

Employing Data Journalism Within the Newsrooms in Sudanese Press Institutions.**A field Study Applied to a Sample of Journalists Working for News sites.****توظيف صحافة البيانات داخل غرف الأخبار في المؤسسات الصحفية السودانية****دراسة ميدانية بالتطبيق على عينة من الصحفيين العاملين بمواقع إخبارية**

Alaa Taha Fadlallah Al-Khalifa آلاء طه فضل الله الخليفة allataha117@gmail.com	Master of Media	Gezira University-Sudan
---	-----------------	-------------------------

Received: 10/ 06/2024 Accepted:09/10/2024 Published: 31/10/2024

**

Abstract:

The current study dealt with identifying the nature of employing data journalism within newsrooms in Sudanese press institutions by applying it to Sudanese news websites. To achieve the objectives of the study, a simple random sample was taken from workers at news websites, and a questionnaire was designed that consisted of six axes. After verifying the psychometric properties of the questionnaire in terms of validity and reliability, the questionnaire was applied to the sample members. The results concluded that the concept of data journalism, from the employees' points of view within newsrooms, is low. The degree of employing data journalism within newsrooms from the point of view of their employees was moderate. The degree of repercussions achieved from employing data journalism within newsrooms in journalistic institutions, from the point of view of its employees, was moderate. The degree of contents that data journalism addresses within newsrooms in ways that were to a mild degree, and the degree of tools used in data journalism was to a high degree. Based on the results, the study came out with some recommendations, including using newsrooms due to the necessity of employing data journalism and working to benefit from it.

Keywords: journalism, data, newsrooms, media, Sudan.**المخلص**

تناولت الدراسة الحالية التعرف على طبيعة توظيف صحافة البيانات داخل غرف الأخبار في المؤسسات الصحفية السودانية بالتطبيق على مواقع الأخبار السودانية ولتحقيق أهداف الدراسة تم أخذ عينة عشوائية بسيطة من العاملين في مواقع الأخبار وتم تصميم استبانة تكونت من ست محاور ، وبعد التحقق من الخصائص السيكومترية للاستبيان من صدق وثبات، تم تطبيق الاستبيان على أفراد العينة، وقد توصلت النتائج إلى أن مفهوم صحافة البيانات من وجهة نظر العاملين داخل غرف الأخبار منخفضة، وأن درجة توظيف صحافة البيانات داخل غرف الأخبار من وجهة نظر العاملين فيها كانت بدرجة متوسطة، و أن درجة الانعكاسات المتحققة من توظيف صحافة البيانات داخل غرف الأخبار في المؤسسات الصحفية من وجهة نظر العاملين فيها كانت بدرجة متوسطة، وأن درجة المضامين التي تعالجها صحافة البيانات داخل غرف الأخبار في وسائل كانت بدرجة متوسطة، وأن درجة الأدوات المستخدمة في صحافة البيانات كانت بدرجة مرتفعة، وبناء على النتائج خرجت الدراسة ببعض التوصيات ومنها: باستخدام غرف الأخبار لضرورة توظيف صحافة البيانات بشكل أكبر والعمل على الاستفادة منها.

الكلمات المفتاحية: الصحافة، البيانات، غرف الأخبار، وسائل الإعلام، السودان.

introduction:

The press evolved from the printed form. (Newspapers, magazines, books, posters). And it turned into the world of the Internet or digital media in all its forms and types known today and still in continuous development, as the access to information and obtaining it became available to everyone, so information is no longer free for anyone, but thanks to modern technological developments there is a large flow of news, data and information, which led to a change in the patterns of journalism and a change in the method of use by the audience receiving that news.

This Developments Technology have imposed a big challenge on Newspapers, especially in style dealing with its audience, and put it in the competition circle to survive, spread and acquire the audience wide spread in all corners of the world, one of these challenges is controlling the flood of information which contains the good and the bad, the true and the false news. depending on the above, a new trend has emerged in the news industry in different Press institutions, this trend presents in collecting, numbers and information, refining and analyzing data, extracting its results and publish it by using engineering shapes and statistical maps, including important information and stories, reliable news, based on multiple sources, and able to attract followers and readers, making them able on absorption the information and consolidate it in his mind. Depending on this, the study tries to stand on the reality of data journalism, its concept and the use of its tools in local Press institutions, as the degree of its use in processing the content it provides through its programs and publishing, also through the opinions staff survey in the newsrooms of those institutions.

Study problem:

Data journalism has evolved over the past decade with the proliferation of media. Electronic modernity and social media were among the factors that contributed to the disappearance of some Newspapers, after the news became broadcast instantly. Also, the most important factor that contributed to the spread of press data in the Arabic world is the media institutions seeking to Keep up the technological development for media to attract the largest number of readers which is a new way to respond the information. It is an attempt to make money in order to ensure continuity though the market challenges. However, data journalism is not confined to electronic journalism. It even registered its existence Also in the world of audio media Visual And through tracking researcher for some news Official sites, with her belief about the important development on communication media and on the same contents, this study came to learn about one of the new developments that have entered the newsrooms news, as it contributed to improving media content, which is data journalism. Accordingly, the problem of the study revolves around answering the next question:

What is the degree of employment of data journalism within newsrooms in local press institutions? And What are the most prominent topics it addresses?

The Goals of the Study:

This study aims are to know the degree of employing data journalism within newsrooms in Press local institutions from the point of view of its employees, the following sub-objectives branch out from this goal:

- .1 Understand the concept of data journalism from the perspective of employees in the field of news journalism.
- .2 Learn how to employ data journalism within the newsroom.
- .3 Identify the implications of employing data journalism within newsrooms in Press institutions.
- .4 Identify the most prominent contents that data journalism addresses within newsrooms...
- .5 Identify the most prominent difficulties that facing data journalism within the newsroom.
- .6 Identify the future of the data Journalism.

The Importance of the study:

- The importance of the study From the huge momentum of the information and the large flow of news from the media as most notably those modern means, which came as an application of the rapid technological development that the world is witnessing it today, so it has become necessary to search for alternatives to traditional journalism, finding a new kind of Press which interested in analyzing information , numbers and the big data that comes to the media, and its interpretation For the public.
- Understand the true concept of data journalism and its importance applying it inside newsrooms by using modern visual technology tools.
- Recognition on the extent to which journalists employ modern technology in area of journalism, and how they benefit from data journalism applications in the field of news publishing.

The Study questions:

The study seeks to answer the main question: What is the degree of use of data journalism within newsrooms in journalistic institutions and what are the most prominent contents it addresses? The following questions branch out next questions:

- What is the degree of data journalism employment within newsrooms?
- What are the most prominent tools used in data journalism within newsrooms?
- What are the contents that data journalism addresses within newsrooms?

Employing Data Journalism Within the Newsrooms in Sudanese Press Institutions.

- What are the repercussions achieved from employing data journalism within newsrooms?
- What are the most prominent difficulties facing the use of data journalism within newsrooms?
- What is the future outlook for the success of data journalism in the future?

The Study Limits:

Spatial Limits: Sudanese press institutions.

Temporal Limits: During the months of January and February 2024.

Human Limits: Workers inside newsrooms in Sudanese press institutions.

Study Limits:

The generalization of the results of this study is determined by the following:

*Indications of the validity and reliability of the sample members' responses to the questions that were designed for the purposes of this study.

*The seriousness of the respondents in answering the study questions as they were serious.

The Definition of the terms:

Data journalism: It is a logical development of our journalistic practice of tracking research, collecting data, and narrating it in journalistic stories, and it relies on the use of statistics and graphs.

Data journalism is a comprehensive term that includes a growing set of tools and techniques for the purpose of providing information and analysis that helps in writing innovative journalistic reports and news materials.

From the point of view of journalists, data journalism represents an overlapping set of skills used in different fields to display data in a simplified manner in an attractive graphic format for the readership.

The researcher defines it as: It is a new type of journalism, based on collecting data, interpreting it, analyzing it, editing it, and publishing (displaying) its results using visual tools, and it is used by local media.

Newsrooms: It is the place or office where news is prepared for publication.

The researcher defines it as: The editorial rooms in journalistic institutions.

Employment: is the use of available means, energies and expertise at the disposal of the individual or institution.

The researcher defines it as: the level of practice and use of data journalism in the process of producing news within the newsrooms of newspaper institutions.

News institutions: all entities that provide services to the public in all fields, whether economic, political or social, such as national newspapers.

The Study Methodology:

The study relied on the media survey method, which is part of the descriptive method, and is considered an organized scientific effort to obtain data, information and descriptions about the phenomenon or group of phenomena that are the subject of the research, from the vocabulary that makes up the research community and for a period of time sufficient for the study, with the aim of forming a basic base of data and information required in a specific specialty or determining the efficiency of existing conditions by comparing the information obtained in drawing up policies and plans on the basis of insight. The study used, within the framework of the media survey method, a survey of the opinions of journalists working in newsrooms to identify the extent of their reliance on data journalism in producing journalistic content.

The Previous studies:

Hussein's study (2020) entitled "Setting technical standards and governing rules for the designs of emerging infographic journalism and the extent of its application through Arab and Egyptian electronic newspaper websites." The study aimed to identify the art of infographic journalism as a new journalistic art in the world of electronic journalism, clarify the reasons that led to the emergence of infographic journalism and its value in the world of electronic journalism, and study the stages that the makers of the art of infographic journalism go through to produce their design outputs, in addition to setting the technical and design rules for the industry of infographic journalism that must be followed by those in charge of Arab electronic newspaper websites. The study used the descriptive analytical approach by studying examples of actual models of forms of journalistic infographics implemented in Arab electronic newspaper websites and identifying their positives and negatives. The study reached a number of results, including that infographic journalism imposes its presence in the world of information communication via websites and social networking programs, and its space is increasing day after day, and that the factors for the success, credibility and modernity of websites include allocating space for infographic journalism and paying attention to its implementation by specialists in this type of journalism. Infographic journalism also requires a separate work team from the editorial work team of websites for more focus and specialization for this type of journalism, which requires a specialized team with distinguished talents in the field of graphic design, information analysis, fact-finding, statistics and data collection. The research recommended more attention and joint cooperation between those in charge of the educational system in the faculties of fine and applied arts and faculties of media to develop a unified curriculum and a dedicated course and give

space to this specialized media art that represents a new link between the field of art and graphic design and the field of journalism and media in the age of multimedia and modern technology.

A study entitled Data Journalism and its Role in Publishing Official Statistics

The study aimed to highlight the importance of using official statistics as sources for data journalism. The study used the descriptive analytical approach to demonstrate the importance of using official statistics in data journalism. The study concluded that a journalist who deals with data must have the skill of reading data and familiarity with mathematics and statistics based on description and inference.

The study of Abdel Wahab and Abdel Razek entitled “**The Future of Data Journalism in Egypt**” aimed to identify the future of data journalism in Egypt during the next two decades (2017-2017). The study group consisted of practicing experts working in press institutions in Egypt, as well as academics specialized in journalism (journalism professors at Egyptian universities), and their number reached 20. The study tools were represented in both: a scale form, and an interview with experts from journalists and academics. The study dealt with the approach of anticipating the future, and its application to the media journalism industry. The study revealed the most important means that have a role in developing journalism currently and in the future, including network journalism, as well as data analysis and its use as data journalism, graphics and illustrations, and visual journalism. The results of the study reached three future scenarios, represented in: First: the stability scenario or the reference scenario. Second: the creativity scenario or the optimistic scenario. Third: the pessimistic scenario or the hesitant scenario. The results also showed that the experts agreed that there are many factors that may lead to the weakness of data journalism in Egyptian press institutions, including the lack of a communicator capable of using and employing data journalism or infographics, and the traditionalism and lack of innovation in presenting news materials, while the motives for using data journalism (infographics) in newspapers in the future are represented in many motives, including confronting the decline in newspaper readership, and trying to increase the profits of press institutions after increasing distribution.

The benefit of the previous studies

Previous studies were used to formulate the research problem and its importance, and to choose the tools and methods that suit this study, in addition to monitoring the scarcity of previous studies that address the study of employing data journalism in producing news content. The results of previous studies were also used when analyzing the results of his study.

What distinguishes the current study from previous studies

This study is distinguished from previous studies in that it studies a new topic, which is data journalism, and how to employ it within newsrooms, while previous studies addressed other technological elements such as mobile journalism, infographics, and their uses in Arab news websites. This study also used the analytical questions method with sample members, while most previous studies used the content analysis method as a tool to collect data on the uses of modern technology in the media.

The current study is similar to previous studies in that it is interested in infographics and data journalism and uses the survey method in most of them, but it differs in that it focuses on employing data journalism within newsrooms in journalistic institutions.

The first section:

Theoretical framework:

First: The definition of data journalism and its development:

Data journalism is a comprehensive term that includes an increasing set of tools and techniques for the purpose of providing information and analyses that help in writing innovative news reports and news materials.

Data journalism can be defined as specialized journalism or a new specialization in journalism to highlight the increasing role of digital and graphic data in the production and dissemination of information in the era of the digital revolution. It reflects the increasing interaction between content producers (journalists) and specialists in a number of other fields such as artistic design, computer science and statistics.

From the perspective of journalists, data journalism represents an overlapping set of skills used in different fields to present data in a simplified manner in a graphic format that is attractive to the readership. Although computer-assisted reporting began to appear in the West since the 1960s, the strong relationship between journalists and computer-based technology led to the development and growth of a broader concept of data journalism. Techniques for using computers in journalism to analyze data began to be developed in the late 1960s and early 1970s. For example, the United States has benefited from the Freedom of Information Act (FOIA) since 1967, which obligated federal agencies to release data to the public; Which allowed journalists to benefit from it in newsrooms, at a time when the Freedom of Information Act did not come into effect in the United Kingdom until 2005. A number of newspapers and news agencies in most countries of the world have campaigned to force

governments to open up and be transparent in providing data over the past half century, and the Freedom of Information Act is the first driver for pushing towards the growth of data journalism Uskali,2015. At the beginning of this century, what is called open-source journalism began to emerge as a potential trend for a new start in journalistic practices. The Internet also represented a new journalistic medium that provided the opportunity to create a knowledge society based on collecting and publishing data.

Data journalism can be said to be a development of the emergence and spread of open data, which is digital data available from public or private sources, and published with open licenses that guarantee access to it without political, financial or legal restrictions. The user of open data enjoys absolute freedom to reprint, copy, distribute and employ the data, while committing to mentioning the source of the data to preserve the ownership of the source of the information, its credibility and the validity of its source. Journalists have of course benefited from this type of data to produce news reports based on data. In this context, the governments of the United States and the United Kingdom have begun implementing projects to make government data available through websites such as: www.data.gov, www.data.gov.uk. The governments of Canada and Australia are also making rapid strides in this direction. (Tanja, 2011) The British Guardian newspaper launched in March 2009 what it called a data blog.

The first major news organization to adopt this concept, however, the name of the first person to use this term is shrouded in mystery. Although the newspaper mentioned that its first attempt in the field of data journalism dates back to 1821; it presented data tables for Manchester and Saltor schools that included the number of students in schools and the average annual spending on educating students, and the data showed the number of students who received free education and the number of poor children, with a comprehensive analysis of the data. The emergence of data sets derived from the secret documents leaked by WikiLeaks represented the starting point for contemporary data journalism activities on a large scale, which began with the leaking of Afghan and Iraqi war logs and US embassy correspondence since 2010, which prompted many prominent news agencies, around the world, to enter the field of data journalism. Since then, the term data journalism or data-driven journalism has spread widely in journalistic circles, and in just five years it has gained wide popularity, and many newspapers, news agencies and newsrooms have been keen to expand the scope of work within this new type alongside traditional journalistic methods, In the United States, many newspapers emerged that expanded in this field, such as the New York Times and the Chicago Tribune. In Finland, the first data journalism news bureau was established in the summer of 2012 (Helsinki Sanomat), followed by the Finnish Broadcasting Corporation in 2013. These bureaus were preceded

by individual attempts by individual Finnish journalists. Data journalism literature has focused largely on topics such as conflicts in Afghanistan and Iraq, tax havens abroad, the Olympic Games, crime in large cities, pollution in some areas, and other topics that data journalism has focused on. Since then, many awards have been recorded in data journalism. The concept of data journalism can be simplified as using data and public statistics to write a news report. An example of this is when a journalist uses official crime statistics published by the competent authorities in the country and instead of presenting them in the form of tables or abstract numbers, he uses an infographic, which means converting complex information, data and concepts into images and charts that can be clearly understood and absorbed, or an interactive map to illustrate areas or provinces with high crime rates, as well as the situation to display poverty or unemployment data, etc. and moves on to From suggesting better policies or presenting expert opinions instead of relying on traditional journalistic templates.

Second: The importance of data journalism: Since the inception of journalism until now, data has been and still is a major component of journalistic work, but data journalism has gained great importance in the age of information flow. Data journalism is not an alternative to traditional journalism, but rather an addition to it. It serves two important purposes: it works to create unique news materials away from the traditional method, and it also helps journalism perform its role as one of the tools of public oversight of government policies.

After the journalist suffered from a scarcity of information, information became abundant and flowing on the Internet thanks to the development of social media networks, which contributed to the rapid flow of data, so the journalist had to select from this information and carry out a filtering and verification process. Data journalism helps to narrate richer journalistic reports, as the journalist's task is no longer limited to collecting information and formulating a news report, but he has to process and analyze the data, taking advantage of digital technology to narrate a distinctive journalistic story. Data journalism is based on analyzing real data from specific sources mentioned by the journalist, which increases the credibility of the information included in his journalistic report. Instead of attributing the report's information to unknown sources or an informed source or a source who refused to mention his name, etc., he mentions the source of his data from an official governmental or international body such as the World Bank or the World Health Organization or the National Statistical Authority in the country or the Ministry of Finance... etc.

This gives his report accuracy and reliability, and a skeptical reader can refer to this data to verify its accuracy. Data journalism helps to explore unclear relationships between data, and helps the reader to obtain more information that is difficult for him to access or understand and extract useful

information from it. An example of this is what journalist Stephen Doig did in the field of using and analyzing data with the help of computers, who worked on analyzing data from Hurricane Andrew that hit southern Florida in 1992, and drew a map of the extent of the damage that occurred around the hurricane, and another map showing wind speed, which revealed that new homes were more susceptible to damage from the storm, which means that the state's building codes and the lack of supervision and inspection of new housing units caused the increase in the amount of damage. Doig won the prestigious Pulitzer Prize in 1993 for this report, which is a great source of inspiration for what can be achieved through data. Data journalism also contributes to strengthening the connection between the journalistic report and the individual. For example, the BBC website and the British newspaper Financial Times work on the budget in an interactive manner.

Where one can know the impact of the budget on him personally and not in general. Data journalism also addresses the problem of the inability to absorb and deal with the flow of information at the same speed and quantity as it arrives, as the information taken from the media, whether printed, visual or audio, affects citizens' choices and behavior, so data journalism is a factor that helps the individual in making his decisions. Data journalism deals with the reality of the change that has occurred in the readership; in the age of technology and high speed, the reader no longer has the time or perseverance to read an entire newspaper or a long press report that relies on verbal narration only, but many have begun to browse newspaper headlines via their mobile phones, and press reports flow to them via news applications, so data journalism emerged to keep pace with this development, and the journalistic narrative changed to pictures, drawings, interactive maps and attractive headlines.

Third: Benefiting from data journalism: Data journalism can be an individual work as well as a collective work. Some journalists are able to develop their technological skills, while others resort to collaborating with graphic designers to publish their stories or with software developers to obtain data. The style followed by the newspaper depends on its financial capacity. Instead of employing a graphic designer, a montage engineer, and others, it can suffice with a comprehensive journalist, who is the journalist capable of doing all these details on his own. Some media resort to relying on a work team consisting of a journalist, a graphic designer, and a software developer, and each individual has specific tasks that are in line with his specialty. In this case, the journalist is satisfied with searching for data, collecting it, verifying it, purifying it, analyzing it, and putting the context of the journalistic story.

The graphic designer draws the graphs on the computer and chooses the colors and symbols, while the software developer tries to develop programs that help the journalist obtain the data or the graphic designer to present a good display of the data sometimes by writing a special code. Software developers and designers are an important part of the process of finding and presenting stories and

designing how users interact with them, so the work must be collaborative and based on cooperation between all parties. Based on the above, it can be said that the tremendous development in communication methods and the data revolution and its large and complex flow have posed a major challenge in the methods of displaying and publishing data in traditional journalistic formats, and therefore the importance of data journalism has emerged in the age of digital technology, and the flow of information in light of the trend of governments around the world towards digitization and making data available has contributed to the availability of the foundation on which this type of journalism is based. Accordingly, the difference between data journalism and traditional journalism is that the journalist relies primarily on databases to create news stories that arouse public opinion. Data journalism has witnessed a clear development in recent years with its spread in the media arena, and it has even become taught in colleges and institutes of journalism around the world.

The second section:

The applied framework

The definition of the study community:

The study community is all the components of the phenomenon that the researcher wants to study. Thus, the community of this study was limited to workers in newsrooms in some Sudanese news sites who were chosen through a simple random sample.

The Study sample:

Dealing with the sampling system means choosing a specific number of individuals in the community that are representative in their characteristics and features of the group of audience members, and thus the part represents the whole. In this regard, the researcher used a random sample of all workers in Sudanese newsrooms, where the number of teachers during the study was (1134) journalists. In order to measure the concept and importance of data journalism and the extent of its impact within newsrooms. The researcher then distributed the questionnaire form to the journalists, and followed up on the study members more than once until the valid questionnaires for the study were retrieved.

The Questionnaire tool:

The researcher built and developed a questionnaire, benefiting from the literature, studies, and previous questionnaires, and consulting with experts and specialists. She formulated a set of paragraphs under it, noting that the preparation of a single questionnaire in its initial form included four dimensions. After presenting it to four arbitrators specialized in the field of journalism and publishing. After making the amendments recommended by the arbitrators, some paragraphs were

modified and formulated. The number of dimensions of the questionnaire after its final formulation reached three dimensions distributed over more than one paragraph and several fields, where each paragraph was given a weight according to a graduated scale (five-point): I strongly agree, I agree, I somewhat agree, I disagree, I don't know.

Questionnaire Test: Tests are one of the most important scientific research tools used in a large number of scientific researches, in which the researcher presents a large number of stimuli to the person being examined. The aim of these questions is to obtain a number of quantitative answers through which the researcher can judge an individual or a number of individuals in the group.

There are two types of tests, which are:

Validity test: The validity of the questionnaire means ensuring that it will measure what it was designed to measure, and validity also means that the questionnaire includes all the elements that should be included in the analysis on the one hand, and the clarity of its paragraphs and vocabulary on the other hand, so that it is understandable to everyone who uses it. The researcher verified the validity of the study tool by presenting the questionnaire in its initial form to a group of university professors specialized in media science and journalism, working at Al-Jazeera University - where they expressed their opinions and observations about the suitability of the questionnaire paragraphs, the extent to which the paragraphs belong to each field of the questionnaire, as well as the clarity of its linguistic formulations. In light of these opinions, some paragraphs were excluded and others were modified.

The Reliability test: It means the stability of the study tool (the questionnaire) and ensuring that the answer will be approximately the same if it is applied repeatedly to the same people at different times. To achieve this, the researcher distributed 3 questionnaires to three journalists.

Open questions:

The researcher designed an open question, then the researcher transcribed the respondents' answers and analyzed them to obtain a relative index of their answers.

Statistical methods:

The methods used included the following:

1/ Frequencies and percentages: to describe the study individuals, and to calculate the number of study individuals' responses to calculate their percentage.

2/ Arithmetic mean: The researcher used it to know the extent of the increase or decrease in the study sample's responses to each statement of the study variables.

3/ The Standard deviation: The researcher used it to identify the extent of deviation of the responses of the study sample members to each statement of the study variables and each of the main axes from their arithmetic mean.

It turns out that the concept of data journalism from the point of view of newsroom workers in Sudanese news sites was low, and the Euphrates ranged between low and medium, indicating the need to develop the concept of data journalism from the point of view of newsroom workers. The least paragraphs that newsroom workers need to understand include: It is easy for me to deal with data technology, effective in conveying ideas and information about activities that concern different topics, and I have the ability to attract the attention of the public to the media. This shows the need to improve the concept of data journalism in general and in these areas in particular. The concept of data journalism highlights the increasing role of digital and graphic data in the production and distribution of information in the digital age, and it reflects the increasing interaction between content producers, journalists and specialists in a number of other fields. The researcher explains the low result due to the novelty of the topic and its rapid development, so that many workers in the media and journalistic field have not kept pace with its concepts. There is also confusion about the concept of data journalism and its tools among some workers; as some of them consider the tools to be data journalism itself.

The Discussion of the results related to the second paragraph: What is the degree of employing data journalism within newsrooms from the point of view of those working in them?

It is clear that the degree of employing data journalism within newsrooms in Sudanese news sites from the point of view of those working in them was average, and the paragraphs ranged between low, medium and high degrees, which indicates the need to improve the degree of employing data journalism within newsrooms from the point of view of those working in them. The lowest paragraphs were: I excel in speed of response and publication through data journalism, the paragraph: Data journalism is useful in interacting with the public, and the paragraph: I provide participants with training skills through data journalism. The highest level was in the following paragraphs: Data journalism is characterized by brevity and lack of prolongation, data journalism covers the event comprehensively, and through data journalism it is possible to move away from skills. The researcher explains the existence of an average level of employing data journalism perhaps due to the cooperation shown by the workers with each other so that they benefit from each other's experiences and employ what each other has learned in this field, especially benefiting from programmers and designers.

The Discussion of the results related to the third paragraph: What are the repercussions achieved from employing data journalism within newsrooms in Sudanese news sites from the point of view of their employees?

It is clear that the degree of repercussions achieved from employing data journalism within newsrooms from the point of view of their employees was average, and the paragraphs ranged between low, medium and high degrees, indicating the need to improve the repercussions achieved from employing data journalism within newsrooms. The lowest level came in the following paragraphs: Data journalism makes the public part of the responsibility, data journalism demonstrates the institution's ability to confront crises, and data journalism addresses shortcomings away from journalism. While the highest level came in the following paragraphs: Data journalism is able to respect the public's mentality, data journalism reflects a journalistic story driven by accurate data, and data journalism is interested in colors, shapes, and lines. The researcher explains the average result due to the existence of an advanced information revolution, which increased the impact of data journalism in a positive way and highlighted its role in terms of speed and accuracy in publishing news, but in return it may not enable workers to keep up with the rapid successive developments and master the use of data journalism tools, which makes it have a low impact, and therefore it came with an average degree.

The Discussion of the results related to the fourth paragraph: What are the contents that data journalism addresses in newsrooms?

It is clear that the degree of contents that data journalism addresses in newsrooms was average, and the paragraphs ranged between low, medium and high, indicating the need to improve the contents that data journalism addresses in newsrooms in local media. The lowest level was in the following paragraphs: Data journalism facilitates understanding and comprehension by the reader, the paragraph Data journalism keeps pace with the information revolution, and the paragraph Data journalism explains information visually. The highest level was in the following paragraphs: Through data journalism, the guessing process can be reduced, data journalism uses shapes and graphs, and data journalism simplifies information. The researcher explains the average level of content due to the multiplicity of information, such as being multiple sports, cultural, political, social and economic information on the one hand, and on the other hand, data journalism has an effective role in collecting, selecting, analyzing, filtering and delivering information to the reader with various contents.

The discussion of the results related to the fifth paragraph: What are the most prominent difficulties facing the use of data journalism inside newsrooms from the point of view of those working in them?

It is clear from the sixth question that the degree of the most prominent difficulties facing the use of data journalism inside newsrooms from the point of view of those working in them was high, and the paragraphs ranged between low and high degrees, indicating the need to continue working to solve the difficulties facing the use of data journalism inside newsrooms in local media from the point of view of those working in them. The highest averages were in the following paragraphs: The ability to use data journalism effectively is weakened by lack of computer experience, the paragraph The lack of a library in the newspaper hinders the use of data journalism, and the paragraph The inability to retrieve negatively affects data journalism, while the lowest averages were in the following paragraphs: Among the difficulties of data journalism is the newspaper's lack of subscription to periodicals, and I suffer when using data journalism from difficulty accessing information, and the lack of credible sites affects the effectiveness of data journalism. The researcher explains the high level of difficulties in using data journalism from the perspective of workers because it requires specialists (designers and programmers) when using it within newsrooms and that they have long accumulated experience, which is not present among some workers.

The discussion of the results related to the sixth paragraph: What is the future outlook for the success of data journalism in the future from the point of view of those working in it?

It is clear from the seventh question that the degree of the future outlook for the success of data journalism in the future from the point of view of those working in it was average, and the paragraphs ranged between low, medium and high degrees, which indicates the need to continue working on paying attention to the future outlook for the success of data journalism in the future from the point of view of those working in it. The highest levels came in the following paragraphs: Data journalism can develop to integrate and integrate images, journalistic forms and multimedia within journalistic topics, so that professional designers are used in the future, and the paragraph There will be a greater ability to employ infographics later, and the paragraph There will be more interaction with the public through data journalism. The researcher explains the average future outlook for the researcher's conviction of the importance of data journalism and its role in the development of journalism in general, as well as the importance of data journalism from the point of view of those working in it and their conviction of the importance of employing it in their work, but perhaps some of the previous difficulties hinder them from working appropriately when planning to use it.

The Results

The results of the study showed that there was confusion among newsroom workers about the concept of data journalism and its tools, and that the degree of employing data journalism within newsrooms in Sudanese news websites was not at the required level. The results also indicated that some newsrooms do not have designers and programmers working side by side with journalists, but they need training on data journalism tools. Their work needs further development in the field of data journalism, and that data journalism addresses specific content, which is reflected appropriately on newsroom workers. The study found that there are many difficulties facing the use of data journalism within newsrooms. Data journalism workers suggested some suggestions, including that data journalism can be developed to integrate and integrate images, journalistic forms and multimedia within journalistic topics. Data journalism can also provide financial and technical support to the financial media departments in newspapers later. There can also be an independent team that undertakes design, which will facilitate the task, and the effectiveness of employing data journalism in newspapers can be increased later.

The Recommendations

Based on the results of the study, the researcher recommends the following:

1. Sudanese news websites should employ data journalism more and work to benefit from it within newsrooms.
2. Providing training for newsroom workers on the concept of data journalism and how to benefit from it in enhancing content.
3. Enhancing the use of data journalism by providing material and technical support to multimedia and electronic journalism departments.
4. Working on allocating an independent work team to design data newspapers, which facilitates the work of newsroom workers.
5. Inviting researchers and higher studies graduated students to conduct more studies on data journalism within newsrooms so that they can delve deeper into it and its tools.

* *

References and sources:

- Belaid Nahy, Data Journalism Handbook, issued by the Tunisian Association for E-Governance. 2019.
- Gray, J., Chambers, L., & Bounegru, L. (2012). The Data Journalism Handbook (How Journalists Can Use Data to Improve the News?). California: O'Reilly Media.
- Abu Arqoub, Omar (2119). The Model of Smart Newsrooms and the Use of Modern Communication Tools

- .01 5,) in it. Al Jazeera Media Institute.

- Al-Rumahi, Tama A. R.) 2114 (. Employing digital media in producing news programs on Jordanian television
- Unpublished master's thesis, Middle East University, Jordan.
- Hussein, Samir (1995). Studies in media research, Cairo, Dar Alam Al-Kutub.
- Hussein, Muhammad Siddiq, A study of setting technical standards and governing rules in the designs of emerging infographic journalism and the extent of their application through the websites of Arab and Egyptian electronic newspapers. Jumaa Al-Zarqa - College of Arts and Design, refereed conference research.
- Amal Khairi Amin Muhammad, Data journalism and its role in publishing official statistics, a thesis presented at the Fifth International Conference of Arab Statisticians.
- Muhammad Abd Al-Wahhab Wahba Muhammad Shafiq: The future of data journalism in Egypt during the two decades 2017-2037, Arab Journal of Media and Communication Research: Issue 19 October/December 2017.
- Lesage, Frédéric; Hackett, Robert A.;. (2014). Between Objectivity and Openness—The Mediality of Data for Journalism. Media and Communication, 2(2), pp. 42-54. Retrieved from www.cogitatiopress.com/mediaandcommunication.
- Uskali, T., & Kuutti, H. (2015). Models and streams of data journalism. The Journal of Media Innovations (2.1), 77–88.
- Al-Qarar Center for Media Studies, Monday, May 20, 2024, <https://alqarar.sa/5151>
- Mukhtar Siddiq, Scientific Research Methods, (Sudan: Dar University of the Holy Quran 2004).
- Al-Qahtani, Salem et al., Research Methods in Behavioral Sciences (Riyadh: Dar Al-Obeikan for Printing and Publishing 2000).
- Al-Assaf, Saleh Hamad, Introduction to Research in Behavioral Sciences, previous reference, p. 429.
- Rasim Muhammad Al-Jamal, Introduction to Research Methods (Cairo: Cairo University Center, 1999).