



## Knowledge and Use of Data Driven Journalism Among Media Reporters in Minna, Niger State, Nigeria

Gloria Eneh Omale<sup>1</sup>, Daniel Ofomegbe Ekhaerafo<sup>2</sup>

<sup>1</sup>Department of Information and Media Technology  
School of Information and Communication Technology (SICT)  
Federal University of Technology, Minna, Niger State, Nigeria  
e.gloria,@futminna.edu.ng

<sup>2</sup>Department of Theatre Arts and Mass Communication  
Faculty of Arts  
University of Benin (Uniben)  
Edo State Nigeria  
talk2ofomegbe@gmail.com

*Abstract—Journalism practice is gradually shifting from just the reportage of spontaneous information to data query and analysis of large data. A precursor to this development was the issue of precision journalism. However, the event of statistical software and searchable compilations of media contents in form of videos, texts and other media forms has given birth to a new form of journalism called data journalism. This paper examined Journalists in Minna knowledge of data driven journalism, their use of data journalism tools and the challenges associated with their use. Anchored on the technological determinism theory and media ecology theory, the paper used survey research method with the questionnaire as instrument to generate data from 286 Journalists who constituted members of the Nigerian Union of Journalists, Niger State Chapter. The results of the study show that many journalist lack knowledge of the form of journalism. They do not use the basic tools of data driven journalism and they are hampered by training opportunities and dearth of skills necessary to venture into this area. The paper concludes that journalists in Minna lack the basic knowledge and tools of the data driven journalists. Hence, it is not practiced in the State. The paper recommends serious training for journalists on the nuances of data driven journalism.*

**Keywords—Big data, data journalism data query.**

### I. INTRODUCTION

The new media age has thrown up a number of opportunities and challenges to journalism. While media technologies have made news gathering and dissemination possible, it has also opened a vista of opportunities for journalists to query social media users comments, assess number of users of a particular platform, get public reaction to an issue on the new media. It is also possible to get concrete and verifiable evidence on any issue of interest on the web. This is because the era of the new media is an age of big data. Big data according to Lewis [1] is a social, cultural and technological phenomenon which involves a complex amalgamation of digital abundance, emerging analytic techniques, mythology about data driven insight and growing critique about the overall influence of big data practices for democracy and society. Similarly, this suggests that big data

concerns itself with digital information storage and retrieval techniques and its implications for different aspects of social life. With the advent of the social media and citizens driven journalism, journalism tends towards fake news, unanimous sources and uncertainty. Data driven journalism is a remonstrance against fake news and unprofessional news writing. It is the practice that helps journalist with social science research skills and digital literary skills to create and analyze stories from existing issues to show trend and predict the likely impact. Bradshaw [2] conceives data driven journalism as the modern means of news processing and dissemination which has brought a new dimension to reporting where facts, figures, infographics, videographics, pictures, demographics and psychographics are creatively retrieved and processed to serve as data for effective and credible reporting.

In other words, it is possible to download files on any issue from the web and write meaningful report about them on such issues. Lechenet [3] adds that our personal lives are recorded in huge databases. The recent probe into *Data Analytics* in the United Kingdom over its manipulations of voters in the United States and Nigeria in the 2016 and 2015 general elections suggest the value of data in media reportage of issues and the sort of agenda given to an issue. With the rate at which information flows on the web, knowledge of data driven journalism ought to give the journalist an ample opportunity to go beyond episodic event into big data to unravel hidden issues that have implications for the greater number of people in the society. A journalist can only do this, when he or she has the requisite knowledge of data journalism and its application.

The use of big data in media enquiry can be traced to the pioneering work of [3] who traced his pioneering effort to the late 1960s when he laid emphasis on a new generation of Journalists that know how to find, evaluate and analyze information. It gained an appreciable level of cognizance at the dawn of the 21<sup>st</sup> Century. The basic focus is on how people use

information, mobile connectedness and use, data sharing, social media use and the new media in general. Lewitter [4]

Given the power of big data in modern journalism, one would think that journalists in Nigeria, particularly those in Minna would take advantage of it. Where they have the knowledge and skills necessary for the practice data driven journalism, the result will likely be robust journalism. This study therefore assesses Journalist in Minna Knowledge and use of data driven journalism in their day to day practice.

#### *A. Statement of the problem*

The benefit of big data to modern journalism is that it has helped in providing empirical data for robust journalism practice. As [4] observes “the digital era has also afforded researchers access to new sources of digital data in unprecedented ways. New methods of codification of experimental design, the development of systematic sampling and survey, advent of multivariate statistical analysis as well as the development of searchable compilations of media content and video recordings now offer communication researchers opportunities to work with very large datasets, have new insights for thinking about existing questions, understand trends, behaviors and actions in a way that has not been previously possible”.

From these huge benefits of the knowledge and use of big data, it is likely that journalists that apply it in practice would stand better in their reportage. Where the knowledge of data literacy is high, it is possible to analyze and compare budgets, policies and even reports from databases they have access to. On the other hand, it is not certain the level of data literacy among reporters in Minna and their use of data driven journalism tools in practice, hence, it is against this back drop that this paper sought to find out the level of knowledge and use of data driven journalism in Minna, whereby, findings from the study will be used to set further pace on how to utilize the great benefits of this relatively new area of journalism practice in other to enhance better, precise and reliable reportage.

#### *B. Objective of the Study*

The objectives of the study were to:

- Find out media reporters in Minna Knowledge of Data driven Journalism
- Ascertain their use of the various tools used in data journalism
- Find out the challenges that limit their capacity to use data driven Journalism.

## II. CONCEPTUAL OVERVIEW

### **A hint on data journalism**

Digitization of communication has given birth to a new trend in journalism called data journalism. It is a relatively new discipline based on innovation in information technology. At the heart of digital communication is the notion of big data. Big data according to [1] is a movement which has been associated with the analysis of large social networks, automated data aggregation and mining, web and mobile analytics, visualization of large datasets, sentiment analysis and computer-assisted content

analysis of very large datasets. Thus, big data is a trend in communication research which journalism has leverage on. It is from this perspective [2] defines data journalism as “using methods and digital tools to gather, filter and visualize stories based on data”. To Meredith Broussard (nd) in [5] “Data journalism is the practice of finding stories in numbers and using numbers to tell stories,”

Furthermore, there are different uses of data journalism such as algorithm, text mining, data mining, social analytics, sentiment analysis, topic modeling, viblogs, microblogs. [3] Suggested the following ways of practicing data journalism, the collection of already published information commonly called open-source intelligence, web scrapping which involves the use of different software to download information, crowd sourcing-sourcing information from people who have firsthand information about it. Creating data bases from scratch and social network analysis, which means getting the demographic and psychographic data of respondents from the social media.

By its nature, data journalism has three basic features; volume, velocity and variety. The beauty of data journalism lies in the verification of the data sources and its capacity of been reproduced by different sets of researchers. To Turo, I.U &Heikki, K [6] data journalism provides avenue for real time information processing and presentation. Data journalism provides avenues for a better understanding of societal trends. It serves as a new platform to interrogate data which hitherto where too voluminous to be analyzed. Data journalism creates avenue for data literacy and knowledge transfer. It serves to provide agenda on critical issues which where hitherto neglected.

### **Significance of data journalism for news media**

In time past when information was scarce, most of journalists’ efforts were devoted to hunting and gathering of information. Now that information is abundant, processing is more important. When journalists combine new technology with narrative skills, they can deliver context, clarity and a better understanding of the world around us. [5]. Data savvy journalists can now bridge the gap between statisticians,

Media reporters are needed more than ever today to curate, verify, analyze and synthesize the wash of data. Within this context, data journalism has profound importance for both our society and the journalism profession at large. .Data journalism according to Cinzia, D, Z, Yoann, S and Artur L [7] includes three dimensions and requires three different types of journalism skills: computer assisted reporting, news applications development and data visualization. News reporters with these skills are able to discover interesting and relevant findings by analyzing data with the help of information technology tools.

## III. LITERATURE REVIEW

Liabwuk and Pachi [8] carried out a study of Journalists in Kaduna utilization of data for data journalism practice, result from their study, showed a strong level of agreement amongst journalists on their knowledge and use of data in journalism practice. The study called for training of journalists to make for effective practice.

In another study by [5] on the art and science of data-driven journalism, he opined that just as there is a gap between available talent and the demand created by big data, there is a

data science skill gap in journalism. He maintained that rapid expanding troves of data are useless without the skills to analyze them. He opined that whatever the context, focusing too much on tech skills could exclude some of the best candidate for the job, but that, there will be need to build capacity in these areas through training, mentorship, numeracy, competition and recruiting. He concluded that this will create a good pathway to the profession.

Similarly, both studies are relevant to this paper as this study seek to know the knowledge level of media reporters in Minna about this new trend in journalism practice. The result from this study would go a long way to prepare journalist in Minna on the required skills, capacity and training to meet up with the new trend.

#### IV. THEORETICAL FRAMEWORK

This paper is anchored on the technological determinism theory and the media ecology theory. Technological determinism theory emanated from Marshall McLuhan in 1964. The basic premise of the theory is that the media are the extensions of the human body and that the media do not only alter the environment but the very message they convey. The media bring new perceptual habits and ways of doing things while their technologies create new environments. The theory states that technology, especially the media, decisively shape how individuals think, feel and act and how societies organize themselves and operate.

According to Asemah [9], the medium determines the content of communication. The medium has the power to manipulate our perceptions of our environment. As opposed to Karl Marx's theory of economic determinism where production makes changes in the history, McLuhan's theory of technological determinism says that changes in modes of communication evolved from human experience.

McLuhan examined the ways technological has shaped human society and experience and came to the conclusion, that technology creates changes in human society as we communicate. He observed that when the printing press was invented, human moved from writing on papyrus to printed materials. Similarly, when the telephone and telegraph were invented, the message runner was replaced with these technologies

In relations to this paper, the advent of new form of information storage and processing has given birth to a new form of journalism, thereby altering the old way of news gathering and analysis. Thus, journalism is moving from just reporting episodic event to interrogative recorded events on the web.

Media ecology theory was propounded by Neil Postman in the 1970s. The basic thrust of the theory is that machines have in many ways shaped and changed the media environment from the physical plane to the virtual space. The result is that these changes shape the journalists work environment and perception.

[8] Contend that the engagement of digital textual practices in all spheres of human endeavor has increased with technological advancement both in software programmes and hardware technology. According to them "the internet which serves as the media environment and the data software which serve as tools for processing information and the audience which are found in the virtual space all make use of internet to source for news".

They argued that the ecology or internet environment has made the audience and the journalists to operate at a hyper level which was not the case in the traditional or conventional era of news sourcing and dissemination.

The relevance of this theory to the paper lies in the fact that, modern journalism is driven by data. Only journalists who are familiar with the tools and skills necessary to operate data bases can practice data journalism..

#### V. RESEARCH METHODOLOGY

##### A. Research design

The research design employed in this study was survey. Survey method is useful in collecting primary data involving large human samples and their cumulative views on a particular matter. Asemah, Gujbawu, Ekharefo and Okpanachi [10] opine that the aim of the survey is to find out why people behave in a particular way and what their behavior would be under a given condition. They noted that the survey design makes it possible to study the perception, opinion of a sample and variables as they are without the researcher making any attempt to control or manipulate them.

##### B. Population of Study/Sample size

The population of Journalists in Minna as at 5<sup>th</sup> May 2018 stood at 262. of these, there were 180 males and 82 females with varying degrees. From the demographic data obtained, 47 were single, 188 were married, widowed 13, separated 6 and divorced 8. The entire population was used as sample size for the study considering the fact that it's not much.

##### C. Method of data analysis

. The researchers used the purposive sampling technique in selecting the Journalists. The survey coincided with the world press freedom day, hence the researchers reached out to all registered members of the Union present at the NUJ house popularly known as IBB Pen house in Minna. This was because it is a meeting point for all journalists from various media houses and correspondents chapel in the City. A 22-item questionnaire was administered on them to generate relevant data for the study. The questionnaire was analyzed using cross tabulation with frequency tables and simple percentages. This format made the presentation clearer and the calculation of percentage scores much more feasible. The analysis of the result is presented below.

#### VI. PRESENTATION OF DATA/DISCUSSION OF FINDINGS

The discussion is based on three research objectives raised at the beginning of the work. From the data in the data, what is obvious is that majority of the respondents were of the opinion that their organization has not keyed into it and that they haven't been trained on data driven journalism. This means that many journalists lack the knowledge and tools necessary for data journalism practice. However, they never doubted the fact that the softwares will be available for interested journalists but they expressed phobia for the mathematical, numerical and scientific nature of data journalism because they are more familiar with the traditional method of news gathering and reporting and are

not ready to accept the reality of the new trend in contemporary journalistic reporting.

Amongst all the respondents, none has knowledge on all the software used for data mining, analyzing and visualizing. Only three can tell the software used for data mining only (text mining was the only software they knew about). On the challenges confronting their use of data driven journalism, majority of the respondents were of the view that their media organizations have

not keyed into it and the necessary training has not been organized for them to effectively take off.

These findings differ considerably from those of [8] study of Journalists in Kaduna utilization of data for data journalism practice, where they find a strong level of agreement amongst journalists on their knowledge and use of data in journalism practice. However, the challenges confronting Minna Journalists also find support with those in Kaduna who called for training of the journalists to make for effective practice.

#### Data presentation

**Table 5 Registered Journalists in Niger State**

S/N	Media House	Frequency	Percentage
1	Newsline	32	12.21
2	Radio Niger	39	14.89
3	NSTV	19	07.25
4	NTA	17	06.49
5	Power Fm	16	06.11
6	Prestige Fm	28	10.68
7	Ministry of Information	64	24.43
8	Federal Information Resource Centre	14	05.34
9	Correspondents from other media house outside Minna represented in Niger State	33	12.60
<b>Total</b>		<b>262</b>	<b>100</b>

**Table 2 Respondents Knowledge of Data Journalism, Tools and Techniques**

	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
Have you heard about data Journalism?	3	259	262	1.15	98.85	100
Have you used Big Data in journalism?	1	261	262	0.38	99.62	100
Have you used Data Techniques in your Report ?	0	262	262	0	100	100
Do you know how to use them?	0	262	262	0	100	100
Have you heard of Big Data Tools we Import10, Open Refine, Data Cleaner, Hadoop, Cloudera and MongoDB?	0	262	262	0	100	100

**Table 4 Respondents Knowledge on software for data journalism**

Do you know the software for data mining, analysis and visualizing	Frequency	Percentage
Yes	3	1.15
No	259	98.85
<b>Total</b>	<b>262</b>	<b>100</b>

**Table 5 Respondent Knowledge of data mining**

Which data mining software do you know about			Have you ever use any of the mining software		data
	Freq.	%		Freq.	
ODA	0	0			
Word star	0	0	Yes	1	0.38
Text mining	3	1.15			
Some of the above	0	0	No	261	99.62
None of the above	259	98.85			
<b>Total</b>	<b>262</b>	<b>100</b>		<b>262</b>	<b>100</b>

The import of these findings from the tables above is that data journalism practice is yet to gain the necessary awareness, adoption and use amongst journalists in Minna. These may be based on the level of advancement in technology use and the expertise necessary for a digital driven media

VII. SUMMARY/CONCLUSION

The research work focused on knowledge and use of data driven journalism among media reporters in Minna, Niger State. The objectives of the study, amongst others were to, ascertain their use of the various tools used in data journalism and to find out the challenges that limit their capacity to use data driven Journalism. Findings show that data journalism practice is yet to gain the necessary awareness, adoption and use amongst journalists in Minna.

Recommendations

Based on the findings, therefore, the paper recommends that:

1. Media proprietors in Minna should as a matter of urgency organize training on big data research for reporters..
2. The necessary software for data driven journalism should be acquired for media reporters to have hands on experience.
3. The Nigerian Union of Journalists should as a matter of urgency organize workshop in this new trend of journalism practice.
4. Media training institutions should introduce courses in this area, so that students who hope to practice can have adequate knowledge of the skills required before they venture into the profession.

REFERENCES

[1] S. Lewis,. “Big data and journalism: epistemology, expertise, economics and ethics”. *Data Journalism*. 3(3) 2015, pp.19

[2] P. Bradshaw,.. “How to be a data journalist”. The Guardian. available at [www.theguardian.ng](http://www.theguardian.ng). Accessed on 12<sup>th</sup> May, 2018, Pp. 3-5

[3] A. Lechenet,“*Global Database Investigations: The role of the Computer Assisted Reporter*”. Reuters Institute for the study of Journalism. University of Oxford. 2014, pp. 8-12

[4] F Lewitter, Ten simple rules for responsible big data research. *PLOS Comput Bio* 13(3) 2017, pp 19.

[5] B.H. Alexander,The arts and science of data-driven journalism: “When journalist combine new technology with narrative skills they can deliver context clarity and a better understanding of the world around us”. Columbia journalism school. A Tow/ Wright report.2015, pp.8-15

[6] I.U Turo, andK. Heikki, Models and Streams of Data Journalism. The Journal of Media Innovation. 2015, Pp.77-88.

[7] D. Z Cinzia,S. Yoann, and L. Artur, Data Journalism in News Media Firms: “The Role of Information Technology to Challenges and Embrace opportunity of data-driven journalism”. At the twenty third European conference on Information System (ECIS). Minister, Germany 2015, Pp. 2-11.

[8] B.C. Liabwuk, and F.N.B Pachi,. “The utilization of data for data Journalism (Web 3.0) for Effective Media Practice by Registered journalists within Kaduna metropolis. A paper presented at the 19<sup>th</sup> African Council on Communication Education held at Nigerian Institute for Policy and Strategic Studies (NIPSS), Kuru-Jos, October 31-2<sup>nd</sup> November, 2017,. pp.. 4-7.

[9] E.S. Asemah, *Selected Mass Media Themes*. Jos: Jos University Press 2011, pp. 15

[10] E.S Asemah,M. Gujbawu, and D.O. Ekhareafu, Okpanachi,*Research Methods and Procedure in Mass Communication*. Jos. Jos University Press.2012, pp.8-12..