directly linked to journalists' level of competence, the accuracy of the data used, and the clarity of its sources. The absence of analytical skills or weak professional standards may lead to misleading the public rather than raising awareness. The study confirmed that data journalism is not an alternative to traditional journalism, but rather a complementary tool that enhances its democratic role in serving the public good.

Recommendations:

The research recommends the integration of data journalism into academic curricula in media colleges, with a focus on developing journalists' statistical and technical skills. The study emphasizes the importance of expanding the availability of government data in open and usable formats, while enacting clear legislation that guarantees access to information. It also recommends that journalistic institutions adhere to professional and ethical standards when using data, particularly with regard to the accuracy of figures, the transparency of sources, and the avoidance of visual manipulation. The study also calls for enhanced collaboration between journalists, statisticians, and computer science professionals to support the production of more in-depth and impactful journalistic content on public issues.

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