

## Awareness and Uses of Data Driven Reporting Techniques By Journalists in Minna, Nigeria.

### 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 the techniques and uses of data driven journalism. 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 were members of the Nigerian Union of Journalists, Niger State Chapter. The results of the study show that many journalists lack knowledge of data 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.

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 (2015) 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 journalists with social science research skills and digital literacy skills to create and analyse stories from existing issues to show trend and predict the likely impact.

Bradshaw (2016) 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, vidographics, 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 reports about them on such issues. Lechenet (2014) 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 events 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 Meyer (2002) 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 (Schroeder, 2014).

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

Statement of the Problem. Big data has helped in providing empirical data for modern journalism. As Batta (2017,p.3) 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, behaviours 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 do better in their reportage. It is not certain the level of data literacy of journalists in minna and their use of data driven journalism skills in practice. Where the knowledge of data literacy is high, it is possible to analyse and compare budgets, policies and even reports from databases they have access to. This may not be the situation with Journalists in Minna, Niger State. In modern journalism practice lack of knowledge of data journalism poses a big threat to practitioners. This paper therefore sought to answer the question, what is the knowledge and use of data driven journalism by Journalists in Minna?

Objectives of the Study.

The study was guided by the following objectives

1. Find out Knowledge of Data driven Journalism by journalists in Minna
2. Ascertain their use of the various tools used in data journalism
3. Find out the challenges that limit their capacity to use data driven Journalism.

Research Questions.

Arising from the above objectives, the following research questions guided the study.

1. What is the knowledge of Journalists in Minna about Data driven Journalism
2. what use do they make of various tools used in data journalism
3. what are the challenges that limit their capacity to use data driven Journalism.

## **Theoretical Framework**

This paper is anchored on the technological determinism theory and the media ecology theory. This paper is based on the technological determinism theory. The 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 (2011), 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 inhuman society particular 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 relation 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.

Liabwuk and Pachi (2017) contend that the engagement of digitextual 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 softwares 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.

### **Data journalism**

The digitization of communication has given birth to a new trend in journalism called data journalism. At the heart of digital communication is the notion of big data. Big data according to Park (2014) 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. In other words, data journalism is the adoption of big data procedures and techniques in journalism practice. It is from this perspective that Bornegru(2012) cited in Appelgren (2016, p.1) defines data journalism as “ using methods and digital tools to gather, filter and visualize stories based on data”. There are different uses of data journalism such as algorithm, text mining, data mining, social analytics, sentiment analysis, topic modeling, viblogs, microblogs. Lechenet (2014) 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 softwares 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 (Eragal & Klischewski 2017). The beauty of data journalism lies in the verification of the data sources and its capacity of been reproduced by different sets of researchers. It 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.

Some studies have interrogated the notion of data journalism. For instance, Kiabi (2019) examined the level of knowledge of Kenyan political reporters on a few key concepts of empirical research and opinion polling. Although data from the study were from a nonrepresentative sample, it offers important insights into levels of knowledge on an important topic in journalism. Results indicate that 63.4 percent of the reporters did not know that survey findings from a nonrandom or nonprobability sample cannot be generalized to the population. Another 63.4 percent did not know that sampling error cannot be computed from data that were collected using a nonrandom sample, while 49.3 percent did not get it correct that the main

difference between a nonrandom and random sample was that a random sample ensures that each member of the population has an equal chance of being selected as a study participant. Editors interviewed for this study were in agreement that majority of the reporters were ill-prepared when it comes to interpreting results from an opinion poll and accurately reporting on them. This analysis finds that structural factors, such as ownership, government control, political power, and lack of resources impact a journalist's level of knowledge on opinion polling. Most immediate interventions such as the need for universities and colleges to incorporate research methods courses in their curriculum and sponsoring journalists to workshops and fellowships on opinion polling with a view to bridging the knowledge gap were recommended.

In a study by Appelgren, Lindenb & Dalenc (2019), they noted that although data journalism is practiced globally, data journalism research has traditionally focused on a limited set of countries, primarily within the liberal and democratic corporatist media systems. While acknowledging the growing interest in data journalism research, they pointed at the limited number. They therefore studied five national comparative case studies studying data journalism in Africa, the Arab world, Italy, the UK, and Argentina. Their study points to three important contextual factors that shape data journalism worldwide: journalistic cultures, media markets, and the political environment.

Similarly, Ausserhofer, Gutounig & Oppermann (2017) explored the existing research literature on data journalism. Over the past years, this emerging journalistic practice has attracted significant attention from researchers in different fields and produced an increasing number of publications across a variety of channels. To situate the state of the emerging trend in journalism, they surveyed the published academic literature between 1996 and 2015 and selected a corpus of 40 scholarly works that studied data journalism and related practices empirically. Analyzing this corpus with both quantitative and qualitative techniques allowed them to clarify the development of the literature, influential publications, and possible gaps in the research caused by the recurring use of particular theoretical frameworks and research designs. They concluded that very little is known about data journalism outside of the news desks of famous organizations.

Mironenko (2018) research aims to describe what data-journalism is and how it can be used in such genre as investigative reporting. The study was foregrounded on the fact that in the digital era, data integrate faster into different fields of journalism. Nowadays the amount of open digital sources available for studying and analysis has increased at unprecedented rates. There are many government lists, social networks, independent databases that can be useful in more accurate and clear storytelling. However, it challenges journalists to learn how to gather, sort and visualize data.. The research provides a critical overview of the debates on how new developments, networks and instruments are changing the social, economical and political investigations. A range of researchers debate in quite polarizing terms whether the data driven journalism is more objective or not. The work analysed international and Russian practice. The author uses a series of in-depth qualitative interviews with professional investigative reporters and open-data experts as an empirical method. The main problem addressed is how they deal with unorganised and

hard-to-reach data and cooperate in newsrooms. The study finds a gap in the use of data for journalism practice.

Borges-Rey (2016) harps on the centrality of data in modern society on the basis prompted a need to examine the increasingly powerful role of data brokers and their efforts to quantify the world. Practices and methods such as surveillance, biometrics, automation, data creeping, or profiling consumer behaviour, all offer opportunities and challenges to news reporting. Nonetheless, as most professional journalists display a degree of hesitancy towards numbers and computational literacy, there are only limited means to investigate the power dynamics underpinning data. The author discusses the extent to which current data journalism practices in the UK employ databases and algorithms as a means of holding data organisations accountable. Drawing on semi-structured interviews with data journalists, data editors and news managers working for British mainstream media, the study looks at how data journalism operates within the news cycle of professional newsrooms in the UK. Additionally, it examines the innovations data journalism brings to storytelling, newsgathering, and the dissemination of news.

What is obvious from these studies is that data journalism as an emerging field of journalism have its peculiar challenge of adoption, procedure and practice across the globe. As a growing trend, media organisations need to deploy the right resources to training their staff in this trend. The recent revelation from the panamas papers and the pandora papers clearly revealed the power of data journalism in investigating journalism. Its application will bring journalism in touch with global realities.

### **Methodology.**

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, Ekhareafu and Okpanachi (2012) 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.

The population of Journalists in Minna as at 5<sup>th</sup> May 2021 stood at 262. Of this number, 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 census of population was used for the study considering the size. 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 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 analysis of the result is presented below.

### **Data presentation and analysis**

**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>

**Table7 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 MongoBD?	0	262	262	0	100	100

**Table 8 Respondent Knowledge on definite Techniques used in Modern Journalistic as Report**

Which of these techniques do you know	Frequency	Percentage
Text Mining	2	0.78
Data Mining	0	0
Sentiment analysis	0	0
Discourse Analysis	0	0



Micro B logs	0	0
Topic Modeling	0	0
Algorithm	0	0
Some of the above	1	0.38
All of the above	0	0
None of the above	259	98.85
<b>Total</b>	<b>262</b>	<b>100</b>

**Table 9 Respondents Knowledge on software for data journalism**

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

**Table 10 Respondent Knowledge of data mining**

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

**Table 11 Respondents knowledge on use of data analysis in contemporary journalism**

<b>Which of this data analysis</b>	<b>Freq. %</b>		<b>Do you know how to use data analysis in you report</b>	<b>Freq. %</b>	
	<b>Freq.</b>	<b>%</b>		<b>Freq.</b>	<b>%</b>
Text analysis	2	0.73	Yes	0	0
Audw analysis					
Social Media analysis	1	0.38	No	262	100
Procedure analysis					
Some of the above					
All of the above					
None of the above	259	98.85			
<b>Total</b>	<b>262</b>	<b>100</b>	<b>262</b>	<b>100</b>	

**Table 12 Respondents challenges with the use of big data in journalism**

<b>What challenges do you have with the use of big data in journalism</b>	<b>Frequency</b>	<b>Percentage</b>
My organization has not keyed into it	80	30.53
The software are not available	0	0
We have not been trained in the usage	182	69.47
<b>Total</b>	<b>262</b>	<b>100</b>

**Table 13 Respondent knowledge on features that describe Big Data**

<b>Which of this features describe Big Data</b>	<b>Frequency</b>	<b>Percentage</b>
Volume	0	0
Velocity	0	0
Variety	0	0
Manipulation	0	0
Staking	0	0
No Idea	262	100
<b>Total</b>	<b>262</b>	<b>100</b>

#### Discussion of results

The discussion is based on three research questions raised at the beginning of the work. From the data analysed, what is obvious is that majority of the respondents were of the opinion that their organization has not keyed into it and that they have not 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 express 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 the contemporary journalistic reporting. This is in line with the submission of Kiabi (2019) when the Editors interviewed for this study were in agreement that majority of the reporters were ill-prepared when it comes to interpreting results from an opinion poll and accurately reporting on them. This analysis finds that structural factors, such as ownership, government control, political power, and lack of resources impact a journalist's level of knowledge on opinion polling.

This clearly suggest that data journalism is still far from getting the right acceptance amongst some Journalists. There is a gap in the knowledge level required to engage in the practice. What can be deciphered from this, is that the training required to drive the practice is lacking. Apart from some journalists have their training in the social sciences and some numeracy disciplines, there is lukewarm attitude to statistics by students of mass communication. The tendency is that many who ventured into practice will most likely shawn beats that statistically inclined in reportage.

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 know 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 be organized for them to effectively take off.

These findings differ considerably from those of Liabwuk and Pachi (2017) 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.

This means that even though Kaduna and Niger State share a common boundary, the knowledge gap between the journalists that practice in both states differ. There is strong level of knowledge and awareness in Kaduna than in Minna. This may be due to the fact that Kaduna is a metropolitan city with strong media presence. 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.

The import of these findings 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.

#### Recommendations:

1. Media proprietors in Minna should as a matter of urgency organize training on big data research for journalists.
2. The necessary softwares for data driven journalists should be acquired for the journalists to have hands on experience.
3. The Nigerian Union of Journalists should as a matter of urgency organize workshop in this new area of journalism.
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.

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