

**UNIVERSITY OF GHANA**

**DEPARTMENT OF COMMUNICATION STUDIES**

**THE ADOPTION OF DATA JOURNALISM PRACTICES IN GHANAIAN  
NEWSROOMS: EXPLORING THE PERSPECTIVES OF MEDIA STAKEHOLDERS**

**BY**

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PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPhil  
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**INTEGRI PROCEDEMUS**

## DECLARATION

I, Michael Etrue, declare that this study is an independent study undertaken under supervision and has not been presented anywhere by another researcher. All references used in this study have been acknowledged appropriately.



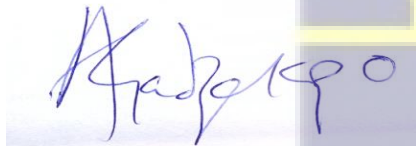
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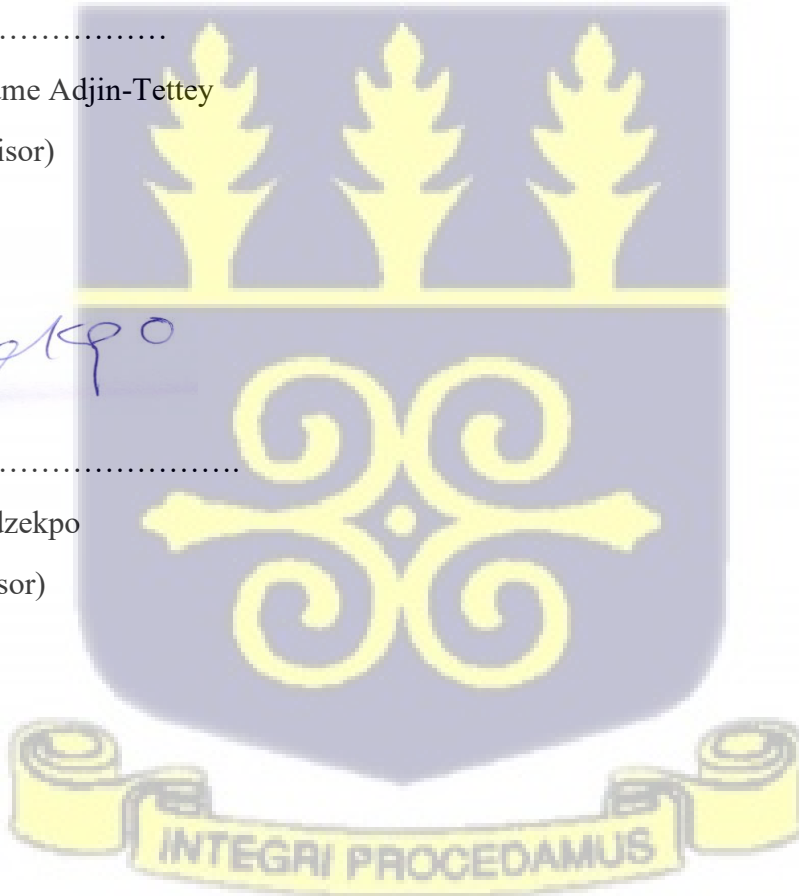
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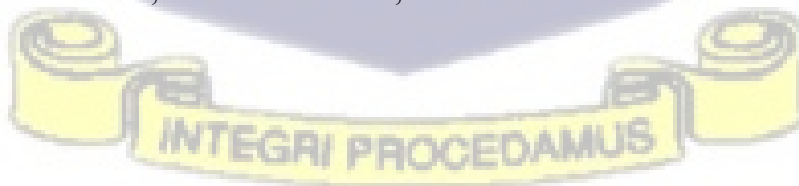
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## ABSTRACT

This study investigates the adoption of data journalism in Ghana, analysing the practices, perceptions, and challenges faced by key stakeholders within the media industry. Grounded in Diffusion of Innovation theory, the research explores how journalists, newsroom managers, civic technology groups, training organizations, and government agencies engage with data journalism, an emerging field in the country's media landscape. Through in-depth qualitative interviews with 17 participants, the study reveals both the potential and limitations of data journalism in Ghana. Findings show that while data journalism is recognised for its capacity to enhance reporting depth and accuracy, its integration into newsrooms is impeded by several factors: a lack of readily accessible data, limited financial resources, and the slow acquisition of technical skills among journalists. Despite these challenges, early adopters within Ghana's media sector, particularly in investigative reporting and election coverage, are showcasing the value of data-driven storytelling. The study also highlights the importance of cross-disciplinary collaboration and government efforts in fostering a culture of data sharing and data storytelling, although widespread adoption remains slow due to the perceived complexity of data journalism tools and practices.

**Keywords:** Data Journalism, Media Innovation, Diffusion of Innovation Theory, Ghanaian Media



## DEDICATION

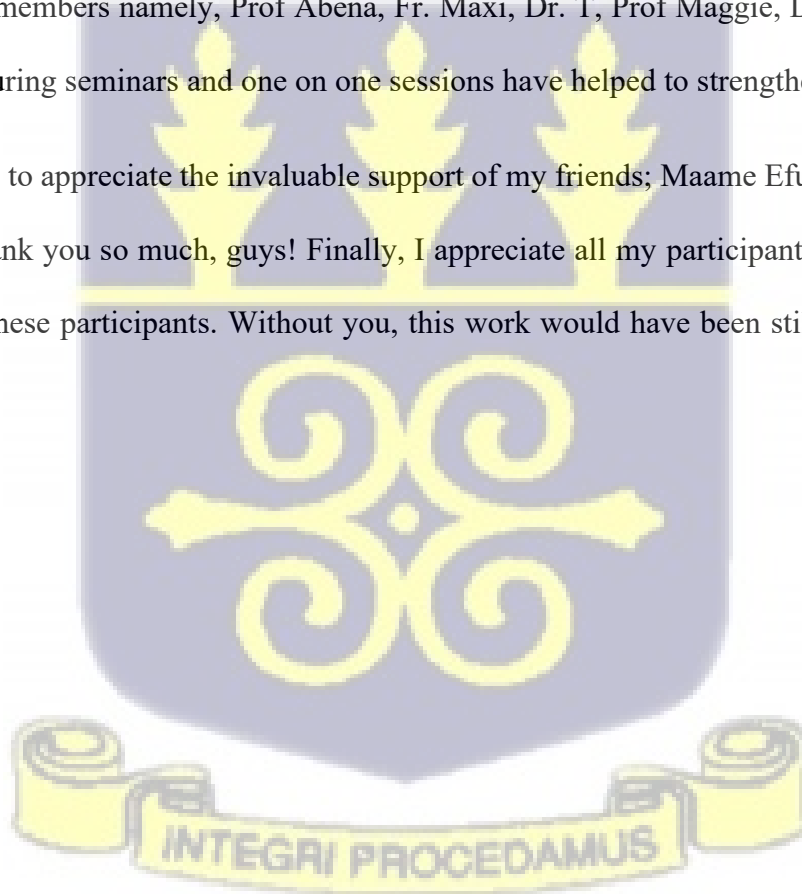
I dedicate this work to my support system and my entire world; my father Frank, my mother Faustina, my brothers Fredrick, Richmond, Bernard and my *akyere*, Nancy. I also dedicate this work to Ghanaian innovators everywhere who fight the good fight every day pouring new wine in antique skins. And finally, to my God in whom I find sanctuary when the mighty storms of this world rock my small boat.



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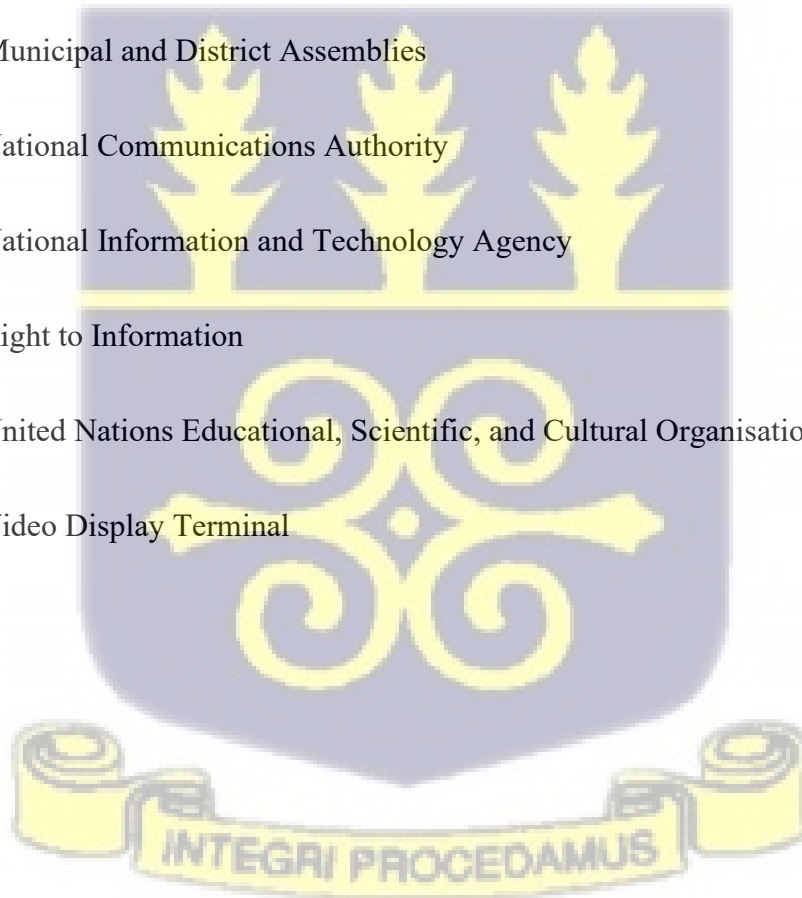
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## List of Abbreviations

CSO	Civil Society Organisation
GIJ	Ghana Institute of Journalism
GODI	Ghana Open Data Initiative
IFJ	International Federation of Journalists
ICIJ	International Consortium of Investigative Journalists
MFWA	Media Foundation for West Africa
MDA	Municipal and District Assemblies
NCA	National Communications Authority
NITA	National Information and Technology Agency
RTI	Right to Information
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
VDT	Video Display Terminal



## CHAPTER ONE INTRODUCTION

### 1.0 Introduction

This study investigated the perspectives of media stakeholders on adopting data journalism practices in Ghanaian newsrooms. This preliminary chapter introduces the entire research by first discussing the background of the study. In the sections following, the problem the study sought to address is discussed, as well as the study's objectives and its significance to academia and media stakeholders.

### 1.1 Background

The technological ecosystem of journalism continuously evolves, with new and improved methodologies discovered and existing tools modified. It has been argued that it is challenging to separate the study or practice of journalism from innovations and technologies used in the field because the practice and discipline are inherently dependent on technology for gathering, documenting, and disseminating information to the public (Zelizer, 2019). Throughout history, journalists have used various tools, ranging from bullhorns to cameras, to enhance and extend their ability to collect and present information in their journalistic routines (Zelizer, 2019) As technology advances and filters into newsrooms, it affects journalistic methods to find and report news. Digital technologies have allowed the media unparalleled access to audiences and collaborative opportunities worldwide, redefining how journalists gather, interpret, and publish the news (Mabweazara, 2015). In the past, journalists mainly relied on their contacts as their news sources however, with new technologies used in news reporting and production, tradition is increasingly giving way to new methods of journalism practice (Obijiofor, 2003).

As part of the globalization of communication, innovations and technological trends which often originate in the Global North find their way into the Global South and become adopted, albeit localised, by journalists eager to exploit their potential (Appelgren et al., 2019). Data journalism is one of these recent innovations that has gripped the collective imaginations of newsrooms in the Global South (Mutsvairo et al., 2019). Originating from early experimentation in the US, where journalists centred data and databases in their information gathering, analysis, and storytelling processes and then spreading to European newsrooms, data journalism has now spread globally. Data journalism, also known as data-driven journalism, is a growing trend in response to society's growing dependence on data. It has become increasingly prominent as journalists seek to use these data sources to add depth and credibility to their reporting (Appelgren et al., 2019).

Research on the forms and functions of data journalism has tended to be Western-centric, particularly in countries characterised by long-held freedom of information laws and well-resourced media houses that afford journalists data access and protect them from the legal and political risks of doing data journalism (Mutsvairo, 2019). Even in non-Western countries with similar freedom of information laws, media scholars have had to contend with the different political, economic, social and cultural contexts that invariably shape the operations and forms of the media landscape (Siebert et al., 1963; Gondwe & White, 2022; Mutsvairo et al., 2019). There has been recent calls for research focusing on data journalism in non-Western countries in order to trace the forms of data journalism in different media contexts (Mutsvairo et al., 2019, Sackey et al., 2022). This study therefore seeks to contribute to the ongoing discourse among scholars of data journalism in exploring the adoption of data journalism in varying contexts.

## 1.2 Evolution of the Mass Media Landscape in Ghana

Ghana's contemporary mass media landscape has evolved through several distinct phases, shaped by both colonial influence and opposition to repression during the post-independence years (Gadzekpo, 2007).

The contemporary phase of Ghana's media development began with the liberalisation of the airwaves in 1996, leading to the proliferation of FM radio stations, mobile telephony, increased number of newspapers, and the rise of new media platforms. Since the Fourth Republic's beginning and the media's liberalisation, Ghana's media industry has experienced significant growth. As of the fourth quarter of 2023, the National Communications Authority (NCA), which regulates frequencies, had granted 747 radio broadcast frequency authorizations with 550 of these stations currently operational. The country also has 127 functioning TV stations and a diverse range of over 100 newspapers that complement the broadcasting sector (National Communications Authority, 2024; Yeboah-Banin & Adjin-Tettey, 2023).

Ghana's 1992 Constitution adopted to usher in the Fourth Republic signals the crucial role the media plays or ought to play in the new dispensation. Chapter 12 of the Constitution enshrines freedom of the media. It guarantees the independence of journalists and media agencies, categorically rejects censorship, admonishes the media to uphold the principles, provisions and objectives of the Constitution, and defends the responsibility and accountability of the Government to the people of Ghana (Constitution of the Republic of Ghana, 1992; Nyarko, 2019). Other hard-won legal and legislative victories such as the repeal of the repressive criminal libel law, which was used by successive military regimes to suppress dissenting views and the passage of the Right to Information Act has further strengthened the legal framework of the Ghanaian media (Nyarko, 2019).

Apart from the Fourth Republic and the subsequent liberalisation of the media landscape in Ghana, one of the largest transformative agents of the media in this period has been digitalization and the Internet, which has seen the rise and proliferation of new media platforms such as online news websites, blogs and social media (Demuyakor, 2020).

The turn of the century brought about rapid changes to the Ghanaian media landscape and these changes were in turn studied by scholars. Obijiofor (2003) studying new technologies and journalism practice in West Africa during the turn of the century suggested that the emergence of new technologies in journalism – video display terminals (VDTs), pagination systems, computer graphics terminals, the Internet, interactive multimedia systems and digital telecommunications (satellite cable system and fibre optics in broadcasting) — have dramatically altered traditional newsgathering processes and production formats of the traditional media with the majority of journalists optimistic towards these innovations. Sey (2011), reflecting from a historical perspective on new media practices in the country, revealed that Ghana was one of the first African countries to get connected to the Internet in 1989–1990. She further went on to reveal that in 2007 out of a population of about 23 million, there were 16,200 broadband subscribers, 23,400 Internet subscribers, and 880,000 Internet users in the country. She presented two local content sites— Ghana Web, a news portal, and Myjoyonline, the website of a local FM radio station—among the top 10 Web sites visited in Ghana in 2009 according to industry-generated data (Sey, 2011). Another study conducted in the early period of new media integration also found that the media in Ghana were largely open to using social media as part of their news processes, and just like their peers around the world, Ghanaian journalists were adopting social media for work purposes, with many noting that these new media had, to an extent, impacted the way they went about their work (Deo-Silas, 2013).

As at January 2022, Ghana had over 16 million internet users, reflecting an increase of close to two million users from 2020 (Appiahene et. al., 2024). Additionally, the country had around eight million social media users as at January 2021, highlighting the growing digital engagement within the population (Appiahene et. al., 2024). Social media platforms like Facebook, Twitter, and Instagram have become dominant media publishing platforms allowing anyone with an account to broadcast to the world. They have become massive news aggregators for consumers and provided a slew of tools and platforms for journalists and media organizations to extend their reach. Traditional media, far from rejecting these upstart innovations, have instead learned to adopt and embrace them for their ends (Yeboah-Banin & Adjin-Tettey, 2023).

The preceding lends some reinforcements to the assessment by Demuyakor (2020) that digital media and information communication technology have shaped and continue to shape the media landscape of Ghana.

### **1.3 Rise of Data Journalism Globally**

Regarding the scholarly consensus of the origins of data journalism, the narrative is as follows. In 2006, a journalist and programmer named Adrian Holovaty, working for the *Washington Post* online website, wrote an essay on his blog describing how certain types of newspaper stories have consistent, structured data pieces that could be better delivered to the reader from a database-centred approach instead of a straight newspaper story (Holovaty, 2006). He argued that newspapers need to shift away from a story-centric worldview to a database centric worldview. The traditional journalistic practice of news being sourced from people and about people or the story-centric observations of an incident by a journalist covering a beat was still dominant, and this alternative approach was hotly contested by industry stakeholders as to whether this new idea actually constituted journalism (Holovaty, 2006). In the same article, however, he nuanced his

position by admitting that it doesn't have to be a zero-sum game but that the two forms of information dissemination can co-exist and complement each other (Holovaty, 2006). This seminal moment directly inspired the creation of *Politifact* as an election year project of the *Saint Petersburg Times* (Holovaty, 2006). The website burst into prominence during the 2008 United States (US) elections as a fact-checking data-driven website.

It is this new power of news presentation that moved Adrian Holovaty to spread the “good news” across newsrooms around the world. Later in that same 2009, he gave a talk on his methods to the United Kingdom (UK) based *The Guardian* newsroom, where he spurred the imagination of a news editor named Simon Rogers, who had worked with the online version of the newspaper and edited the science section (Rogers, 2019). Rogers after this talk would become an early adopter of this innovation by establishing the Data Blog portal on his paper's online website in 2009. *The Guardian's* Datablog launched with 200 distinct datasets that news consumers could interact with. Other actions by stakeholders such as governments and civic technology groups around that period contributed to make this new form of journalism a force to reckon with. One of the most significant developments was the launch of the U.S. government's open data platform, Data.gov, in May 2009, which initially featured around 47 datasets. This launch was followed by other Open Data portals launched by countries and major cities worldwide, with civic technology groups such as the Open Knowledge Foundation demanding access to more data sets and features allowing citizens and journalists to interact with government data. This launch of online public access datasets by governments (primarily Western) around this period spurred the adoption of this data-led approach by newsrooms around the world who suddenly found themselves needing journalists with the suitable set of skills and tools to make sense of and tell public interest stories from this open-source government data to fulfil their normative watchdog role (Rogers, 2019).

Another illustrative case in the literature about the impact of data journalism at the time was when the *The Guardian* crowdsourced its reporting on a story concerning British Members of Parliament expenses (Hammond, 2017). The newspaper released the complete dataset of expense claims on its online Datablog portal and called upon its readers to assist in analysing the documents and uncovering potential stories for further investigation by Guardian journalists (Rogers, 2009). Within a year, they had their readers helping to crowdsource thousands of MPs' expenses. The UK government also released a dataset on government spending named the Combined Online Information Systems and *The Guardian* built an interactive explorer software to encourage readers to explore the data on the system and the expenses data set (Gambini, 2019).

Another case that contributed to the need for data journalism was the 2010 WikiLeaks data dump of US military records from Iraq and Afghanistan. The disclosures, comprising more than 90,000 records of incidents and intelligence reports about the conflict, were obtained by the whistleblower Julian Assange's website, WikiLeaks, in one of the most significant leaks in US military history. Journalists from *The Guardian*, *The New York Times*, and *Der Spiegel* were given access to the archive by the WikiLeaks team. They spent several weeks investigating the logs, analysing the data, and invited the public to interact with the stories created from the data (Gambini, 2019).

From 2010 to the present, data journalism has increasingly matured and found its way into newsrooms worldwide (Mutsvairo, 2019).

#### **1.4 Initiatives and Projects Related to Data Journalism in Ghana**

In Ghana, civil society organisations and media training organisations, sometimes funded by foreign media partners from Germany, the US, and Canada, have contributed to numerous trainings, conferences, or hackathons, all in a bid to develop data journalism as a viable field.

According to Kuire (2023), the Ghanaian government in 2010 initiated discussions about open data with the involvement of the Web Foundation as part of a broader Open Government policy. These discussions led to the establishment of the Ghana Open Data Initiative (GODI) between the Web Foundation and the National Information and Technology Agency (NITA), which assumed responsibility for the project. As a result of this collaboration, an online web platform was launched in 2012 by the National Information Technology Agency to make the Government of Ghana's data available to the public for re-use. Open Data typically refers to data that is “complete, primary, timely, accessible, machine-processable, non-discriminatory, non-proprietary, and license-free” (Zuffova, 2020 p.4). This concept means anyone can use, modify and share data for any purpose. The GODI sought to build an open data community bringing together government, civil society, the media, developers, and academia (Kuire, 2023). The Ghana Government also completed a digital infrastructure called the eGovernment Network Infrastructure Project, which would help collect and disseminate data by Ministries, Departments, and Agencies. The GODI website was launched with 100 datasets and a mobile version was later launched in 2013.

The prioritisation of the media as partners for this project was evident from the fact that as part of the implementation of the project in 2012, the National Information Technology Agency, with funding from Ghana Open Data Initiative (GODI), Africa Media Initiative and World Bank Institute executed what was touted as Ghana's first Data Journalism Boot Camp which aimed to empower journalists to learn how to use government and other public data to build data visualizations and develop stories. It brought together journalists, website developers and creative designers who were put into working groups to build news-driven mobile applications and civic engagement websites to augment the traditional news reportage (MobileWebGhana, 2012). The

training also sought to equip journalists with the skills and data knowledge of research and news publications.

Later in the same year, Ghana Open Data Initiative again organised an Open Data training session for Journalists under the theme, "Elections and Civic Watchdog Media using Open Data" (Penplusbytes, 2015). The training was to educate journalists drawn from diverse backgrounds to train them in data mining, data extraction and data analytical skills for their election reportage. This training was also funded by the World Bank Institute (Penplusbytes, 2015).

In 2013, Citi FM, in partnership with Journalists for Human Rights (JHR), Voto Mobile, and the *Weekend Globe*, published a corruption perception story based on a citizen poll they conducted. This was touted as the first integrated cross-platform data journalism project in Ghana (Journalists for Human Rights, 2013). The story was published on the front pages of the *Weekend Globe* newspaper, as a news story on Citi FM radio, and on the social media pages and websites of the group. According to the group, using information from a poll coordinated by journalists and presenting it in charts and graphs as a front-page story was a novel experience and "no one knew what to make of the project because nothing like it has even been done before at Citi FM" (Journalists for Human Rights, 2013).

In 2013, Penplusbytes, a media training organisation, launched a two-year "Open Ghana – Data Journalism for Improved Maternal Healthcare Delivery" (Penplusbytes, 2015). With support from STAR Ghana, they held a forum for Civil Society Organisations and media persons at Hohoe in the Volta Region. The conference dubbed "Open Ghana – Data Journalism for Improved Maternal Healthcare Delivery" was to create the needed collaborative platform for direct engagement between media members, health officials and other key stakeholder bodies (Penplusbytes, 2015).

Penplusbytes also reported a two-day training for ten selected journalists nationwide which was done in collaboration with Canadian volunteers from Journalists for Human Rights.

In 2014, the Web Foundation reported on their website that they received funding to the tune of \$ 55, 946 to support their in-country affiliate, Mobile Web Ghana, to place data fellows in Ghanaian media houses (Web Foundation, 2014). Penplusbytes partnered with Mobile Web Ghana, the Web Foundation and the African Media Initiative to launch and implement this initiative which was termed Code for Ghana (Penplusbytes, 2015). As part of the initiative, people with data analytics skills collaborated with their host media organizations on open data projects.

The International Consortium of Investigative Journalists (ICIJ) also revealed in 2016 that in the build-up to the release of the Panama Papers story, one of the most significant data journalism projects in the past decade, there was a collaboration with 18 news organizations in Africa which included journalists based in Ghana, Tanzania, Niger, Mozambique, Mauritius, Burkina Faso, and Togo who were participating in the Consortium for the first time (ICIJ, 2016).

In 2016, the impactAFRICA fund was launched to promote data-driven storytelling on the continent (impactAFRICA, 2016). It provided \$500,000 for pioneering data journalism and creative reporting focused on development challenges, including public healthcare, in six African nations: Ghana, Kenya, Nigeria, South Africa, Tanzania, and Zambia. In addition to financial support, it offered technological guidance through civic technology labs in all six countries, personalised editorial mentoring, training in digital skills, and content syndication services. To maximise their reach, impactAFRICA partnered with the Hacks/Hackers Africa community of news technologists, which has 30,000 members, and newsrooms in the African Network of Centers for Investigative Reporting. Ghana won three spots in the final 13 stories selected for the prize money in the second edition in 2017.

In July 2017, a conference dubbed Africa Data Conference, organised by the African Open Data Conference in partnership with NITA, was held at the Accra International Conference Center. It brought together participants from different African countries to learn more about how open data could be used in various fields in Africa, such as Health, Government and Journalism. A workshop titled “Embracing Data Journalism in Newsrooms” unpacked how open data could be used to help investigative journalism on the continent. An interesting highlight of that conference was a presentation from a public interest organisation, Odekro, which provides public online access to Bills, Motions and Parliamentary Debates, and reports from Parliamentary Committee meetings (Kuuire, 2017). The co-founder of Odekro, Nehemiah Attigah, also serves as the technical lead of the Code for Ghana initiative further illustrating how tightly knit and driven the members of the Open Data ecosystem in Ghana are about data journalism.

Another local partner in the ecosystem is The Media Foundation for West Africa (MFWA). The Media Foundation for West Africa organised a three-day training on data journalism in November 2018 in collaboration with DW Akademie to equip journalists from 12 media houses across Ghana with the necessary tools, techniques, and approaches to effectively process, analyse, and present big data. The workshop aimed to empower participants to produce visually appealing and engaging stories using effective data visualization techniques. The goal was to cater to the increasingly busy news audience, providing them with reader-friendly content that effectively communicates complex information (Media Foundation for West Africa, 2018). In an interview in 2018, a Programme Manager of the Media Foundation for West Africa, characterised the practice of data journalism in the subregion and Ghana as being "on the ascendancy" and mentioned that she is aware of two media houses in the country that have a dedicated data journalist in their newsrooms (Journocode, 2018). MFWA continues to offer data journalism training as part of its annual Next

Generation Investigative Fellowship, which began in 2021. The Fellows receive intensive practical boot camp training on data journalism, fact-checking, story development, writing and researching for investigative reporting, and mobile journalism. They are also trained in using access to information laws to gather important datasets that can serve as the basis for groundbreaking journalism.

In April 2019, as part of efforts to revamp the Ghana Open Data Initiative, which had stalled after the initial launch, the Mobile Web Ghana, along with NITA and the Web Foundation organised an Open Data Upload Challenge and Hackathon for four days. The event allowed Municipal and District Assemblies (MDAs) to upload data to the Open Data Portal and for civic technologists, statisticians, journalists, software developers and data scientists to develop data visualizations and innovative data applications. It also afforded space for data suppliers and data users to interact to find out their specific needs and the solutions which could be developed to solve such problems (Mobile Web Ghana, 2019).

In September 2021, Mobile Web Ghana organised a 1-hour online presentation and discussion on data journalism facilitated by Citi FM's Jonas Nyabor. It streamed live on the Facebook page of the US Embassy in Ghana. They were able to do this in partnership with American Corner in Agbogba, Accra, which is a US Embassy initiative to provide access to current and reliable information about the United States through book collections, Internet access, and events and activities for everyone free of charge (US Embassy Ghana, 2021)

In May 2021, another local partner in the media ecosystem iJourno Africa, a nonprofit organisation focused on new media training, conducted its inaugural data journalism training for student journalists in Accra. The one-day training programme hosted 30 participants to equip them with

the necessary skills to utilise data and digital tools in news writing and storytelling. Over the years, iJourno Africa claims they have been dedicated to nurturing students and media professionals by using data analysis to educate and inform the public about various news topics and developments (Lartey, 2021).

After more than a decade of Government launching the Ghana Open Data Initiative and a number of successful data journalism training initiatives by media training organisations and other stakeholder, scholarly attention focusing on how Ghanaian newsrooms have adopted large data sources and data journalism practices as part of their news production routines has been relatively low. Porcu (2017) argues that the scarcity of academic attention to learning and innovation processes of journalists is one of the biggest gaps in the media innovation literature and it is therefore important that innovative data journalism practices in Ghanaian newsrooms be given the attention it deserves.

### **1.5 Data Journalism as an Innovation**

Data journalism can be considered a journalistic innovation in several ways. The first is in its methodology; data journalism involves using advanced data analysis and visualization tools to analyse large datasets and extract stories that would not have been possible using traditional journalistic methods (Appelgren et al., 2019). The second is in its defining feature of collaboration; data journalism often requires collaboration between journalists with different skill sets, including data analysts, programmers, and designers (Appelgren et al., 2019). The third is storytelling: data journalism can create compelling and engaging narratives using data visualizations, interactive features, and multimedia elements (Appelgren et al., 2019). The last is transparency; data journalism promotes transparency in the reporting process by making it possible for readers to see the data underlying the reporting and explore it for themselves (Appelgren et al., 2019).

The adoption of this novel form of journalism has depended on varying actors. Some scholars of data journalism have claimed that the adoption of data journalism across contexts has relied on "a handful of passionate individuals, only partly backed up institutionally, and a limited amount of consensual references that could foster a shared interpretive community" (De Maeyer et al., 2015 p. 432). Zhang and Chen (2022), studying the adoption of data journalism in Hong Kong, argued that adopting data journalism can be split in two ways, adoption driven by the media organisation or adoption driven by individual journalists. Institutional-level adoption of data-driven journalism depends on whether a news organisation or a newsroom team holds or subsidises data-driven journalism workshops, seminars, meet-ups, or training sessions. Individual-level adoption is operationalised as whether a news professional has used data-driven news reporting or has personally attended any workshops, seminars, meet-ups, or training sessions.

Ghana's media landscape, marked by its vibrant growth and diverse array of media organizations, stands out as a prominent example on the African continent. This recognition is underscored by notable events such as Ghana hosting UNESCO's World Press Freedom Day celebration in May 2017 (Yeboah-Banin, 2023) and winning the bid to host the Third African Media Convention in 2023, described as the largest gathering of media stakeholders and policymakers on the continent (International Federation of Journalists, 2023). These milestones highlight Ghana's influential role in media on the continent, making it a compelling subject for academic inquiry. Shilina & Shilina (2019) remark that the study of data journalism is important because it can serve as a benchmark for evaluating the maturity of journalism, the national media system, the government, and civil society in a media context. It therefore comes as no surprise that after the rise of data journalism globally it attracted the attention of media scholars who attempted to trace its origins, its boundaries, norms and adoption in various contexts.

## 1.6 Problem Statement

Data journalism has been studied extensively globally but a review of the literature on the topic reveals a preponderance of studies focusing on Global North newsrooms (Appelgren et. al., 2019). Some scholars have argued that a lopsided research focus on Global North newsrooms characterised by relatively higher levels of sophistication in terms of material resources and access to data collection infrastructure and processing marginalises other media contexts around the world that have adopted data journalism practices but developed different cultures and applications of data journalism shaped by peculiar barriers, advantages and needs that only exist in these contexts (Mutsvairo et. al., 2019).

In recent years, there have been calls to intensify research into the practice of data journalism in media contexts in Africa (Mutsvairo et. al., 2019). These calls have produced a handful of studies from individual national contexts like Zimbabwe, Nigeria, South Africa, Tanzania and Zambia (Muneri, 2019; Okocha & Odeba, 2022; Munoriyawa, 2022; Gondwe & White, 2022). However, the present study differs from what has emerged from these countries in that it considers a context that is marked by over two decades of a liberal vibrant media landscape unlike Zimbabwe and Tanzania's semi authoritarian contexts for example and is also marked by over a decade's implementation of a government-wide Open Data Initiative and targeted media training and media projects on data journalism unlike the Nigerian and South African contexts.

Additionally, past research has adduced evidence from the newsroom (journalists and editors) or from peripheral actors like civic technologists but this study goes a step further to adopt an ecosystem approach which involves gathering empirical evidence from multiple stakeholders (journalists, newsroom managers, government agencies, media training organisations and civic

tech groups) typically considered as instrumental in driving the uptake of data journalism (Baack, 2018; Cheruiyot et. al., 2019).

Porcu (2017) argues that the scarcity of academic attention to learning and innovation processes of journalists is one of the biggest gaps in the media innovation literature and it is therefore important that innovative data journalism practices in Ghanaian newsrooms be given the attention it deserves. By analysing the intersection of national policy, institutional, technological, and cultural factors at the macro (government), meso (media and affiliated institutions), and micro (individual journalists) levels of diffusion, this study provides fresh insights into the ongoing transformation of journalism through the adoption of data journalism practices in Ghana and provides empirical evidence contributions to the study of media innovation in the country. Utilizing in-depth interviews with journalists and media stakeholders, and employing the Diffusion of Innovation Theory, this research seeks to contribute to a deeper understanding of data journalism adoption in Ghanaian newsrooms.

### **1.7 Aim of the Study**

This study explored perspectives, experiences, challenges and opportunities from stakeholders such as journalists, technology professionals, newsroom managers, organizations that train journalists, and relevant government agencies concerning adopting data journalism in Ghana. The specific focus of this investigation revolves around journalists and newsroom editors adopting and implementing data journalism practices within the Ghanaian context. By understanding the viewpoints and experiences of the stakeholders mentioned above, this study aims to contribute to a description and analysis of the state of data journalism in the country. It adds to a more nuanced understanding of the dynamics that influence the adoption of data journalism practices in Ghana's media landscape.

## 1.8 Research Objectives

The objectives of the study were:

1. To explore data journalism practices among journalists in Ghana.
2. To understand the attitudes and perceptions of data journalism stakeholders (journalists, technology professionals, newsroom managers, organizations that train journalists, and government agencies) about data journalism uptake in Ghana.
3. To examine the challenges and opportunities faced by journalists in adopting data journalism.

## 1.9 Research Questions

To achieve these objectives, the study was guided by the following research questions:

1. How do journalists practice data journalism in Ghana?
2. What factors influence the adoption of data journalism in Ghanaian newsrooms?
3. What barriers exist against the adoption of data journalism in Ghanaian newsrooms?
4. What are the perspectives of media stakeholders concerning adopting and mainstreaming data journalism in Ghana?

## 1.10 Significance of the Study

Given the Eurocentric/Western bias in data journalism studies (Gondwe & White, 2022), the study aims to contribute to the literature on data journalism and media innovation in African contexts.. It may also be relevant for media studies research conducted in Ghana and journalism training non-profits who may use this study as a baseline study to attract funding for their data journalism training activities.

### **1.11 Organisation of the Study**

The study is organised into seven chapters. Chapter One introduces the study by providing a background of the entire study. It further explained the research problem, the study's objectives, the study's organisation, and the chapter's summary. Chapter Two will discuss the theoretical framework for the analysis. Chapter Three will review relevant literature on the adoption of data journalism. Chapter Four will present the methodology used in the study, specifically, the research design, target population, sampling technique or procedure, data collection and instrument, data analysis and presentation. In Chapter Five, the study's findings as related to the objectives and research questions will be presented. Other results not directly captured as research objectives or questions but which helped flesh out the perspectives of media stakeholders on adopting data journalism in Ghana will also be presented. Chapter Six will discuss the findings and analyse them through the lens of the theory and reviewed literature. Chapter Seven will conclude the work by summarising the results and practical implications of the findings. It will also address some limitations of the study and provide recommendations for further studies.

### **1.12 Chapter Summary**

This chapter served as the background to this study by presenting an exposition on the past and present Ghanaian media environment, highlighting some changes that have evolved following the era of media liberalisation in Ghana. It traced the development of data journalism as a genre of journalism globally and its subsequent spread to newsrooms worldwide. It also noted that research primarily falls short when it comes to analysing data-driven journalism practices in Ghanaian media. This chapter then presented the study's problem statement, objectives, research questions and its significance and an outline of the study.

## CHAPTER TWO THEORETICAL FRAMEWORK

### 2.0 Introduction

This chapter discusses the theory underpinning this study, its' assumptions, tenets and limitations. The chapter further relate the theory to this study's objectives and guiding questions to indicate the suitability of the theory to the research.

### 2.1 Theoretical Framework

This study will explore data journalism adoption in Ghana through the lens of Rogers' (2003) Diffusion of Innovation theory. Zhang and Chen (2022) applied the theory in a study explaining data journalism adoption in Hong Kong while Zhang and Feng (2019) used this theory in their research on data journalism adoption in China.

Data journalism is uniquely positioned as both an innovation in journalistic practice and a transformative media product (Appelgren et al., 2019). Unlike traditional forms of journalism, data journalism leverages large datasets and statistical analysis to uncover stories that might otherwise remain hidden. This approach not only enhances the depth and accuracy of reporting but also results in a media product that is data-driven and highly informative. The relationship between journalists and data journalism could be characterised as symbiotic; journalists must first adopt and master the tools and techniques of data journalism before they can effectively translate complex datasets into stories that are accessible and engaging for the audience. The benefits to the audience are substantial, as data journalism provides clarity on complex issues, supports evidence-based decision-making, and empowers the public with accurate, transparent information (Heravi & Lorenz, 2020). However, the challenge lies in the journalist's ability to make this innovation

user-friendly, ensuring that the final media product is both informative and easily understood by a broad audience. This dual responsibility underscores the critical role of media organisations and allied stakeholders as both adopters and translators of data journalism.

A systematic literature review of data journalism on the continent revealed that studies on the phenomenon are usually theorized, with the dominant theoretical framework being Schudson's Sociology of News Production, which explains how news work is socially constructed and could be altered and Media Determinism Theory by McLuhan which argues that technology drives societal behaviours (Sackey et al., 2022). Adopting the Diffusion of Innovation Theory in this study provides a fresh theoretical perspective on data journalism adoption in an African context.

## **2.2 The Diffusion of Innovation Theory**

According to Everett Rogers (2003), the central thesis of this theory is that "diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system" (p.5).

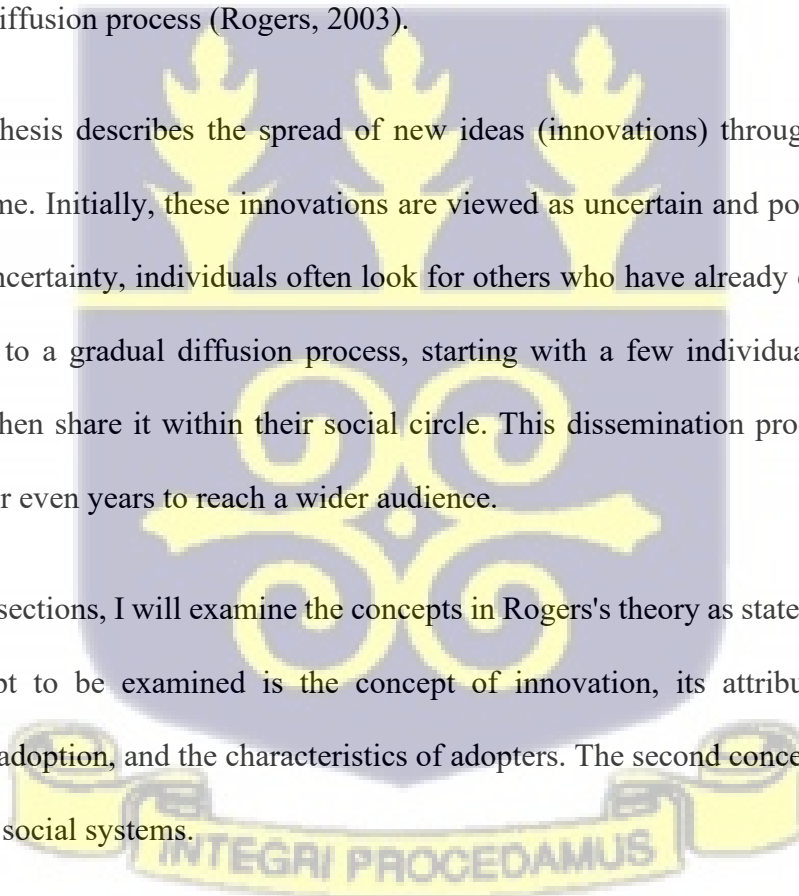
Everett Rogers' first presented his Diffusion of Innovation Theory in a book titled Diffusion of Innovations, first published in 1962. The book is in its fifth edition, having undergone various revisions to the ideas first presented. The theory itself, which was first used to study questions in the agriculture discipline and later sociology and communication studies, has been adapted widely and criticised just as broadly but has still maintained relevance and is still being used by communication studies scholars in general and data journalism research specifically, to account for and explain the spread of innovation within a populace (Rogers, 2003; Zhang & Chen, 2022).

Everett's interest in the diffusion of innovations stemmed from observing farmers in his home community in Iowa who were hesitant to adopt profitable new ideas. This led him to study the

diffusion of agricultural innovations during his graduate work in rural sociology at Iowa State University in the 1950s. He began interviewing farmers about their adoption of farm innovations on a diffusion project which later influenced his dissertation in 1957 analysing the diffusion of agricultural innovations in the project community. While reviewing literature for his dissertation, he found similar adoption patterns in studies of other fields, such as kindergartens, driver training, and medical drugs. This led him to believe that diffusion was a universal process of social change. He continued developing his ideas while at Ohio State University, researching the diffusion of agricultural innovations among Ohio farmers. In 1962, he published the first edition of "Diffusion of Innovations," summarizing research findings and advocating for a more standardised approach to studying the diffusion process (Rogers, 2003).

Rogers' (2003) thesis describes the spread of new ideas (innovations) through communication channels over time. Initially, these innovations are viewed as uncertain and potentially risky. To overcome this uncertainty, individuals often look for others who have already embraced the new idea. This leads to a gradual diffusion process, starting with a few individuals who adopt the innovation and then share it within their social circle. This dissemination process usually takes several months or even years to reach a wider audience.

In the following sections, I will examine the concepts in Rogers's theory as stated in his definition. The first concept to be examined is the concept of innovation, its attributes, stages in an organisation, its adoption, and the characteristics of adopters. The second concept to be examined is the concept of social systems.



### 2.3. Attributes of Innovation

This theory proposes five attributes of innovations that influence the rate of adoption by individuals in a social system. The adoption rate is the speed at which social system members adopt an innovation (Rogers, 2003). The first attribute, relative advantage, is the degree to which an innovation is perceived as superior to the idea it replaces. Higher perceived relative advantage leads to a faster rate of adoption. Compatibility, the second, is how an innovation aligns with the existing values, past experiences, and needs of potential adopters. Higher perceived compatibility is associated with a faster rate of adoption. The third attribute is complexity which refers to the degree to which an innovation is perceived as challenging to understand and use. Higher perceived complexity is linked to a slower rate of adoption. The fourth attribute is trialability which considers the extent to which an innovation can be experimented with on a limited basis. Greater perceived trialability is associated with a faster rate of adoption. The last attribute is observability which is the degree to which the results of an innovation are visible to others. Higher perceived observability leads to a faster rate of adoption (Rogers, 2003).

The attributes of innovation as outlined by Rogers' Diffusion of Innovations theory offer a valuable framework for analysing the adoption of data journalism in Ghana. Relative Advantage refers to the perceived benefits of data journalism over traditional journalism practices, such as the ability to provide evidence-based reporting. This attribute will be central to understanding why certain journalists and newsrooms in Ghana may embrace or resist data journalism practices. Compatibility explores how well data journalism aligns with the existing values, experiences, and needs of Ghanaian journalists and media organizations. This attribute (compatibility) will help assess the fit between data journalism and local journalistic norms. Complexity addresses the perceived difficulty of adopting data journalism, including the technical skills required and the

challenges of working with large datasets. This will be crucial in understanding the barriers faced by Ghanaian journalists in integrating data journalism into their work. Trialability pertains to the opportunities for journalists to experiment with data journalism on a small scale before fully committing to it. This will be examined in the context of available training programs and the willingness of media organizations to adopt new practices incrementally. Finally, Observability considers the visibility of the outcomes of data journalism practices, which influences other journalists' and organizations' decisions to adopt these methods. In Ghana, the success and impact of data-driven stories could either encourage or dissuade further adoption, depending on how widely these outcomes are recognised and valued. By applying these attributes to the analysis, this thesis will offer a comprehensive understanding of the factors influencing the adoption and practice of data journalism in Ghana.

#### **2.4 Stages of Innovation Adoption in Individuals**

According to the diffusion of innovation theory (Rogers, 2003), there are five stages of adoption that individuals go through when they encounter an innovation. The first stage is the awareness stage. During this stage, the individual becomes aware of the innovation through mass media or personal networks. The second stage is the interest stage. In this stage, the individual becomes interested in the innovation and seeks more information about it. The third stage is the evaluation stage. At this stage, the individual evaluates the innovation based on their needs and circumstances. The fourth stage is the trial stage. The individual tries the innovation on a small scale to assess its potential benefits and drawbacks. The final stage is the adoption stage, where the individual decides to adopt and integrate the innovation into their regular practices or routines. It is important to note that not all individuals will move through these stages at the same rate or in the same way. Some individuals may skip stages, while others may go back and forth between stages before

deciding to adopt or reject the innovation. The five stages of innovation adoption as described by Rogers (2003) provide a valuable framework for analysing how data journalism is being adopted by individual journalists and editors in Ghana. The awareness stage is particularly relevant when considering how journalists and media editors in Ghana first become aware of data journalism through professional networks, training programs, or exposure to successful case studies in other regions. In the interest stage, these individuals may seek further information about the benefits and applications of data journalism, such as how it can enhance investigative reporting or provide deeper insights into societal issues. The evaluation stage involves assessing the relevance of data journalism to their specific contexts, including the resources available and the potential challenges they might face, such as limited access to reliable data. During the trial stage, Ghanaian journalists might experiment with data journalism on a small scale, perhaps by incorporating data into a single report to gauge its effectiveness and audience reception. Finally, in the adoption stage, those who find data journalism beneficial may integrate it into their regular reporting practices, leading to its broader acceptance within the media landscape.

## **2.5 Characteristics of Adopters**

According to the theory, adopters can be classified into five categories based on the timing of their adoption relative to others. The first category are innovators, the first individuals to adopt new ideas or technologies. These people are adventurous, enthusiastic about innovation, and often form connections beyond their local networks. They have the financial resources and technical knowledge to handle the risks associated with new ideas, and they thrive on the uncertainty and challenges that come with innovation. Although they might face scepticism within their local communities, innovators play a crucial role in introducing and spreading new ideas, acting as gatekeepers in the diffusion process (Rogers, 2003).

The second group are the early adopters. Early adopters are the second group to adopt the innovation. Early adopters are important individuals within the local social system who play a significant role in the diffusion process of innovations. They have a high degree of opinion leadership and are sought after for advice and information about new ideas. Early adopters serve as role models for others in the system and help trigger the critical mass needed for widespread adoption. Adopting and endorsing innovations decreases uncertainty and contributes to the successful diffusion of new ideas (Rogers, 2003). The third group are the early majority. The early majority represents a significant portion of a social system, making up about one-third of its members. They adopt new ideas just before the average member of the system and play a crucial role as a link between early adopters and late adopters. The early majority interact frequently with their peers but do not hold positions of opinion leadership. They tend to deliberate before fully adopting a new idea and follow the lead of early adopters rather than being pioneers themselves.

The late majority adopts the innovation after most of the population has already done so. Like the early majority, the late majority constitute around one-third of the members of a social system. They adopt new ideas just after the average member of the system. For the late majority, adopting innovations may be driven by economic necessity and increasing peer pressures. They approach innovations with scepticism and caution and only adopt when most others in the system have already done so. The late majority require strong support from system norms and peer pressure to feel comfortable adopting new ideas, as they have relatively limited resources and are risk-averse.

Laggards, the last adopter category in a social system, lack opinion leadership and are highly localised in their outlook. They have minimal interactions in their social networks and often refer to past practices when making decisions. Laggards are sceptical of innovations and change agents, and their adoption process is lengthy, lagging behind the awareness of new ideas. Their resistance

to innovations is rational due to their limited resources and cautious approach to avoid potential failures. The laggard's precarious economic position necessitates careful consideration before adopting innovations.

The adopter categories outlined in the theory offer a framework to understand the varying rates at which data journalism is being embraced in Ghana. Innovators in the Ghanaian media landscape are those pioneering journalists and media organizations who were the first to experiment with and integrate data journalism practices. These individuals, often equipped with advanced technical skills and resources, have been instrumental in introducing data journalism to the broader community, despite potential scepticism from peers. Early adopters represent the next wave of influential journalists who have recognised the value of data journalism and have begun incorporating it into their work. Their endorsement and utilization of data-driven reporting serve as a model for others, helping to reduce uncertainty and encourage wider acceptance within newsrooms. The early majority in Ghana's media industry comprises journalists who adopt data journalism after seeing its success among early adopters. While not as quick to innovate, they play a critical role in bridging the gap between early and late adopters, contributing to the mainstreaming of data journalism. The late majority includes those who adopt data journalism practices later, primarily due to external pressures such as industry trends, economic necessity, or the increasing demand for data-driven stories. Their adoption tends to be cautious and contingent upon seeing the success of the approach among their peers. Finally, laggards in the Ghanaian context are the journalists or media houses that are most resistant to adopting data journalism, often due to limited resources, scepticism, or a strong preference for traditional reporting methods. Understanding these categories will provide insight into the diverse ways data journalism is being adopted across Ghana, highlighting both the drivers and barriers to its diffusion.

## 2.6 Social Systems as an Element of Innovation Diffusion

In the diffusion of innovation theory context, social systems refer to the groups and networks of individuals who share similar social and cultural backgrounds, norms, values, and beliefs. These social systems can be formal or informal and may include organizations, communities, societies, or any group of people who have the potential to adopt an innovation. Social systems play an essential role in the diffusion of the innovation process because they influence how innovation is communicated, evaluated, and adopted within the group (Rogers, 2003).

The concept of social systems, as outlined in Rogers' Diffusion of Innovation theory, is crucial in understanding the adoption and diffusion of data journalism within the Ghanaian context. The stakeholders involved in this ecosystem—journalists, technology professionals, newsroom managers, organizations that train journalists, and government agencies such as the Right to Information Commission, National Information Technology Agency, and Ghana Statistical Service—collectively form the social systems that influence how data journalism is communicated, evaluated, and adopted. These diverse groups bring different perspectives, resources, and motivations that shape the norms, values, and beliefs surrounding data journalism. For instance, newsroom managers who prioritise innovation and data-driven reporting can set a precedent within their organizations, encouraging journalists to adopt these practices. Similarly, government agencies and training organizations may play a pivotal role in providing the necessary resources and frameworks that support the integration of data journalism into everyday reporting. Understanding how these interconnected social systems function in Ghana will provide a comprehensive view of the factors that either promote or inhibit the diffusion of data journalism, revealing the complexities and dynamics that drive its acceptance and growth within the media landscape.

## 2.7 Limitations of the Diffusion of Innovation Theory

When applying the Diffusion of Innovation theory to the context of data journalism in Ghana, certain limitations of the theory become apparent. One key limitation is that the theory tends to oversimplify the adoption process, often assuming a linear progression through stages that may not reflect the complex realities of innovation adoption in diverse and dynamic environments (Rogers, 2003) like the Ghanaian media landscape. Additionally, the theory's categorization of adopters (e.g., innovators, early adopters, etc.) can sometimes ignore the nuanced socio-cultural and economic factors that influence how different stakeholders, such as journalists, newsroom managers, and government agencies, interact with and adopt data journalism. This rigid classification may not fully account for the challenges unique to developing regions, such as limited access to technology or varying levels of digital literacy among journalists.

To mitigate these limitations in the upcoming analysis, my research will take a more contextualised approach by incorporating the specific socio-economic and cultural factors that shape the adoption of data journalism in Ghana. Rather than strictly adhering to the linear model proposed by DOI theory, the analysis will recognise the iterative and non-linear nature of innovation adoption within this context. Moreover, by closely examining the roles of different stakeholders—such as journalists, technology professionals, and government agencies—this research will highlight how their interactions and the broader systemic influences contribute to the diffusion process, thereby providing a more comprehensive understanding that addresses the limitations of the theory.

Another significant criticism of the Diffusion of Innovation theory, particularly relevant to the study of data journalism in Ghana, is its limited consideration of power dynamics and the influence of gatekeepers within social systems. The theory often assumes that innovations diffuse relatively evenly across a social system, without adequately accounting for how power imbalances, such as

those between media organizations and government agencies, or between urban and rural journalists, can affect the diffusion process. In the context of Ghana, these power dynamics can significantly influence which innovations are promoted, who has access to them, and how they are implemented. For instance, larger, well-funded media outlets in urban areas may adopt data journalism more readily than smaller, resource-constrained outlets in rural regions, leading to unequal diffusion across the country.

To address this limitation, the upcoming analysis will pay special attention to these power dynamics, exploring how they shape the adoption and practice of data journalism in different parts of Ghana. By examining the roles and influence of various gatekeepers, such as newsroom managers or government agencies like the National Information Technology Agency, the research will provide a more nuanced view of how data journalism is diffused and practiced. This approach will help to uncover any disparities in adoption and ensure that the analysis is sensitive to the complexities of the local media landscape, thereby offering a more balanced and realistic application of the theory.

## **2.8 Conclusion**

By adopting the Diffusion of Innovation theory, the study can gain a deeper understanding of the factors that impact the adoption and use of data journalism in Ghana, the roles of actors in the ecosystem and provide insights into how this new form of journalism can be adopted more widely in the country.



## CHAPTER THREE

### LITERATURE REVIEW

#### 3.0 Introduction

This chapter reviews both pioneering and contemporary research into data journalism and provides a firm grounding in literature to guide the study. Literature reviews are crucial in research, offering a comprehensive overview of relevant published work in a specific area. By analysing key findings, perspectives, and methodologies, they identify gaps in knowledge and contribute to the development of a subject over time. Integrative reviews are especially valuable for synthesizing and evaluating the literature on emerging topics, leading to the identification of new theoretical frameworks and research directions (Lim et al., 2022). The results of the review will be discussed in themes in this chapter as follows.

#### 3.1 Data Journalism Definitions and Classifications

According to Lewis and Waters (2018), data journalism is a term with multiple interpretations and complexities that challenge easy academic explanations. Early practitioners of data journalism, like Holovaty, were not too concerned about marking out boundaries for this form of journalism. In fact, one of his famous blog posts on the subject is titled, "Is data, journalism? Who cares?" (Holovaty, 2006). A review of the early literature that emerged once scholarly attention shifted to the practice suggests that definitions of the genre are geographically determined. United States data journalists, perhaps influenced by journalist-programmer Holovaty's pioneering essay, tend to associate the term with numbers, programming, visualization, mapping, and public records (Fink & Anderson, 2015). Swedish journalists describe it not necessarily as programming but as closely connected to crowd-sourcing or gaining public assistance in gathering data. They view it as a set of work methods to make a journalistic sense of raw data (Appelgren & Nygren, 2014).

Simon Rogers, who helped pioneer data journalism at UK's *The Guardian*, defined the field broadly as the use of numbers and as "using data to tell stories in the best possible way, combining the best techniques of journalism" (Rogers, 2019). Heravi and Lorenz (2020), describe data journalism as "finding stories in data—stories that are of interest to the public—and presenting these stories in the most appropriate manner for public use and reuse". Her conception of data journalism puts the tenets of journalism first; what is central to the investigation, which is the story, and the communication of that story to the public. The data is only the source, and computational methods and applications are the tools journalists use in their work.

In Africa, Gondwe and White's (2022) study assessing data journalism in Tanzania and Zambia takes quite a dim view of what they refer to as Anglo-American conceptualizations of data journalism, which overly privileges quantitative and technological methods. These methods, they assert, are traditionally lacking in journalism education in sub-Saharan Africa and are too expensive for low-resource media systems to keep up with. They claim that beyond the liberal and democratic corporatist media system approaches that characterise data journalism in the Global North; there are other forms of qualitative data-driven practices (such as rigorous interviewing and critical observational methods) that journalists in Africa adopt for their investigative stories which should be considered lest scholars risk perpetuating cultural knowledge divides. Their findings revealed that most Tanzanian and Zambian journalists (most of whom had practised journalism for about ten years) indicated that the field of data journalism was new and required a lot of statistical skills, which they believed would come with young graduates whose new curricula emphasise statistical methods. Most of them also perceived data journalism negatively in that it was not able to tell a true story other than to offer statistical interpretations of government documents such as national budgets, census, and other-related economic schema. This criticism of

data journalism as being overly dependent on statistics and data and not the story finds resonance in a study by Lewis and Waters (2018) conducted in the aftermath of unexpected election outcomes in the United Kingdom and the United States in 2015 and 2016, which resulted in journalists expressing concerns about data journalism which had played a significant role in poll predictions on news platforms, raising questions about its definition and role as a developing field. Journalists in both countries who favoured traditional methods and perceived data as less reliable than on-the-ground reporting pushed back against data journalism. The results of the study highlight that news culture in general often prioritises traditional approaches over unfamiliar evidence tools.

Interestingly in Gondwe and White's (2022) study, a majority of the journalists reported using data as a source for their stories and reported that they also combined data with interviews to create more credible stories. The authors concluded that this suggested that because of the narrow way data journalism has been defined, even though the journalists were already practising some form of data journalism, they did not believe they were. This is in part corroborated by Okocha and Odeba (2022), who found that Nigerian journalist's view of data journalism seems less reliant on the high level of technology present in their American counterparts. To these journalists, data journalism practice was characterised by a comparison of issues, infographics, figures, charts, symbols, and statistical information. However, other African scholars believe that data journalism is best done with computers. Scholars such as Madrid-Morales' (2020) have called for media researchers and journalists in Africa to leverage the use of computational methods in their journalistic practices, and Mutsvairo (2019) has emphasised the need for basic familiarity with data visualisation software like DataWrapper and spreadsheet applications like Microsoft Excel.

Attempts have been made to reconcile what seems to be the many faces of data journalism by categorizing data journalism into three groups; Long-form data journalism, everyday data

journalism and gamified data journalism (Wu, 2022). A study by Loosen et al. (2017) revealed that long-form data projects in newsrooms focus on politics, use sophisticated data visualizations with interactivity, and rely on multiple sources, including institutional and non-institutional ones. Long data projects are characterised by their duration of months or years, use of software programs for data analysis, involvement of multiple news workers, and reliance on diverse sources. Apart from long data projects, scholars have discussed "daily data-driven stories" or "everyday data journalism" (Stalph, 2018; Zamith, 2019). These stories differ from long data projects in terms of their quicker turnaround, less collaborative efforts, and less investigative approaches. Daily data journalism mainly focuses on hard news, employs simple data visualizations, has low interactivity, and heavily depends on government or institutional sources.

### **3.2 Similarities and Differences Between Closely Related Genres**

Perhaps the most detailed attempt at demarcating the boundaries of data journalism from other closely related genres through evaluating their epistemological and professional dimensions comes from Coddington (2015), who identified three overlapping forms of what he termed collectively as data-driven journalism practices: (1) computer-assisted reporting, or CAR, a legacy term he saw as closely associated with investigative reporting supported by the use of computers and computer applications, (2) data journalism, defined as broader than CAR and often associated with open-source tools and open data, and (3) computational journalism, described as algorithms and automation. Computational journalism is perhaps the most closely related to data journalism, but it emphasises on computational methods and algorithms. It seeks to combine these algorithms, data, and epistemological methods from the social sciences to empower journalists in exploring vast amounts of structured and unstructured information during their pursuit of stories. Coddington (2015) classifies these three forms based on their orientation towards professional expertise or

networked participation, transparency or opacity, big data or targeted sampling, and a vision of an active or passive public. These journalistic forms are seen as related yet distinct approaches that integrate the values of open-source culture and social science with those of professional journalism.

In 2010, around the same time data journalism took off, Julian Assange, the founder of Wikileaks, which published the leaked records of the US Army's operations in the Iraq War, discussed his aspiration for the Wikileaks platform as attempting to set a new standard of "scientific journalism" (Hammond, 2017). This perspective led data journalism scholars to draw parallels between this seemingly new form of journalism to earlier strains of journalism that also sought to have a scientific bent (Hammond, 2017). The first of these is Computer-Assisted Reporting (CAR), also known as precision journalism. Philip Meyer's book, *Precision Journalism*, published in 1973, played a significant role in introducing data analysis as a crucial aspect of journalism. Meyer advocated for a "scientific" approach, emphasizing the adoption of the scientific method, objectivity, and scientific ideals (Meyer, 2002). The relationship between Computer-Assisted Reporting (CAR) and the new wave of data journalism has been a topic of extensive debate. While not everyone agrees with the National Institute for Computer-Assisted Reporting's (NICAR) claim that only the name has changed, many commentators argue that there is a connection between newer innovations and traditions (Bounegru, 2012; Westlund & Lewis, 2014). Rogers (2019) has argued that *The Guardian* newspaper has been doing data journalism since 1821 when its first edition carried a table of data about Manchester Schools. The main difference, he argues, is that data used to come in the form of big costly books, whereas now there are low-cost machine-readable data files highlighting the greater accessibility of digital data.

Lynch (2013) has pointed out the contrasting approaches of precision journalism founder, Meyer, and Wikileaks founder, Assange, regarding the ethos of journalism. Meyer believed that data analysis should ensure journalistic accuracy and minimise interpretive errors, while Assange argued that readers should determine the truth through their examination of source documents. Although some perceive data journalism as offering a renewed promise of objectivity, Assange's version aligns more with a "post-objective" journalistic culture, where transparency takes precedence over objectivity (Lynch, 2013). The transparency of data journalism, which exposes sources and data, is often connected to the normative watchdog role of the news media, where informing the public and holding power accountable is central. This appears to be a point of continuity with CAR, which is closely associated with investigative, civic, or public service journalism, as it allows for a comprehensive exploration of previously inaccessible subjects and amplifies the voices of marginalised groups (Meyer, 2002).

Bounegru (2012) further argues that data journalism democratises resources, tools, and methodologies by enabling anyone to delve into data sources. The democratizing role of data journalism is not solely due to journalists themselves but also stems from the openness and accessibility of data sources. The scientificity of data journalism depends on the audience's relationship with the source material, while the democratization of data journalism relies on the availability and openness of data sources.

Hammond (2017) extends this argument by pointing out that there exists tension in data journalism about the role of journalists themselves. On one hand, data sources and tools take centre stage. At the same time, the audience is invited to get their hands dirty, as it were, straight from the source bypassing the typical gatekeeping journalists are responsible for. Hammond (2017) further suggests that data journalists often find themselves drawn to the idea that new data-driven practices

offer a way to engage an audience by making journalism into something that everyone can join in with doing thereby centring the audience.

The consensus from data journalism appears to be that one of the features of data journalism practice that makes it distinct from similar forms of computer-assisted journalism like Precision Journalism and Computer-Assisted Reporting is the interdisciplinary nature of the genre, which brings together stakeholders such as journalists, programmers, civic technology enthusiasts, and Open Data enthusiasts (Baack, 2018).

Another feature is in its central ethos of Open Data, which carries with it certain norms and values commonly found in the Open Data movement, although there is evidence in the literature that these norms tend to be filtered through the local contexts of practising journalists. In Porlezza and Splendore's (2019) study, the authors discovered that Italian data journalists often adopt ideas and values from the Anglo-American journalistic culture, which significantly differ from the Mediterranean journalistic tradition. These ideas include the norm of objectivity, liberal views on open source and open data, networked journalism, and computing culture. Anderson and Borges-Rey (2019) examined British data journalism artefacts and identified a tendency to focus on telling a truthful story about the world. In contrast, data journalism studies in the Arab region conducted by Lewis and Al Nashmi (2019) highlighted the struggle of journalists with limited freedom of expression due to official policies and social expectations of loyalty reinforced by religion. This is corroborated by a study comparing data journalism actors in Europe and Africa by Cheruyiot et. al. (2019), which found that African actors consider their local and national expectations when adopting data journalism practices.

### 3.3 Related Studies on the Adoption of Data Journalism in the Global South

Examining the evolution of data journalism beyond the Western context is crucial as different regions and countries have adopted unique cultural orientations that define their approach to data journalism. For instance, researchers have shown that Africa's emerging data journalism narrative is centred around philanthropically-funded organizations, presenting both advantages and complexities (Cheruiyot & Ferrer-Conill, 2018). Due to limited resources and training, data journalists often rely on support from Western donors like Google News Lab, Voice of America, and the World Bank Institute. This raises concerns about the potential influence of Western ideals on local journalism, as highlighted in Relly and Zanger's (2017) research on external actors impacting news media work in Afghanistan where they find that news media work was prone to undue influence and 'capture' by various actors outside the media organisation due to the work being reliant on the funder's interests and implicit approval.

According to Cheruiyot et al. (2019), data journalism practices in the Global South are gradually being integrated into mainstream journalism, similar to how it happens in Western news media. News stories often rely on government data, but the number of data journalists at the national level is typically small, and data journalism education is still developing in journalism schools. As a result, skills development in data journalism is often an individual effort, with limited educational resources available in non-Anglo-American journalistic contexts.

In the Global South, journalists may encounter circumstances where authorities not only restrict access to relevant data but also engage in censorship, imprisonment, or even violence against journalists attempting to report unfavourable data. Studies have suggested that they might face more obstacles in data access, experience government censorship, and lack adequate training and

resources (Du, 2019; Muneri, 2019). However, it is necessary to note that the Global South also contains countries that are democratic with a vibrant liberal landscape.

Lewis and Al Nashmi (2019) present the Arab region as a difficult and dangerous environment for reporters and editors. Arab authorities are restricting access to relevant data and even censoring and punishing journalists who try to access and report data in an unfavourable way. For instance, in many Arab countries, the justification of "national security" is used to suppress certain news and limit public access to information, even when no real threat is involved. Lewis and Al Nashmi (2019) detail how reporters often balance discomfiting data-driven news work and Islamic/cultural values of respect for authority. The authors conclude that this has stunted the development and adoption of data journalism in the region. Despite a year-long search for participants across the entire Middle East and North Africa region for this pioneering study of data journalism in the Arab region, only 16 interviews were conducted. The results point to the barriers to the expansion of data journalism, both structurally (lack of public data and political and social expectations) and individually (ignorance and resistance).

In Mexico, journalists who publish data on topics like crime and corruption put their safety at risk. In certain contexts, authors have only been able to discuss data journalism's potential and gradual growth due to the absence of data and professional expertise of journalists, even when collaboration is offered. In many newsrooms, data has yet to significantly impact journalism practices; instead, its potential is conceptualised in terms of imagined affordances (Nagy & Neff, 2015).

In Africa, researchers have suggested that the availability of data is often flawed due to institutional reasons, such as resource constraints and lack of or stuttering implementation of freedom of

information laws (Mutsvairo et al., 2019). In the best-case scenarios where data are obtained freely, journalists have to contend sometimes with situations where the data is not in a machine-readable format to allow smoother processing into stories which complicate the data journalism process. The process of cleaning, preparing the data for analysis, and visualizing data can be time-consuming and expensive for journalists and newsrooms (Kulkarni, 2016). Distributing and publishing the data also comes with peculiar challenges. In Tanzania, for instance, distributing data not approved by the chief statistician is a criminal offence, and scrutiny of economic and social data has been criminalised to control the narrative presented by public sources (Mutsvairo et al., 2019).

### **3.4 Legal Frameworks Guiding Media Access to Public Information in Ghana**

Ghana promulgated a Right to Information Law in 2019, rather belatedly joining the rest of her peers on the continent. Drafted in 1999, the bill languished in the legislature and underwent three rewrites in 2003, 2005, and 2007. It was presented to Parliament for the first time in 2010, with the final version placed before Parliament in 2018 and passed as Act 989 a year later with an implementation date of January 2020 (Shaban, 2019). The law provides for the operationalisation of the constitutional right to information from the public and some private institutions, subject to exemptions that are necessary and consistent with the protection of public interest while seeking to foster a culture of transparency and accountability in public affairs. In 2022, the RTI Commission, the body set up to oversee the implementation of the Act, reported in its 2021 Annual Report that 65 public institutions received 247 information requests. 159 of the 247 requests, which translates to 64 percent of requests for information, were approved outrightly, while seven requests were rejected outrightly, representing three percent (RTI Commission, 2022).

While this suggests, on the whole, a positive attitude towards the law by the relevant institutions, journalists and scholars alike have had some reservations. Adjin-Tettey (2023) for example critiqued in part a struggle for control between public institutions that possess public information and citizens, civil society organizations, and the media. She found that a year after the effective operationalizing of the law, certain institutions resist implementing it. Some institutions reject RTI requests by claiming they do not possess the requested information; others also impose excessive and unauthorised fees for accessing the information, contradicting the fundamental principles of the RTI. She also found that some decentralised public agencies need designated RTI officers or units. Officers in such institutions still adhere to old practices and refuse access to information, citing the lack of permission from their head offices. Additionally, conflicts between the RTI Act and other laws governing information release in public institutions lead to the denial of information without considering the provisions of the RTI law. Adjin-Tettey (2023), however, was full of praise for the work of the RTI Commission, asserting that the Commission has significantly contributed to facilitating information access. It has successfully overturned initial requests that were denied or faced obstacles due to excessive charges, and its rulings on review applications and establishment of information officers in public institutions have been instrumental in ensuring the successful processing and approval of RTI requests. As part of her recommendations for a smoother implementation of the RTI law, Adjin-Tettey (2023) called for alternative cost-effective technologies for information officers to facilitate the processing of information requests, retrieval of information, and the transmission of information to applicants. She also recommended the development of technology-driven data banks that will facilitate the storage of information in public institutions and ease the search for information for applicants.

Despite these challenges, data journalism remains crucial in providing transparent and accurate information to the public, holding those in power accountable, and shedding light on important issues (Heravi & Lorenz, 2020).

### 3.5 Collaboration in Data Journalism

Collaboration is a crucial aspect of data journalism. Journalists from newsrooms all over the world often collaborate on the development of international massive data stories. The Panama Papers, for instance, showcased the transformative power of data to expose illicit financial activities and involved a collaboration of more than 100 media partners around the world with 18 African countries (Heft, 2019).

Palomo et al.'s (2019) study provides evidence for data journalism projects in which the audience plays an active part in the production process. The readers of the *La Nacion* newspaper based in Argentina are directly involved in creating data-journalism stories through data management: coding data, contributing with data, and correcting information. The researchers concluded that in Latin America, where digitalization arrived late, and investigative reporting is traditionally constrained, audience participation made it possible to collaborate on topics that the newspaper staff could not do alone.

Apart from news audience, the development of data journalism has traditionally been aided by peripheral actors, such as civic technologists, media training NGOs, and Open Data activists who often educate data journalists in using tools and accessing data (Aitamurto et al., 2011; Appelgren & Nygren, 2014; Lewis & Usher, 2016). Cheruiyot et al. (2019) studied a subset of these actors, civic technologists, in a comparative African and European context and found that the goals of civic tech are not the simple diffusion of Western ideas but rather a negotiation of local and

national origins with global issues. The two practices that civic tech and journalists share are those of facilitating and gatekeeping, with facilitating being about enabling others to take action themselves and gatekeeping being about highlighting information that is deemed publicly relevant. Journalists are closer to a gatekeeping than a facilitating role, where civic tech instead is more prominent. Civic technologists thus reach their goal of engaging people in important issues. By doing so, they influence data journalism practices by introducing friction between journalistic and civic goals.

### **3.6 Contribution of Present Study to Literature**

The present study attempts to build on the general data journalism literature by adopting an ecosystem lens in studying the adoption of data journalism. Many of the studies earlier reviewed have typically adduced evidence from either the newsroom mainly or in combination with peripheral actors. The present study operating from the Diffusion of Innovation Theory position however considers a mix of macro, meso, and micro factors in the adoption or otherwise of data journalism. To that end the study analyses how various groups at each of these three levels, journalists (micro), media training organisations (meso), civic technology institution and groups (meso), and governmental agencies (macro), interact and contribute to data journalism in Ghana. This focus not only enriches the existing literature but also offers a unique perspective on the dynamics of data journalism in a developing country context.

Also, the current body of literature on data journalism particularly on the Ghanaian media context remains sparse. While global studies have extensively explored the evolution, methodologies, and impact of data journalism around the world as well as in a handful of African countries, there is a significant dearth of research that focuses on data journalism as applied in Ghana. Most of the

recent studies on Ghanaian media innovation have been on newsroom use and appropriation of emerging digital technologies including Artificial Intelligence but not the context of data journalism (Jamil & Appiah-Adjei, 2019; Adjin-Tettey, et al., 2024; Demuyakor & Boye-Doe, 2023). Additionally, Sackey et.al (2022) conducted a systematic review on data journalism in Africa which revealed data journalism in other countries but not Ghana despite the relatively unique characteristics of the Ghanaian media earlier described. A search with key terms “Ghana”, “Data Journalism”, “data-driven journalism”, on easily accessible journal databases such as Google Scholar, Scopus, and JSTOR did not show relevant data journalism studies in Ghana as at the time this study was being conducted. This study seeks to address the gap by presenting empirical data on data journalism practices in Ghana especially after a decade’s worth of efforts and initiatives. This study focuses on the processes, challenges, and impacts of data journalism in Ghana and provides new insights that may inform both academia and practice. By documenting and analysing the experiences of key stakeholders in the field, this research contributes to a deeper understanding of how data journalism is evolving in Ghana, offering a foundation for future studies in this area.

### **3.7 Chapter Summary**

This chapter discusses the relevant literature on data journalism, highlighting both global and regional contexts and perspectives. The chapter also discusses the role of various stakeholders, in data journalism. Finally, this chapter addressed the specific gaps in the literature that this study seeks to fill, particularly the lack of empirical research on data journalism practices in Ghana. The insights gained from this analysis will provide a strong foundation for the subsequent chapters, which explore the methods, results, and implications of the research.

## **CHAPTER FOUR**

### **METHODOLOGY**

#### **4.1 Introduction**

This chapter discusses the paradigm and methodology that was employed in this study. It describes the processes and techniques that were used to elicit the data to arrive at findings that appropriately addressed the research questions. The chapter provides an overview and justification of the research design, the target population of the study, sample size and the technique for sampling participants, data collection and analysis processes, and ethical considerations. The purpose of the research design was to enable the researcher to explore practices of data-driven journalism in Ghana, attitudes and perceptions of media stakeholders about data journalism uptake in Ghana, challenges and opportunities experienced by journalists and media organizations and how media stakeholders understand their role in the propagation of data journalism.

#### **4.2 Research Paradigm and Methodology**

Wimmer and Dominick (2011) define a research paradigm as an accepted set of theories, procedures, and assumptions about how researchers look at the world. They describe three distinct paradigms to social science research which are: positivism or objectivism, interpretive, and critical. The present study is rooted in the interpretive paradigm. As Alharahsheh and Pius (2020) explain, interpretivism emerged as a subjective critique of positivism, focusing on the nuanced variables and aspects specific to a given context. Unlike physical phenomena, human beings are seen as unique in their ability to provide deeper meanings, and thus cannot be studied in the same way. Consequently, Saunders et al. (2019) argue that data collected and analysed within this paradigm is less likely to be generalised, as it is heavily influenced by specific contexts, perspectives, and values.

According to Creswell and Poth (2018), interpretivist researchers typically use qualitative data collection methods, such as interviews, observations, and focus group discussions, to gather rich and in-depth information about participants' experiences and perspectives. The interpretive approach involves inductive analysis, where themes and patterns emerge from the data rather than being predetermined by the researcher. Researchers aim to identify themes and meanings that arise from participants' narratives. Finally, interpretivists value detailed and contextually rich descriptions of social phenomena. They strive to provide a "thick description" that captures the complexity and nuances of participants' experiences and social interactions (Creswell & Poth, 2018).

A systematic review of data journalism research in sub-Saharan countries where data journalism could be said to be in its beginner to intermediate stages reveal the preponderance of qualitative methodologies, such as in-depth interviews and case studies employed by the researchers to adduce evidence (Sackey et al., 2022). This is to be expected as a qualitative orientation has been argued by research methodology scholars (Creswell & Poth, 2018) to complement an in-depth exploration of emergent phenomena. Qualitative methodology adopts the interpretivist epistemology, where researchers seek to explore and interpret the subjective meanings, perspectives, and interpretations that individuals attach to their experiences and the social world around them (Creswell & Poth, 2018).

This study employs a qualitative research methodology to delve into the perspectives of various data journalism stakeholders in Ghana, focusing on how they perceive and practice data journalism within their specific contexts. Qualitative research is particularly appropriate for this study as it emphasises understanding the meaning and processes behind phenomena that cannot be easily quantified or generalised. It aims to provide a specific, in-depth understanding of how data

journalism is practiced and adopted by journalists, newsroom managers, civic technology groups, and governmental representatives in Ghana.

The qualitative approach is well-suited for this study because it allows for a detailed exploration of the decisions, processes, and experiences of these stakeholders as they engage with data journalism. This methodology supports the study's aim to gain a comprehensive understanding of how data journalism is integrated into the Ghanaian media landscape, and how the various actors involved navigate the challenges and opportunities it presents. Additionally, the theoretical framework of Diffusion of Innovation theory aligns with the qualitative approach, as it necessitates an exploration of the meanings and interpretations that stakeholders ascribe to data journalism, and how these interpretations influence the adoption and adaptation of this innovation within their respective environments.

#### **4.3 Research Method**

The method underpinning this study is the in-depth interview method. Given the study's objectives, it was appropriate that in-depth interviews be conducted to gather rich data from the participants' words or the description of the participants' experiences. This method has been repeatedly used in data journalism research (Sackey et al., 2022), especially in contexts where the population of data journalists is generally small and the research objectives are exploratory. In-depth interviewing is a method of collecting data that allows the participant to freely express his or her experiences and meanings in context (Saunders et. al., 2019). An in-depth interview is likened to a conversation to gather information which involves an interviewer, who coordinates the process of the conversation and asks questions, and an interviewee, who responds to those questions (Saunders et. al., 2019). Interviews have the advantage of quickly providing large amounts of in-depth data. Immediate

follow-ups and clarification of participants' responses (probing) are allowed in in-depth interviews (unstructured and semi-structured).

However, a major disadvantage of interview as a data collection method is that the participant may not be willing to provide adequate and genuine information. This is mitigated by spending time explaining the research's purpose to the participant, obtaining full consent before taking notes or recording, listening carefully to ask probes, and assuring the participant that they can request a copy of the transcript if they so desire. Another disadvantage of this method is that it requires much time to conduct and transcribe the audio tapes or other notes.

#### **4.4 Study Participants and Sampling**

The study operationalised data journalism stakeholders (Cheruiyot et al., 2019) as the following participant categories; journalists trained in or practicing data journalism, newsroom editors/managers, civic technology groups or Open Data enthusiasts, representatives from media training organizations, and relevant governmental institutions. The selected participant categories are essential for a comprehensive analysis of data journalism in Ghana. Each group plays a distinct yet interconnected role in the data journalism ecosystem. Journalists and newsroom managers provide insights into the practical implementation and organisational dynamics, while civic technology groups and Open Data enthusiasts highlight the technological infrastructure supporting data journalism. Training organizations shape the skills and knowledge necessary for its practice, and governmental institutions influence data accessibility and transparency. In this study, the population comprises 17 participants representing these stakeholders who are integral to the creation, distribution, and facilitation of data production for effective data journalism in Ghana. The selection of these participants was based on their expertise and involvement in the data journalism landscape, ensuring a rich and comprehensive understanding of the field.

The study employed purposive and snowball sampling techniques. According to Wimmer and Dominick (2011), the sampling process can be more efficiently executed by using key participants, that is, members of the group who are extensively knowledgeable about the group's activities, routines and patterns of communication, often acquired by virtue of their many years of membership in that group. The purposive sample includes participants, subjects, or elements selected for specific characteristics or qualities and eliminates those who fail to meet these criteria (Wimmer & Dominick, 2011). The researcher sampled participants in various groups who were knowledgeable about activities relating to the adoption of data journalism practices in Ghana and past or ongoing collaborative stakeholder initiatives related to data journalism in Ghana. It also sampled participants with knowledge on the policy and legal framework relating to data access, storage and publication in Ghana. Purposive sampling was chosen due to the researcher's prior knowledge and understanding of the critical role these stakeholders play in the data journalism ecosystem in Ghana. This method allowed the researcher to deliberately select individuals who possess in-depth knowledge and are actively engaged in the field, making them ideal participants for this study.

Given the specialised nature of the field and the challenge of accessing all relevant participants especially because most media organisations considered did not have specific roles for data journalism, snowball sampling was also employed to help in selecting prospective data journalists. This approach involved initially identifying a few key participants who met the research criteria. These participants were then asked to recommend other potential participants within their professional networks most often fellow cohort mates in training programmes. This method was particularly effective in reaching participants who did not necessarily describe themselves as data

journalists but incorporated data journalism practices in their work and ensured that a comprehensive range of perspectives was captured.

The final sample consisted of 17 participants which falls well within the range advised for in-depth interviews (Creswell & Creswell, 2018) and also fell within the average size of participants for similar research conducted (Chiumbu & Munoriyarwa, 2023; Wu, 2022). The sample size is also justified because the design of the study is such that it does not seek generalizability and therefore does not need a representative probabilistic sample to adduce evidence to make inferences (Creswell & Creswell, 2018). To maintain confidentiality, participants were assured anonymity before the interviews, and their true identities are not revealed in this study. Instead, they have been assigned lettered codes according to their respective groups: journalists (Jn), news editors or managers (NEM), civic tech groups (CTG), governmental organizations (GDR), and media training organizations (MTO). This coding system is used consistently throughout the discussion to protect participants' identities while preserving the integrity of the data.

The table below presents the details of the participants of this study. It contains the alpha-numeric codes, their designated roles and job titles, the number of years of experience in their role, the organisation they work for, and the specific focus or area of specialisation.

**Table 1.0: Details of Research Participants**

Participant code	Designation	Years of Experience	Media Organisation	Media Focus
J1	Business Journalist	20+	EIB Network	Business and financial journalism

J2	Data and Research Analyst/Journalist	3+ years	Multimedia Group: Joy News/Business	Data and Research Analysis
J3	Sports Data Journalist	8 years	Oman FM	Sports Reporting
J4	Data Journalist	11 years	OmniMedia/Citi	Digital Journalism
J5	Financial Journalist	10+ years	Business and Financial Times	Financial Reporting
J6	Data Journalist	6 years	Tech Labari	Data Journalism
J7	Blogger	11 years	Ceditalk.com	Social Commentator
J8	Data Journalist	10+ years	iWatch Africa	Data Journalism
J9	Journalist and News Editor	15+ years	Peace FM	Journalism
NEM	News Editor and Manager	20+ years	Ghana Business News	News Editing
CTG	Data Analyst	5+ years	Mobile Web Ghana	Data Design and Management
GDR1	Acting Unit Director	5+ years	Ghana Statistical Service	Statistical Data Production and Dissemination
GDR2	State Institution	10+ years	NITA	Public Data Management

GDR3	State Commission	5+ years	RTI Commission	Information Regulation
MTO1	Media Personnel Training	10+ years	Penplusbytes	Media Personnel Training
MTO2	Media Personnel Training	4 years	Media Foundation for West Africa	Capacity Building and Media Personnel Training
MTO3	Lecturer	5 years	University of Education, Winneba	Lecturer: School of Communication

#### 4.5 Data Collection Instrument

A semi-structured interview guide was employed as the primary method for data collection. The semi-structured interview guide provided a flexible framework that allowed the researcher to explore the research questions while allowing participants to share their perspectives and experiences in their own words (Wimmer & Dominick, 2011; Deo-Silas, 2013). The guide was designed after an extensive review of the literature on data journalism and the specific context of Ghana. It included open ended questions on key themes such as the definition and practices of data journalism, the opportunities and challenges in practicing data journalism, the role of media stakeholders, the interaction between journalists and governmental data agencies, and the impact of data journalism on public engagement. The instrument was modified to suit each category of participants and allowed for flexibility, enabling probing deeper into topics as they arose during the conversation. This balance ensured that all relevant subjects were covered while allowing participants the freedom to express their views fully and naturally (Creswell & Poth, 2017).

#### **4.6 Conducting the Interviews**

The interviews were conducted in settings that were convenient and comfortable for the participants, primarily through face-to-face meetings, though some interviews were conducted via phone or video conferencing due to logistical constraints (Creswell & Creswell, 2018). The interviews were conducted between July and September 2023 and lasted between 20 to 60 minutes, depending on the depth of discussion required for each participant. In this study, the use of phone and video conferencing for interviews was justified by several factors, including logistical constraints, participant convenience, and the geographical distribution of the interviewees. Given the diverse locations of the participants, which included journalists, newsroom managers, government officials, and civic tech groups across different regions of Ghana and one participant who was based in Kenya at the moment, it was not always feasible to conduct face-to-face interviews. Additionally, some participants had busy schedules and preferred the flexibility that phone or video conferencing provided, allowing them to participate in the study without the need for travel or significant time away from their professional responsibilities. These methods also ensured that the interviews could be conducted within a reasonable timeframe. The choice to use these mediums was made with careful consideration of the need to create a comfortable environment for participants, ensuring that they could engage openly and honestly in the discussion while still maintaining the quality and depth of interaction necessary for in-depth qualitative research.

#### **4.7 Recording and Transcription**

All interviews were audio-recorded with the explicit consent of the participants to ensure the accuracy of the data collected. These recordings were crucial for capturing the detailed responses of participants that could be lost in mere note-taking. The transcription process involved a

meticulous approach, where each interview was transcribed verbatim and subsequently reviewed multiple times for accuracy. Any unclear statements were revisited through follow-up communications with participants to ensure clarity. The transcripts were then anonymised, with participants being assigned lettered codes (e.g., Jn for journalists) to protect their identities while maintaining the integrity of the data.

#### **4.8 Data Analysis**

The data was then analysed in accordance with Emerson et al. (2011) framework for qualitative data analysis. This involved the first step, which is the transcription and organisation. I transcribed and made notes from recordings in addition to my written notes from the interview process and I then organised the initial data into meaningful categories or themes that emerge from my observations. The next step is the initial coding. I started the analysis process by assigning codes to segments of data that represented specific concepts or themes. This helps in identifying patterns and connections in the data. Following that is the categories development stage, where I grouped related codes together to create new categories. These new categories represented broader themes that emerged from the data. After that is the initial memoing, which involved writing reflective memos that captured my thoughts, insights, and interpretations of the data. These memos helped to make sense of the data and develop a deeper understanding of what my participants had presented to me. This feeds into the memo sorting stage, where I then organised and sorted the memos into increasingly meaningful patterns or themes. This process helped in further refining my analysis and developing apparent connections between different aspects of the data. At the subsequent writing stage, I used the insights gained from the analysis to write a narrative that presented the findings of the research.

The coding of themes used both the inductive and deductive approaches. At the first pass, content and interpretations of thematic categories were based on the research questions, theories and objectives of the study. The data gathered was analysed with Emerson et al. (2011)'s guidelines to identify any relationships or patterns. After that, the data was carefully analysed to draw relationships between any emergent themes. After the report was developed, the findings were also compared with the literature to identify which areas were consistent with previously conducted research and which areas did not support the literature.

The researcher also ensured validity through the triangulation of data sources, as suggested by Bowen (2009). This consisted of eliciting supporting evidence on research objectives from multiple perspectives across different capacities.

#### **4.9 Ethical Considerations**

In conducting this study, the researcher adhered to ethical guidelines as outlined by Creswell and Creswell (2018, p.120). First, before initiating the study, I familiarised myself with key stakeholders in the data journalism ecosystem in Ghana, including media practitioners, media trainers, and relevant government agencies. Permission to conduct the study was formally requested by submitting an official introductory letter from the Department of Communication Studies to the relevant authorities within these organizations.

When beginning the study, I identified participants who were either suggested by their respective organizations or identified through purposive and snowball sampling. Each participant was provided with an informed consent form detailing the study's objectives, ensuring that participation was voluntary. I ensured I respected the participant's time, accommodating requests

for phone interviews or other flexible arrangements based on their availability and all the interviews were recorded with participant's explicit permission.

During the data collection phase, the third step, all participant views were treated with equal importance, and no one was misled or manipulated to align with a particular narrative. In the data analysis process, I ensured the anonymity of participants by assigning codes to represent each one, maintaining confidentiality throughout the study. Both positive and negative data were carefully examined to provide a balanced analysis.

Finally, when reporting the data, I aimed to uphold the integrity of the research by avoiding any fabrication or misrepresentation of authorship, evidence, data, findings, or conclusions. The data were presented in a clear, accurate, and appropriate manner.

#### **4.10 Chapter Summary**

This chapter presented the research design and the methods employed in carrying out this study, as well as the justifications for the methodology employed. In addressing the research problem, the study was conducted using the qualitative approach-specifically, the in-depth interview methods. The population, sampling technique, sample, data collection methods and data analysis were also discussed.



## CHAPTER FIVE RESEARCH FINDINGS

### 5.1 Introduction

This study sought to explore the awareness of data journalism among media stakeholders, as well as the prospects of data journalism in Ghana. The researcher relied on a semi-structured interview guide to conduct in-depth interviews with 17 participants with extensive knowledge about activities relating to the adoption of data journalism practices in Ghana, and collaborative stakeholder initiatives related to data journalism in Ghana. Participants with knowledge on policy and legal framework relating to data access, storage and publication in Ghana, as well as the opportunities and challenges associated with the practice of data journalism in Ghana were also interviewed. The 17 participants represent a spectrum of media practitioners, civic technology groups, media trainers, and government agencies that create, distribute, and facilitate data production for effective data journalism in the country. After a thorough analysis of the data, the findings are presented in the following themes.

### 5.2 Awareness and Understanding of Data Journalism

Journalists and media managers in Ghana demonstrated differing levels of understanding of data journalism, with many highlighting its significance and the potential benefits it could bring to mainstream reporting if fully leveraged. The practice of using data in journalism among Ghanaian journalists and newsrooms editors vary considerably, with a few practitioners distinguishing data driven storytelling and reporting from mainstream journalism. Meanwhile, other participants hold the view that data journalism, although a familiar concept, has not successfully gained roots in Ghana. Nevertheless, findings from the present study revealed an appreciable level of awareness of data journalism as a tool for immersive storytelling.

When asked to state what they thought data journalism meant, participants defined data journalism as journalism that is reliant on curated data visually presented to drive engagement. Specifically, the concept was understood by participant CTG as “people using data in telling meaningful stories that audience can understand and engage in.” For GDR1 it meant “using data by the analyst to inform decision-making or to engage the public.” For MTO1, it is a “specialized field of journalism that requires the use of well sourced data to tell compelling stories or unravel the news.” For GDR2, “data journalism may be explained as a form of journalism that employs scientific methods such as collecting, analysing, and presenting data to create news stories and insights.”

An interesting thread running through the above definitions is the ability of data journalism to meaningfully engage the general public through compelling narratives. Moreover, informants demonstrate awareness that data journalism is a skill that must be learned as well as being a technique that must be adopted and explored. This view was advanced by participant J2, “as a data journalist your basic mandate is to use spreadsheet, big data to tell stories. Maybe that is the difference between the traditional media person and you the person who call yourself a data journalist.” This view is echoed by participant NEM:

Some people even argue that all journalism is data journalism, because you need data to report on data. But of course, data journalism is a specialized area where you focus on big data, mainly, of course, there are small data, but of course, most often on very big data.

In the view of the above participants, the ability to use spreadsheet and big data is enough to distinguish traditional media practitioners from data journalists. But it is not only journalists who believe that the distinguishing feature between data journalists and traditional journalists is the use and manipulation of data in storytelling. According to one governmental agency, participant GDR3:

Data journalism involves acquiring, scrutinizing, interpreting, and visually representing data to support news stories and trends. It utilizes data analysis to uncover hidden patterns, correlations, and anomalies within extensive datasets, bolstering narratives with empirical evidence and ensuring accuracy and ethical data use. Proficiency in data handling, statistics, visualization, and critical evaluation is essential. The aim is to provide accessible and informative information, empowering audiences to comprehend complex subjects better.

The role of research as a key component of data journalism was also emphasised by participants.

According to J1:

In my view, data journalism involves conducting journalistic work based on research and facts, particularly emphasizing the use of data. It goes beyond simply reporting figures, especially when it comes to financial topics like budgets. Data journalism involves delving into these figures to identify key points that might not be readily apparent to the public. It's about dissecting data to provide clarity on complex issues and shedding light on aspects that may not be well understood.

The definition from the participant alludes to financial reporting as an area where data journalism is specifically applicable, highlighting an appreciable awareness of topics that are ideal for data journalism. This is emphasized in the following response by participant J5, “The difference [between financial and data journalism] isn't huge, except that financial journalism focuses on one aspect of the economy, while data journalism can be applied across all sectors.”

Regarding the pervasiveness of data journalism in Ghana, diverse views emerged. There were those who had a modest view of the presence of data journalism in Ghana for example J5's thoughts:

I think data journalism is still in its early stages in Ghana. Not everyone in journalism here has the necessary skills. You see some outlets like Citi FM and Joy FM putting out infographics, but it's not widespread. It's important, but it needs more attention and training to grow.

Some believed it has been existing for a long time albeit not quite formalised. According to J4:

I think data journalism is a thing that has been existing in Ghana for a long time except that we have not really placed a lot of priority or focus on it and so largely we have bits and pieces of it in different news publication. I think there are lot of media houses that are vested in business reporting, B&FT, Insight and some of the

business papers. They focus a lot on data production but I think what has been lacking is the deliberate effort to make it the centre of our reporting or the deliberate effort to continue with it in our news production. That is what has been lacking. But I think it is something that has been existing except that it has not really been centred or focused.

The definitiveness in the last statement affirming that data journalism has long been in existence and practiced in Ghana is directly contradicted by another informant who disagreed totally that data journalism is used by most media organisations. According to NEM:

There are newsrooms in Ghana that have no idea what data journalism is, but they are big, they are making money, all the advertisers go to them. So, when we go to them, and we are talking about data journalism, they look at us like a stranger from Mars.

Other participants offer assessment which supports both J4 and NEM about the scope of data journalism practices. According to J1:

I would estimate that less than 50% of journalists in our newsroom regularly incorporate data into their reporting. Many journalists are not well-versed in statistics or data analysis. Typically, data is only used when there's a specific report or official data release, such as mid-year budgets or inflation figures. There isn't a deliberate effort to cultivate data journalism skills within the newsroom.

As mentioned earlier, the use of numbers and charts for visual presentation of financial information is generally regarded as the commonest use of data journalism in Ghana. This implies that an understanding of the widespread applicability of data journalism in different sectors is limited.

### **5.3 Perceived Importance of Data Journalism**

One view that all the participants of the study agreed with is the advantages that is derived from the application of data journalism in modern media. Findings from the study suggested that all of the participants understand data journalism as an improvement on traditional modes of journalism. In the age of misinformation, data-driven journalism could be one of the ways to combat the menace and it also helps increase the credibility of journalists. According to participant J1, "It [data journalism] helps clarify complex topics and dispels misconceptions." Another participant NEM notes:

it's important because with data journalism, you can't deny the facts easily. For instance, the Ghana Statistical Service published data recently, on unemployment in Ghana, about how many young people within a certain age group do not have jobs. If you do a story on this, there is no deniability. Nobody can deny that story. Right? And anybody else who goes to the Ghana Statistical Service will find the same data, right? So using data journalism also reinforces not only journalism, and your credibility, but reinforces the importance of data in decision-making, and also using data to prove reality.

Credibility is crucial in journalism and that is why not being trusted would be detrimental to any media organisation. The meticulous efforts data journalists put in sourcing and mining accurate data are paid off by the level of trust reposed in them by the public and media consumers. In the estimation of participant CTG, data journalists “are very important component of the value chain of media and reporting”. Reiterating the point, CTG maintains that:

Most of the things that we haven't been able to grasp or to do well are because we lack data. For instance, if you tell me that some schools are under trees or we need more hospitals, well it sounds good but if you can back it up with data that X number of children fail their exams, they don't progress because the schools are under trees, they lack infrastructure and you can even map that across the country. I mean anyone who is using that for decision making is really in a good place than somebody who is just talking that more people need to go to school so it just doesn't make decision-making a good thing.

In addition, the study revealed that participants see data journalism as a means to curb over-sensationalism in media. This is echoed in the response of participant J2, “I feel telling stories with data is one of the advantages, it makes your work easy and simple because the way you present data will speak for itself.” Thus, one needs not embellish one's story to make it clearer for the viewer or listener. By just presenting the data as it is, the public can decide for themselves. Using data is preferable in situations where a journalist hopes to relay factual pieces of evidence to ascertain the veracity of a story or report stories of national magnitude. According to the Right to Information Commission's informant GDR3:

It makes stories more accurate and believable because they are based on real evidence. It also makes things clearer because it shares the source of data. This helps find hidden trends and facts. It also helps tell interesting stories with pictures

and charts. This makes people more knowledgeable and helps them understand the world a lot better.

The above perceptions are corroborated in the submission of NITA's informant GDR2. They outline some distinct advantages of data journalism as follows:

Data journalism affords journalists the opportunity to delve deeper into complex issues. By applying data analytics or analytical tools, journalists are able to expose trends and patterns in data which would aid in decision-making. When reports are driven by data, it enhances the credibility of the media. It also helps in building trust with the citizens. Employing data visualization techniques, such as charts, graphs, and interactive infographics, make information more accessible and engaging to readers. Visuals can simplify complex data and help audiences grasp the key points quickly. Data journalism is characterized by transparency about data sources, methods, and limitations. This openness allows readers to assess the reliability of the reporting and fosters a culture of accountability within newsrooms.

The views from the government agencies highlight the government's understanding and commitment of resources to bolster the creation and use of data for factual reporting of news. Thus, from the evidence gathered from the participants, they are of the view that although its proper adoption and utilisation in the newsroom is somewhat belated, data journalism is increasingly recognised for its potential to enhance the quality and impact of news reporting by providing deeper insights and uncovering hidden patterns within complex datasets. The findings suggest that the participants believe that data-driven stories tend to attract higher audience engagement and trust, as they offer verifiable and transparent evidence to support claims. This is corroborated by Participants J1 and J3, both journalists, who added that news articles incorporating data visualizations and interactive elements are more likely to be shared and discussed on social media platforms.

Participants J2 and J6 were of the opinion that data journalism can highlight critical societal issues, such as economic disparities and public health trends, by presenting nuanced analyses that traditional reporting might overlook. This view was further fleshed out by participant NEM who

was of the view that the ability to contextualize and explain intricate topics makes data journalism an invaluable tool for fostering informed public discourse and promoting accountability within institutions.

#### **5.4 Application of Data Journalism**

The use of data in journalism requires specialised knowledge to identify and process data efficiently for storytelling. Participant GDR3 sees the practice as predicated on intense scrutiny and control of key variables in news storytelling. GDR3 was of the opinion that: “Proficiency in data handling, statistics, visualization, and critical evaluation is essential.” This suggests that practitioners may need to obtain relevant training in specific software applications or undergo general data analysis training. J1 explained that:

I would estimate that less than fifty percent of journalists in our newsroom regularly incorporate data into their reporting. Many journalists are not well-versed in statistics or data analysis. Typically, data is only used when there's a specific report or official data release, such as mid-year budgets or inflation figures.

This viewpoint is supported in the narrative of J2 who also explained;

You know when you move stories beyond narrative and you begin to use data for comparative analysis, people are able to compare and contrast, people are able to check trends, people are able to check patterns. If you tell me to tell a story about Ghana's Debt exchange program, a traditional person will just narrate it, it started this, it did that, speak to a couple of people who will tell you oh we were affected this way, but a data journalist will go beyond just that, look for data, clean the data, analyse the data, visualize it to find patterns and trends so instead of just narrative, I can tell you how Ghana's debt has been from a point to another point.

Another significant finding that sheds light on the limited application of data journalism in Ghana is the desire of media to be the first to break major stories. Some journalists were of the view that the pressure to be the first to break a news story often limits the application of data journalism because it requires substantial time for data collection, analysis, and interpretation. Unlike traditional journalism, which can quickly report on events as they happen, data journalism involves

rigorous processes to ensure accuracy and depth, including verifying data sources, conducting statistical analyses, and creating compelling visualizations. This meticulous approach can be time-consuming, making it challenging to balance the demand for immediate news with the thoroughness that data journalism entails, potentially leading to less frequent and hurried application of data-driven reporting. For instance, J1 indicates that data journalism is “...about dissecting data to provide clarity on complex issues and shedding light on aspects that may not be well understood.” However other participants were of the view that the rigor is necessary and desirable. According to NEM, relying on data to tell stories prevents newsroom editors from turning into “PR consultants”.

Thus, to be able to work on a story that heavily relies on data journalism, time and resources must be dispensed profusely. Failure to do this will negatively affect the reportage in terms of facts and ethics as indicated by GDR1:

Journalists sometimes want to put out sensational stories, and that's when they get it wrong. When we see they got it wrong, we try to explain. A few instances where we've seen inaccuracies in the information, we drew their attention.

#### **5.4.1 Experiences with Data Journalism**

From the study, it was revealed that some of the journalists stumbled into adopting data journalism by accident. For other participants, the journey to becoming a data journalist lies in consistently recognising the importance of data in delivering credible stories. It is this need to establish credibility with the public that influences individual initiatives such as enrolling in online courses for certification and training. Sharing his experiences in data journalism adoption, J2 revealed:

I have gone ahead to certify myself as a data person using the google data analytics certificate course and also other short courses and training programmes with credible institutions like Afrobarometer. There were other ones too that I had to go through my own way to acquire the skills on YouTube and learn a lot because sometimes you will be expose to a training programme but you need to do a lot more in-depth training on your own.

In most cases, journalists adopt data journalism as an approach to delivering their news story and end up taking relevant steps to learn the tools needed for the job. Participant J5 shares his journey from business and financial reporting to data journalism in the following:

I started at the Business and Financial Times (B&FT) in 2017. Before that, I was with Business World magazine for about two years, and Business Finder for barely a year. From there I started to think of how my analytical skills can be applied to other topics. The UNDP offered training spaces because we do reports on economic data from Ghana Statistical Service. They had observed our work, so my colleague and I were selected to attend. I was already reporting using Excel, but I improved my skills in visualizing data. I did a story that was awarded in a UNDP masterclass.

When asked if there was any difference between data journalism and financial journalism, participant J5 responded that:

Data journalism is more about using data and visualizing it. You get a story out of the data and visualize it so that readers or consumers can make informed decisions without having to read deeply into the story. Financial journalism, on the other hand, focuses on writing stories about businesses, financial markets, and the financial sector in general.

Another participant described their entry into data journalism from being selected from h newsroom into a media training program. According to J2:

I was fortunate enough to get some holistic training from the UNDP in collaboration with the Ghana Statistical Service, and then GIJ, they had this six-month course that they taught us how to tell effective data stories so that was how I got the certificate from the UNDP and the Statistical service as someone who can tell effective data stories.

For some journalists too, the journey into data journalism takes the form of a side quest where they experiment with and learn the rudiments of data journalism before integrating its principles into future projects. According to J6;

I have been learning about data journalism just on the side. As you mentioned about data conference, that was an interesting thing to learn about it but I have been reading other data journalists from the US basically, one media outlet there so that's how come I kind of got into it. But in 2020, I started writing more stories, I started gathering my own data about start-ups in Ghana, how much they are raising money, which sectors they are covering and all of that and just creating my own database and writing stories about that.

It can be deduced from the above that, the informant engaged in several self-directed initiatives that culminated in the development of data journalism skills. Regarding the motives behind these initiatives, J6 mentioned that:

I wanted to start writing reports. I needed some numbers to write this report so just kind of scanning the internet trying to find information was hard from the beginning and because of that it was a bit frustrating so ultimately, I decided okay let me just try to gather my own data (and) because I was getting a little conversant so I decided to get my own data set overtime to create the stories I want to create.

Sometimes, the self-directed initiatives by journalists, as mentioned above, are recognised by media managers who provide larger platforms for more immersive learning experiences. Moreover, the general media culture within an organisation and shifting roles can play significant parts in the journey of journalists in adopting data journalism. This results from a journalist rising to the challenges posed by emerging trends and responsibilities assigned. This was the experience of J4 who shared their experiences as follows:

At Citi FM, I was in the new media department and so a lot of what I did was in the area of new media, just a few times I did broadcasting whether radio or TV but a lot of my work was on new media. That is where I will say largely, I was exposed to the unlimited possibilities of things happening in the digital space because it is a space that is very fast moving so you get to understand a lot of trends. Even beyond digital media to what is happening to broadcasting per say and of course, you know that even today, the way broadcasting is done, has kind of been influenced greatly by digital media operations and so my working in digital space gives me a lot of these exposures into infographics, data journalism, fact checking, misinformation and all these other things that have become critical subject in global news production and news activities. So, I will say that's where I got to learn a lot of these things and experience at first hand, how it applies to our local newsrooms in Ghana.

#### **5.4.2 Data Sourcing for Data Journalism Stories**

Deciding which stories are appropriate for data journalism practice and selecting data for it is among the key concerns of journalists who participated in the study. The study revealed that the choice to publish stories using data journalism or the decision to investigate particular stories

through data journalism boils down to similar principles of traditional journalism such as how topical or trendy a subject matter is. According to J4:

There are different things that triggers interests. One is based on developing issues. Let's just say next week will be start of BECE, I will just classify that as a developing issue then I start to think around BECE. What critical information around BECE will people find intriguing or be interesting for people to know. Will people be interested to know how many pregnant girls have been sitting BECE since 2000? Or will people be interested to know which schools have continually been adjudged winner, or the candidate that is adjudged the winner, which schools do they largely come from? These are based on a trending issue so you get to think of the intriguing things about that subject and then you try to come up with it. Sometimes, it is also based on sentiments. You are on an urge, you are just trying to find out, what can I do this week, and then you think through a few things or you are just randomly going through a website and you encounter something and then you decide to take it up. Sometimes, there is no need to reinvent the wheel, in other occasion, you just browse to certain website, something may have been produced by Mirror or BBC two years ago, related to Nigeria or Kenya or something then you try to replicate that same idea but put it in a Ghanaian context and so I think those are few examples.

The participant J1 had similar views grounding his explanation on what audiences expect from a data journalist:

You know when you move stories beyond narrative and you begin to use data for comparative analysis, people are able to compare and contrast, people are able to check trends, people are able to check patterns. If you tell me to tell a story about Ghana's Debt exchange program, a traditional person will just narrate it, it started this, it did that, speak to a couple of people who will tell you oh we were affected this way, but a data journalist will go beyond just that, look for data, clean the data, analyse the data, visualize it to find patterns and trends so instead of just narrative, I can tell you how Ghana's debt has been from a point to another point. At what point did we know that we are debt distress and then we had to do a debt exchange programme so we can use data to do all of those narratives and in doing that, the story moves beyond just narrative to evidence based because you have data to now back everything that you are saying, you are not just saying it because somebody has said it, you are saying it because you have evidence, there is data, there is something that people can make reference to and also check it themselves so that was the point that I said, I qualify as a data journalist.

In sourcing data for the stories, some journalists rely on personal contacts within their fellow media organisations as well as the Internet. According to J6:

I just used to go on news websites to see what they have written, maybe call up some contacts I know and just ask if they know anything about certain companies that I can get data from so basically its more of networking and then just desk research looking for data.

Other journalists have a more elaborate process in sourcing data for their stories. According to J4:

It depends on what you are working on. In Ghana there is a problem of finding data sources. So, depending on what I am working on, like I say in my trainings before I set off or in my planning stages, I try to list the primary, secondary or tertiary sources of the particular data I want to find, so if I want data on road accident, the police service usually come in helpful in coming up with that. If you want data on teenage pregnancy, Ghana Health Service has data on that, sometimes you get it from the national, regional or the district office, data from the legal side, you get it from the court or there are some start up companies that also provide data, health issues, again, it all depends on what kind of data you want, World Health Organisations, UN,AFDB, all these are different major data repositories that you find data, sometimes they are often related to Ghana but there are some challenges that come with those data. Largely, I will say these are some of the organisations or sources I get data from.

#### **5.4.3 Examples of Successful Data Journalism Projects and Best Practices**

The findings highlight several success stories and best practices in using data journalism in the country. For instance, participants highlighted using and transforming raw data into compelling visual representations for their TV and radio platforms from polling stations during elections. In addition, the study found that most networks use data-driven stories, particularly through online reports and evening bulletins to cover diverse topics like crime, budget, and inflation. Participant J1 explained:

In the past year, EIB Network has primarily focused on presenting data-driven stories through various channels. We have had extensive reports and write-ups published on our online platforms. One noteworthy example was a piece produced by my colleagues, which delved into in-depth analysis of specific facts and figures. Additionally, we regularly feature data-driven segments in our evening bulletin, where we explore statistics related to various topics, including crime reports, budget breakdowns, and inflation analyses. Our approach involves presenting this information in a digestible format for our viewers. Overall, our content revolves around presentations, interviews, discussions, and online reports.

This was also reflected in the data training experiences of participant CTG who explained:

In Citi for instance, we started seeing some results, back then. Citi is a pro-innovation media organisation, they embrace new things, they are excited and want to do more so when we reached out to them to participate in this project, they were

excited so they gave us people who produced news items, people who could produce both static and dynamic data visualizations for their web portal and so they started seeing some results with their online portal so I think that it was good. Ghana News Agency, they also started producing some information online. For them, I think that we had to do a lot of things but they all embraced the concept or the project. Graphic Corporation were more focused on the print aspect. We saw some print out of some visualizations and others, so I think that, in a nutshell all of them embraced the idea.

Largely, the views above highlight a positive trend of successful implementation of data journalism in the newsroom and the attending benefits that come with such proactive adoption of data journalism by organizations like Citi and Ghana News Agency, the EIB Network among others. Moreover, these stories underscore the growing importance of data journalism in enhancing credibility and trust, driven by the public's ability to independently verify information online, while also pointing out the evolving landscape of data journalism in Ghana.

#### **5.4.4 Skillset and Data Journalism Practice**

The findings of the study revealed that data journalism requires specialized skills to be mastered by journalists and media practitioners. For instance, it was revealed that one must know how to “uncover hidden patterns, correlations, and anomalies within extensive datasets, bolstering narratives with empirical evidence and ensuring accuracy and ethical data use” (GDR3). This means becoming more than a regular journalist who can tell stories and report facts. In addition, GDR2 asserted that “It is a combination of traditional journalism skills with data analysis, visualization, and storytelling techniques to provide a deeper and more nuanced understanding of complex issues.” Given this, learning how to use spreadsheets for data visualization is a key component of the adoption of data journalism.

Most of the journalists agreed that in addition to learning how to use basic data manipulation and analysis software like Excel, data visualization tools such as Tableau and Datawrapper must be mastered to create compelling graphics. They also believed that those who are willing to go the

extra mile to invest in available training opportunities to garner more skills create leverage in the journalism industry.

### **5.5 Training and Skill Development for Journalists in Data Journalism**

The findings of the study revealed the various ways through which individuals are trained to do data journalism. Journalists were of the opinion that training is through self-learning or through media training organisations. Those who take the initiative to learn how to do data journalism by themselves demonstrate a commitment to personal development that is often influenced by changes in roles and responsibilities within the organisations in which they work. On the other hand, others take them as side projects and learn how to use data alongside daily responsibilities. The following explore the available opportunities journalists in Ghana have at their disposal to learn data journalism.

#### **5.5.1 Availability of Training Programs**

In terms of the availability of training programmes for journalists willing to learn data journalism, there was a discrepancy in the responses given by journalists and media training organisations. On the one hand, journalists interviewed bemoaned the non-existence of structured training programmes accessible at all times for capacity building and skills improvement in most media organisations. According to J1:

While there isn't a formal training program within the organization for data journalism, our news editor occasionally encourages journalists to participate in free external training sessions when they become available. However, there isn't a structured plan or consistent effort to promote data journalism skills among our journalists.

From the narrative, one can glean that media institutions are not incorporating data-sourcing training in their respective organisations and only rely on publicly available or alternative means of exposing personnel to skills development. Therefore, the responsibility is pushed on the individual journalist to seek avenues to develop relevant skills in mining and creating data.

On the other hand, government organisations and other non-governmental organisations (NGOs) organise training programmes for journalists interested in learning data journalism. The testimony of J2 alludes to this:

I was fortunate enough to get some holistic training from the UNDP in collaboration with the Ghana Statistical Service, and then GIJ, they had this six-month course that taught us how to tell effective data stories so that was how I got the certificate from the UNDP and the Statistical service as someone who can tell effective data stories.

Beyond these initiatives, other means of accessing training programmes in data journalism come in the form of online courses. According to J2 above, “using the Google Data Analytics certificate course and also other short courses and training programmes with credible institutions like Afrobarometer” have helped to develop firm skills in data journalism. Despite being random and learner-initiated, both training programmes from the partnered organisations and online platforms provide credible certificates that give the beneficiaries confidence and credibility in performing their duty as data journalists.

In addition, platforms such as YouTube remain popular avenues for skills development in data journalism. According to J2, the online video-sharing platform is a great opportunity to gain insights into data journalism beyond workshops and training programmes.

There were other ones too that I had to go through my own way to acquire the skills on YouTube and learn a lot because sometimes you will be exposed to a training programme but you need to do a lot more in-depth training on your own.

In contrast, the findings revealed that training organisations in Ghana have long had programmes aimed at training journalists in data journalism. This view is summed up in the response of the designated representative of the organisation MTO1.

We have been training journalists in data journalism for over a decade of our operations. We have trained several others in using data journalism skills in the field of extractive sector oversight and in coverage of other sensitive areas like business reporting, health reporting etc.

Examining the revelation above begs the question of why most media houses have not tapped into these resources to train their journalists in data mining. The presence of organisations such as Penplusbytes, Mobile Web Ghana, and the Media Foundation for West Africa also highlights the apparent formalisation of data journalism as a practice in the country. Particularly, these institutions act as stakeholders in upholding best practices and providing frameworks for creating and maintaining large data. The breadth of insights received from the experts in these organisations also crystalizes the impact of training programmes profoundly. MTO1 asserts that “We play the role of trainers in this sense; providing the expertise in enhancing peoples’ skills and knowledge in the field”.

Similarly, CTG echoes the position above in the following response thus:

We are actively building capacity, our goal is to build capacity to ensure that at least people contribute, both the existing and the new media, like the media literacy program that we are doing, it involves journalists and students who are in tertiary institutions, we have done other ones. We’ve brought existing journalists but right now, we want to focus on journalist students and equip them so that when they go out, they already have these tools they can use to detect fake news, to detect misinformation, to detect other things and then now they can produce or consume quality news items.

Once again, the importance of training is emphasized in this response as a way to heighten the awareness and sensitivity of journalists in detecting and dealing with misinformation. Another important revelation from the foregoing response is that training is doubly targeted at practising journalists and students on their way to becoming journalists. This highlights an active and essential collaboration between independent training organisations and academic institutions to harness and expand the potential impact of young journalists in big data mining.

Circling back to the response given by J1 above, it is evident that news editors are aware of the efforts of such organisations and look out for workshops as they “occasionally encourage journalists to participate in free training sessions when they become available”.

Occasionally, media entities have also provided avenues in-house for their journalists to be exposed to relevant skills in software operation and data tinkering. This was the case for J2 who had the opportunity to learn how to use Excel to organise data:

So for instance the training that had to do with equipping myself with fact check skills, data visualization skills with Datawrapper and Excel, I think it was an in-house training that my media house actually organized and brought in resource persons and I got these skills

The foregoing views suggests that journalists who dream of becoming data journalists have access to a plethora of avenues, both formal and informal, to obtain training and sometimes professional certification as data journalists.

### **5.5.2 The Role of Training Institutions**

The findings revealed that institutions provide training opportunities for journalists to learn data journalism. Notable institutions such as the Ghana Institute of Journalism and the University of Education, Winneba were highlighted among academic institutions that provide training for individuals. Alternatively, independent organisations such as CTG and MTO1 and MTO2 offer training opportunities for journalists in data journalism. For example, MTO2 had this to say:

We run modules on data journalism as part of courses that we do but in times past we have had training programmes, sometimes three to four days we move journalists from one place to another to go and do specifically data journalism. I quite remember in 2018 when I joined the organisation, we had one like that, somewhere in Aburi. We had about ten to fifteen journalists specifically being trained on data journalism so data analysis, how to clean data, how to tell stories with data and even how to design infographics to represent, display data in most simplest form so that people can read and understand.

Interestingly, at other times, the foundational training of some journalists moving from specialised fields such as finance, sports, etc., become the springboard for advanced data manipulation. This was the case for J2 as narrated below:

The basic statistical or economics skills I got it in school. I did Economics, Mathematics and Statistics at the University of Ghana and I majored in Economics and Statistics. My first encounter with a statistical tool was in school, one of the courses we did was data science, so that was when I was actually introduced to the

R programme which is one of the oldest statistical software to analyse data, visualize and all of that.

Another important finding from the study concerning the various roles played by both governmental and independent training institutions is through technical collaboration. This comes in the form of partnerships towards public sensitisation or gauging narratives and dissemination of relevant information to the public. Participant GDR2, confirmed that the government agency actively engages journalists whenever possible, saying:

Until now, NITA has actively involved the media by extending invitations for coverage of its programs and workshops. Additionally, a forthcoming plan is to host a capacity-building workshop designed specifically for the media, focusing on e-government initiatives. The aim is to broaden their understanding of government digitalization initiatives and seek their input on how the government can enhance service delivery and tackle citizens' challenges more effectively through technology.

Partnerships like the one described above benefit all parties involved due to their symbiotic nature. Through these stakeholder interactions, the government learns how national data is used in the works of journalists and the journalists also gain privileged access to the necessary data as well as notes on how to utilize them effectively. This position was re-echoed by GDR3 thus:

The RTI Commission has been engaging with journalists and media groups in many of their activities or programmes. The aim is to ensure journalists' have a good understanding of the RTI law to enable them access information easily for news stories. The Commission also invites the media to all public activities of the Commission. This collaboration has helped promote transparency and accountability in various areas.

Again, there appears to be willingness and cooperation among state institutions and media organisations in accessing and corroborating stories using national data. According to GDR1, there are no hassles in journalists trying to get data from them to authenticate stories.

As for the ease of collaboration between journalists and the Ghana Statistical Service, it's relatively straightforward. Journalists often reach out to us when they need data urgently for a news story. We understand the importance of their work, so we try to assist them promptly without creating unnecessary obstacles. This collaboration is a crucial part of ensuring accurate and data-driven journalism.

The individual experiences of journalists as far as benefiting from existing relations between the media and other stakeholder institutions affirmed the above-mentioned symbiosis. According to J1, collaborating with specialists is the surest way of doing data journalism.

We often work closely with graphic designers to visualize data effectively, turning numbers into easily understandable visuals. We also consult subject matter experts, statisticians, and economists to gain a deeper understanding of the data. Sometimes, we rely on articles and publications from international news organizations to adapt global trends to the Ghanaian context. Collaborating with these professionals enhances the quality and clarity of our data-driven stories.

Again, on the importance of these collaborations to traditional journalism, CTG mentioned that the ultimate purpose was to work with “journalists so we can transform their news articles into data-driven news articles”.

### **5.5.3 Effectiveness of Training Institutions**

One key component in evaluating training opportunities for data journalists is the quality of training they receive. As mentioned earlier, there are various ways individuals get training in data journalism in Ghana but the most common experience seemed to be through training organisations.

According to MTO1 their effectiveness is self-evident within the journalism space;

We have been training journalists in data journalism for over a decade of our operations. In fact, if you ask a Ghanaian mid-level or senior journalist or media manager which organization conducts such trainings in Ghana, the first name they might recall is Penplusbytes. We have trained several others in using data journalism skills in the field of extractive sector oversight and in coverage of other sensitive areas like business reporting, health reporting etc.

As far as the efficiency of the available trainings, journalists were fairly appreciative of the training they received. Participant J2 described the chance to learn from the UNDP in collaboration with the Ghana Statistical Service, and then GIJ as “fortunate”.

Nevertheless, it appears the nature of newsroom culture and the specific objectives of editors stand in the way of journalists who receive training from these accredited organisations. The findings of the study revealed that whereas editors do not shy away from inviting in specialists or sending

journalists out to receive training in data journalism, they often make the application of the knowledge received impossible, albeit inadvertently. This is how MTO1 puts it:

One major challenge is the issue of editorial conflicts or in-house style of writing. We encourage our trainees to make use of their skills and knowledge when they return to their newsrooms however, the pressures of editorial demands and every outlet trying to break the news first as well as the lack of top managerial will to encourage data journalism practices in newsrooms stifles the process. We get stuck at a point since there is usually not much we can do from that front.

This is an unfortunate situation since without the use and application of knowledge of skills acquired, they may go out of practice and be “rusty”, requiring another effort to retrain journalists.

Another interesting phenomenon limiting the impact of data journalism training institutions is highlighted by GDR1 in the following narrative:

[Sometimes] there's a difference between the people who attend the training and those who actually write the stories. There are instances where I'm told that the people who come for the training are different. So what it means is that...the understanding will be different because we give the training to the group who might better understand the issues than the other group. So these are things that could bring about misreporting and all that. That is an area we have started talking about, and in future engagements, we want to see how we can bridge that gap.

The above implies that those who are often delegated by newsroom editors to participate in training programmes may not be those who need or utilise data journalism in their daily report writing. At the end of the day, although resources have been spent to train these individuals, the overall expected outcome is not be realised.

Ultimately, the ability to utilize data journalism well in telling a story comes down to how skilled the journalist is in using technologies to mine and manage data. According to J2,

You need to furnish yourself with information on every facet of the societal set-up. You need to be daring, you need to read wide you need to know everything. Now when it comes to the skills, when it comes to the tools, after being the statistical person or whatever, you need to know that you are not churning out the story for your own self but for some audience somewhere, someone who doesn't really

understand your statistical jargons so then now it comes to using the tools to break down the story.

Staying ahead, it appears, means continuous learning and self-improvement in already acquired skills. According to J3, one must learn “how to visualize data, compute common stuff like averages, percentage change” and “know the difference between percentage point and percentage change” as well as having critical computational knowledge. More importantly, some participants like J5 emphasized the need for open-mindedness as a data journalist to learn “the software that will come with it, like the software for visualization...data for online stories and publications so basically you should be ready to be learning every day”.

#### **5.5.4 Selection of Facilitators**

The presence of these training initiatives underscores the fact that journalists have access to alternative training opportunities that can be leveraged for the adoption of data journalism in Ghana. Driven by a motive of ensuring that credible journalism is foregrounded in the Ghanaian media landscape, training involves bringing in sought after industry experts to deliver targeted lessons in specialised areas. As one participant MTO1 revealed:

We have a network of facilitators we have used over time for such trainings who are well versed in the big data tech space as well as journalism trainers who have specialized in the field over time and we draw from this pool whenever the need arises and depending on the needs of the target group

It can be deduced that there is a high level of emphasis on the credibility of speakers as criteria for selection. Also, facilitators with track record of successfully utilising data in their report are considered great assets. MTO2 echoes this point in the following:

We are all about who has done it before and has the track record to show. We had some data journalists from Germany coming all the way to come and do the training. But I have also worked with Code for Africa and some other platforms, of course they are Africans. Our experience has been that we look out for people who have demonstrated capacity and often those people may not come from Ghana.

From the response above, we can infer that not only do trainers source locally trusted voices, but they also rely on the expertise and experiences of foreign partners.

From the study's findings, media organisations often put out a call for application from various media organisations to participate in training session or do so at the behest of a media entity. However, at the end of the day, the responsibility lies in the hands of the individual to take advantage of the opportunity provided and develop relevant skills for data journalism. The following response given by informant J6 sums up this point:

Basically, just doing things on my own, just trying to learn. So then there are some databases that I had to learn how to use and then calculate tables I was working with. So, I had to go to YouTube, or just go online and read some guides about how to get data, how to use charts, and how to use visualization charts and things like that. I had to learn how to use them so I had to always go online and learn how to do that on my own.

Largely, what the experiences has revealed is that individuals and organisations are making considerable efforts to increase the spread of data journalism in Ghana. At the individual level, some participants are taking it upon themselves to learn about data journalism and how to make it central to their reporting. This involves enrolling in online courses and taking advantages of new challenges to advance their knowledge in data driven reporting. On the part of media organisations and training centres, there appears to be a commitment to train as many people as possible in handling data through coordinated workshops and training opportunities.

### **5.6 Government Involvement and Policies on Data Journalism Practices**

The role of the government in sustaining the practice of data journalism in the country is paramount. From regulatory legislation and enforcement of ethical rules regarding the use and sharing of data, the government has a major role to play. Evidence from the study revealed the various steps that successive governments have taken to promote and enhance data journalism in the country. Across multiple domains, the involvement of government institutions in setting up

data storage databases, opening access to national data and training journalists on how to manage and use data were highlighted from the study's findings. According to CTG, the government has always been forthcoming in terms of bilateral collaboration towards data journalism innovations in the country.

One of the things that we have worked on with the government is the open data portal which we tried, we did some activities with eco-system players, academia, CSOs, and developers, and then we worked with other government ministries to open up their data set, put them on the portal so people can access, so the government has tried in the past to encourage. We have done training with ministry officials, like the Ministry of Communications, I think more than 20 ministries. We taught them how they can clean up their data, open up their data, created accounts for them. I think that the government tried, they continue the momentum of building the capacities for ministries to have a continuous session for them and then encourage them to open up data.

For GDR2, the open data portal is an essential resource that shows the government's commitment to ensuring that data is always available for public consumption. According to GDR2, "Through the open data portal ([data.gov.gh](http://data.gov.gh)), NITA ensures that government data is made available and accessible to all, including journalists". However, having access to data is not the same as having the ability to use them accurately or ethically. In line with this, government data management occasionally offers training sessions on what journalists need to do in using data that is made available. GDR1 narrates:

So we believe in the journalists putting out accurate information. In some of the cases... we noticed that the journalists, in trying to report, got the message wrongly. But our goal is the fact that they communicate rightly to the populace. What we have done in the past is to build their capacities. So, we have what we call statistical literacy programs, which we run occasionally. Occasionally, we offer this training to ensure they understand the processes involved in arriving at some of these indicators and all that. Basically, to deepen their understanding of the interpretation of the data that they come across and make sure that they communicate accurately.

Also, the government enforces compliance of data sharing through the Right to Information Law which among many things ensures transparency and accountability of public agencies. Findings

of the study revealed that the commission in charge of the implementation of the RTI regularly sensitizes the public and government on data sharing.

The sensitization and training activities of the RTI Commission helps data journalists by providing them with a proper understanding of their rights and responsibilities in accessing information from the public and other relevant institutions. This helps journalists find accurate data and facts for their stories. It also allows them to investigate and tell important stories based on reliable information. This way journalists keep the government accountable and share important information with the public.

Policy decisions, such as the sensitization and training activities by the RTI Commission, are crucial in promoting data journalism by equipping journalists with the knowledge and tools needed to access and utilize information effectively. These initiatives help journalists understand their legal rights and responsibilities, which is essential for obtaining accurate data and facts for their reporting. Moreover, accounts from the interview highlighted that access to information laws and training significantly improve journalists' ability to produce data-driven stories, which in turn fosters greater government accountability and transparency. Hence, in the views of CTG, there is a need to mount “civic pressure...on the government to really speed” the full implementation of the government’s open data policy.

### **5.7 Barriers to the Adoption of Data Journalism in Newsrooms**

The study provides evidence that the practising of data journalism in Ghana is not without limitations and challenges that go beyond upskilling and re-training of journalists in how to handle big data. In this section, key barriers to the adoption of data journalism such as limited access to relevant data, lack of support from newsroom management, and personal constraints are examined from the findings.

One of the key barriers to the progress of data journalism practice in Ghana according to the findings of the study is access to data. For most of the journalists that participated in the study, the obvious source of data for data journalism is secondary sources which include publicly available

data on company websites, government portals and curated news items on particular topics. The reason for this choice is highlighted by the following response from J2:

Because of the space I find myself in, you don't have the time and liberty to collect primary data for your own stories so most often we use secondary data, and by secondary data I mean government data because there are institutions and agencies mandated to collect and analyse our data and because most of the issues we speak or write about are national issues, there are somewhat data available for you to analyse so places that I usually get my data from, the finance ministry's website, UNDP, Bank of Ghana, Ghana Statistical Service, World bank data, IMF, OEC data, Our world in data and other ministries website to look at their reports and special reports so basically that's it.

The statement reflects the dependency rate of journalists on government data in performing duties as data journalists. Apart from the above-listed locally sourced avenues for data mining for journalists, other international platforms are also used. NEM outlines some of these sources in the following:

We have hardly had direct access to data ourselves. We always have access to partner data OCCRP data (Organized Crime and Corruption Reporting Project). They are based in Europe, but they have representatives in Africa, French-speaking Africa, English-speaking Africa, in the US and so on and so forth.

Despite these existing sources, there are still concerns about the existence of large databases to mine data. According to participant J4:

Unfortunately, in Ghana we don't have so many data repositories where it is a one stop shop where you can go and the data is classified according to maybe categories where you can find such data. We have it in some places but right now we don't have such a system and so depending on what you want to work on then you can find the responsible organisations then you have to ask or check directly.

In addition, time constraint limits the proper allocation of resources to digest and create primary data that can be reliable for data journalism. J2 above alludes to "the space" he finds himself in, which obviously as mentioned earlier is one of the barriers limiting the widespread of data journalism practices among journalists. The following response from NEM corroborates J2's view:

in reporting the facts, you need data and the data has to be usable, examinable data, and confirmed data, you need to be able to double and cross-check and be able to report factually. So, when you are working with data, you need to be sure this is relevant data...you have to make sure this is not outdated data and that it is current.

If you are using historical data you need to ensure it is accurate. If you are using data that is unpublished, you need to ensure that it is coming from an official source that is authenticated.

The response above indicates that data journalism requires a considerable amount of time to produce and verify data that can be reliable and useful for accurate reporting. Therefore, time constraints are barriers that are inimical to the successful practice of data journalism, especially when news agencies tend to distinguish themselves as sources for breaking news.

Other than time constraints, the study's findings revealed that it is difficult to trust some of the data found on publicly available platforms such as those mentioned above due to several factors. Firstly, it was reported that most of the data on most government websites are old. J2 revealed the frustrations of working with government data as a data journalist in the following narrative:

In Ghana, data is not readily available [and] even if they are, sometimes they become so old that they become irrelevant to the conversation that you want to have so government agencies are tasked to put up data or reports on their website so we can actually go there pick them up and feed on them but you want let's say information on Ghana's gross international reserve or how much gold or oil we have exported within a certain period you have to wait for months before you get.

Thus, there appears to be a yawning gap when it comes to an agency that will actively curate and update data from all of the vast sectors of the government for use by data journalists. This is corroborated by the representatives of some state institutions that participated in the study. For instance, GDR3 revealed, "Sometimes, finding and organizing the data takes time, especially when it's stored in different places. Again, not having enough information officers or the right technology slows the process of getting information."

Another significant barrier to data journalism highlighted by the study is the high level of bureaucracy involved in getting data from public officials. GDR3 emphasised this in the narration below:

Sometimes, the bureaucratic system in public institutions impedes easy access to information. There is also intransigence on the part of some public officers when it comes to the granting of access to information. There is also the problem of data storage which makes it difficult to access information from government institutions.

Regarding the role of the acts binding public officials to be forthright with information sharing, GDR3 revealed that journalists have not been able to benefit fully due the “lack of appreciation of the Act on the part of some public institutions which makes it difficult for them to release information to applicants”.

However, the study revealed that sometimes the barrier is the inability of journalists to access data from some of the above-mentioned sources. This view was expressed by J2, “Sometimes too where you get this government data, if you are not really trained on how to mine the data, you can go to Ghana Statistical Service website and you will not find anything.”

### **5.7.1 Support from Newsroom Management**

The organisational culture of some media houses promotes the adoption of data journalism, leading to personnel skill development and training. Strategic newsroom managers can see the potential of data journalism in boosting the overall ratings of their media agency and therefore divert adequate resources to train journalists in their media organisations. J3 specified that a lot of responsibility lies in the hands of top managers of media organisations to ensure the success of data journalism in the newsroom. J3 narrated:

Well, mainstream newsrooms need to recognize the value of in-depth domestic data journalism. Sometimes, companies can miss opportunities by not keeping up with the trends...and while it might seem challenging, media houses should realize that being able to adapt and communicate effectively is key.

### **5.7.2 Economic Barriers**

The findings of the study also revealed that economic factors play a significant role in hindering the adoption of data journalism. The financial constraints faced by many news organizations can limit their ability to invest in necessary tools, software, and training required for effective data

journalism. Factors such as the high costs associated with acquiring advanced data analysis tools and hiring or training staff with specialized skills can be prohibitive, especially for smaller media outlets with limited budgets. Additionally, the economic pressures to produce quick, cost-effective content can discourage newsrooms from dedicating resources to the more time-consuming process of data journalism. In the following narrative NEM laments the cost involved in practicing data journalism in the country:

the cost element is high. And that will explain why most Ghanaian media organizations would not invest in data journalism for instance, how do you store the data, you know, and then there are other challenges; in Ghana, you hardly get people to leak data to you. They will come and tell you the information but when you ask for documentary evidence they vanish.

Some participants were of the view that the cost involved in maintaining trained journalists who are dedicated to mining, verifying and creating data is enough to deter most organisations from investing in practicing data journalism.

Another area of cost comes from the technology required to keep journalists working efficiently with data. This can be in the form of technological gadgets and software needed to compute complex datasets. According to NEM, these are the areas requiring the most investment.

the costs in data journalism come with technology, you need high-speed internet, you need an efficient laptop, high speed, memory, you know, efficiency, you need electricity. You know, we've had power challenges in Ghana, some time ago, that affected databases, so your storage systems can be affected and all that. So to be able to have stable power systems and stable technology efficient technology costs money.

Thus, it can be seen that the adoption of data journalism within a media organisation comes with increased financial obligations and spending habits within the organisation.

### **5.8 Future Prospects of Data Journalism**

Evidence from the study suggests a strong and positive outlook on the prospects for the adoption of data journalism, driven by advancements in technology and a growing recognition of its value

in news reporting. With increasing access to sophisticated data analysis tools and training programs, journalists are becoming more equipped to handle complex datasets and produce insightful stories. Also, the rising demand for transparency and evidence-based reporting among audiences is pushing media organizations to invest in data journalism. This has necessitated cross-platform collaborations between newsrooms and tech companies to foster innovation in data visualization and storytelling techniques.

Although for the participants data journalism is still in its early days as a distinguished methodology for reliable storytelling, the success stories of those who have incorporated data journalism effectively stand as testaments for future iterations and exploration. According to J1, past success in practising data journalism has boosted the zeal of the organisation to utilise data in election coverage. The following narrative captures the enthusiasm and predictions about data journalism:

In upcoming elections, we plan to go beyond presenting raw figures. We intend to analyze which political party is gaining control in various regions and the dynamics behind these shifts. We'll focus on hotspots and tap into census data to make predictions based on past trends. Our goal is to provide viewers with a comprehensive understanding of the election results as they come in. Additionally, we're exploring the use of the CNN model to further enhance our election coverage.

The above excerpt highlights the awareness of best data journalism practices globally and how local media organisations can harness the opportunities they offer.

Among media practitioners and media stakeholders, there is a buzz about the spread of data journalism and its impact on journalistic competencies. A lot of the attention has been on equipping journalists to advance knowledge and skills in tapping into the richness of data all around.

According to J3:

Data journalism is currently a hot trend in modern-day journalism, not just in Ghana but worldwide. It's highly competitive, and I've noticed that even in countries like

India, there's a growing interest in data journalism. I encourage aspiring journalists to embrace this field despite its challenges because, in the end, it's about creating meaningful, positive content. Of course, it comes with its own set of challenges, but it's worth pursuing.

Data is the currency of modern journalism and as MTO1 echoed, the goal ultimately has been to

envision a moment where Ghanaian journalists and even those in the sub-region realize the power of data and how they can use that to achieve their purpose as the 4th estate of governance.

However, several steps must be taken to lay the right legal, administrative and infrastructural foundations to facilitate adoption.

According to GDR3, a key consideration for future prospects involves the legal matters:

Firstly, it's vital to protect individuals' private information legally, upholding their privacy. Secondly, transparency-promoting laws can be used to access important government data, respecting information ownership and obtaining consent before use. Addressing misinformation requires regulations to prevent the spread of false content. Journalists need guidance to share information responsibly and truthfully. The Data Protection Act is a key tool in achieving these goals. This legislation establishes rules for collecting, processing, and sharing personal information while safeguarding rights. It defines terms like "personal data" and outlines principles such as transparency and accountability. The Act grants individuals' rights like data access and rectification, mandates security measures, and sets penalties for non-compliance. To ensure effective compliance and enforcement of Act 989, the Commission has undertaken processes to develop regulations for the passage of a Legislative Instrument (LI). The Commission has gone further to solicit inputs from stakeholders to the draft regulations through written submissions and inputs at various stakeholder engagements before the draft LI is laid before Parliament for passage.

The above policies and legislative efforts seem to be targeted to the benefits of journalists and public officers who share information about their work under the law as they can rely on the protections and insurance of the law whenever necessary. In the views of GDR1, the efforts of government will bear fruit insofar as journalists and media stakeholders lend supporting hands.

The following highlights the assertion:

We need to enhance the use of statistics, and journalists can support us in this endeavour. If they help us get key stakeholders to use statistics, we can develop the

country even further. So it's important that they get on board, and we work together as one family...almost every two years, we conduct a user satisfaction survey. We sample some of our users to ensure we get a representative sample, both within and outside the country. In this survey, we aim to gather perspectives on our products and services. Users tell us what they're happy with and what they're not satisfied with. Based on this information, we seek to make improvements.

Another aspect of the future prospects involves training of future data journalists. According to

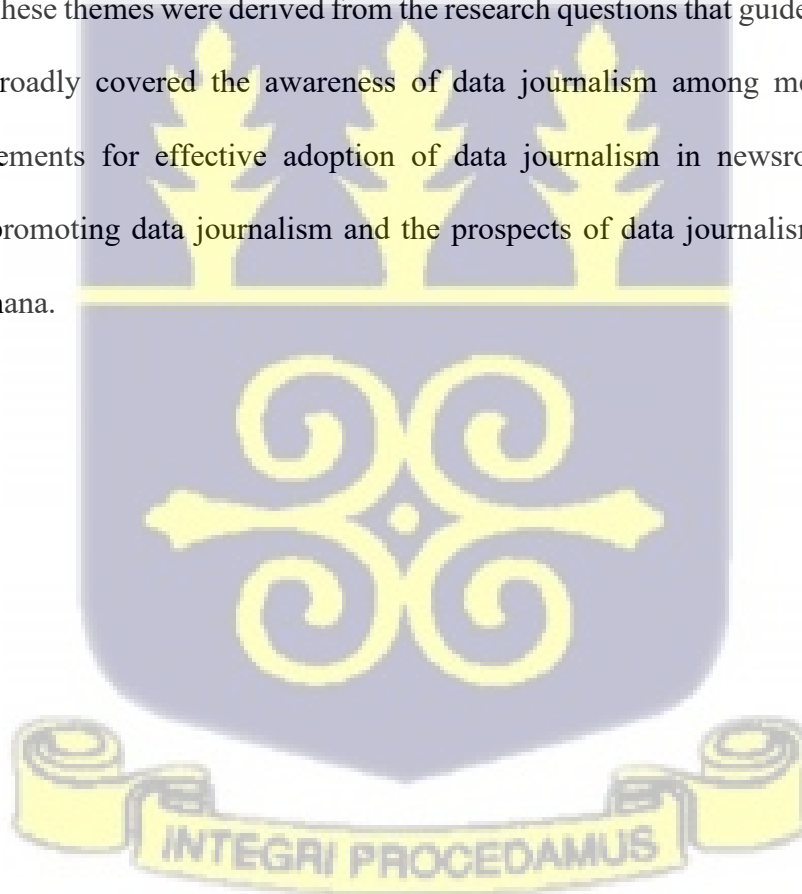
MTO1:

journalism training schools should incorporate data journalism in their curriculum and graduate people who are data journalists just as we have broadcast journalists and others.

### **5.9 Chapter Summary**

This chapter of the study analysed the findings that emerged from the data collected under a thematic basis. These themes were derived from the research questions that guide the current study.

These themes broadly covered the awareness of data journalism among media stakeholders, technical requirements for effective adoption of data journalism in newsrooms, the role of government in promoting data journalism and the prospects of data journalism in the future of journalism in Ghana.



## CHAPTER SIX

### DISCUSSION OF FINDINGS

#### 6.0 Introduction

This chapter discusses the findings presented in chapter five guided by the research objectives of the study which are to: explore data-driven journalism practices among journalists in Ghana, understand the attitudes and perceptions of data journalism stakeholders (journalists, technology professionals, newsroom managers, organizations that train journalists, and government agencies) about data journalism uptake in Ghana and examine the challenges and opportunities faced by journalists in adopting data journalism. The discussion attempts to situate the findings of the study within the existing literature premised on the Diffusion of Innovation Theory, which serves as the theoretical framework for the present study.

#### 6.1 Data Journalism Practices Among Journalists in Ghana

The study sought to explore the adoption and implementation of data journalism practices within the Ghanaian media landscape by examining the forgoing understanding of data journalism among stakeholders and practitioners.

Data journalism practices among journalists in Ghana are not all uniform, with varying levels of adoption across different media houses. For example, while some media organisations were training journalists in advanced data analysis and visualisation and developing data stories about ten years ago, others belong to newsrooms where the only time data is integrated into stories are when it concerns economic news like budget readings. As evidenced in Chapter Five, many journalists acknowledge the potential of data journalism to enhance the depth and accuracy of reporting, particularly in investigative journalism and coverage of complex issues. However, the integration of data journalism into daily routines is often hindered by a lack of necessary skills, resources, and institutional support. According to the Diffusion of Innovation Theory, these challenges can be seen as barriers to the adoption process, particularly concerning the innovation's

complexity and the perceived effort required for its implementation. The theory suggests that innovations are more readily adopted when they are perceived as easy to use and when adopters see a clear relative advantage. In Ghana, the limited diffusion of data journalism practices can be attributed to the perceived complexity of the tools and techniques involved, as well as the lack of a critical mass of early adopters who could influence wider uptake. Despite these challenges, there are pockets of innovation where journalists, often those with specialised training or support from international organizations, are experimenting with and integrating data journalism into their work, thereby slowly influencing the broader adoption of these practices within the industry

There was an appreciable level of awareness among participants concerning data journalism as a tool for immersive storytelling that involves breaking down data to clarify complex issues and illuminate aspects that might not be well understood. In addition, data journalism is understood as delivering reliable and compelling narratives using a rigorous, scientific approach. Journalists also conceive data journalism as having the potential to influence the way stories are told and presented to the general public and as an improvement on traditional modes of journalism. The descriptions given about the concept of data journalism particularly from journalists highlight an awareness of only one of the three main groups of data journalism identified by Wu (2022). These are long-form data journalism, everyday data journalism and gamified data journalism. Journalists were more familiar with everyday data journalism. The majority of participants highlighted familiarity with practices that involved the use of broad publicly available datasets organised and presented through a combination of visualizations channels often involving simple static charts with pictures (Stalph 2018; Zamith, 2019). Journalists frequently employ data visualization techniques such as infographics to enhance news delivery through both traditional mass media platforms and digital portals. Through this approach, the primary mode of data journalism hinges on presenting information as they are found from already-assembled datasets. Bradshaw (2023) contends that

data journalism extends beyond storytelling to encompass creating informative products that engage audiences through multimedia formats. However, in the Ghanaian context, data journalism practices often encounter resistance within newsrooms where there is a preference for speed in news delivery. This reluctance is underscored by the theory's emphasis on complexity as a deterrent to adoption. The additional steps involved in data-driven storytelling, such as data processing and visualization, are viewed as potential impediments to the rapid dissemination of news—a critical requirement in competitive media environments.

As presented in the constraints section of the findings, some participants were of the view that data journalism stands in the way of speedily reporting of news since data-driven stories require additional steps, processing, visualisation, computing, etc. The reluctance of media organizations in Ghana to fully embrace data journalism due to its perceived hindrance to the speed of news reporting can be explained through the Diffusion of Innovation Theory. According to the theory, one of the key factors influencing the adoption of an innovation is its complexity—how difficult it is to understand and implement. This perception aligns with the theory's assertion that innovations perceived as more complex are less likely to be adopted quickly. Moreover, the need for rapid news dissemination in a competitive media environment exacerbates this challenge, as media organizations may prioritise speed over the depth and accuracy that data journalism can provide. Thus, the perceived complexity and the fear of delayed reporting create significant barriers to the diffusion of data journalism within Ghanaian newsrooms.

Findings from the present study corroborate Gondwe and White's (2022) view that data journalism requires considerable technical skills that pose challenges for media organisations to fully integrate. Contrary to Okocha and Odeba (2022) who found that Nigerian journalists relied less on the high level of technology as compared to their American counterparts, Ghanaian journalists

highlight the essence of technology in practising effective data journalism. To many journalists who confirmed using data to tell stories in the newsroom, knowledge of Microsoft Excel remains paramount. This reflects the position of Mutsvairo (2019) that there is a need for basic familiarity with Microsoft Excel and knowledge of other data visualization resources if one is to enter the data journalism kingdom.

The study identified several successful applications of data journalism in news delivery across Ghana's media landscape. During elections, for example, raw data was effectively transformed into visually compelling representations for television and radio broadcasts. Furthermore, data-driven stories are prominently featured in online reports and evening bulletins, covering diverse topics such as crime, budgeting, and inflation. Despite these advancements, data presentation often prioritises public consumption rather than facilitating interactive engagement with the data itself (Bradshaw, 2023). Bradshaw's research underscores the versatility of data journalism, highlighting its application across various domains including economics, health, politics, and cultural trends. However, the adoption of data journalism practices in Ghana for these areas remains sluggish, indicating persistent barriers to its integration into mainstream media operations. These realities of the research findings, particularly regarding the snail-paced adoption of data journalism in Ghana, despite its benefits, are best explained by the diffusion of innovation theory that guides the study.

According to Kaminski (2011), diffusion of innovation, simply, refers to the process that occurs as people adopt a new idea, product, practice, philosophy, and so on. It accounts for the steady spread of innovation across channels among the members of a social system over time. Generally, the theory is used to explain the spread of innovation within a populace (Rogers, 2003). Drawing consensus from Rogers's (2003) attributes of innovation that facilitate adoption rate, the findings

suggest that data journalism is perceived to have a higher relative advantage among stakeholders and media practitioners. In addition, data journalism scores highly in terms of compatibility with existing media organisations' frameworks and goals. Bradshaw (2023) intimates that data journalism blends fluidly with traditional modes of journalism and often goes unnoticed. This is supported by Uskali (2015) who discovered that media organisations with track records of adoption of data journalism seldom identify clear-cut distinction between mainstream journalism and data-driven journalism, hence were hesitant to admit being data journalists. This explains that the adoption of data journalism does not call for disruptive structural changes that unsettle newsroom cultures. Moreover, the evidence suggest that data journalism is steadily gaining momentum among journalists, thus satisfying the fourth and fifth attributes; trialability which considers the extent to which an innovation can be experimented with on a limited basis and observability which is the degree to which the results of an innovation are visible to others.

It is deduced from the findings that what remains inhibitory to the widespread adoption of data journalism practices in Ghana relates to the third attribute, complexity, which refers to the degree to which an innovation is perceived as challenging to understand and use (Rogers, 2003). Most journalists highlighted the steep learning curve that comes with adapting data journalism, emphasising the gap in training opportunities for skills development. On the other hand, they highlight the lack of structured training opportunities to enhance the skills of journalists in data journalism. According to Rogers (2003), communication is “a process in which participants create and share information with one another in order to reach a mutual understanding” and it involves both mass media and interpersonal communication (Zhang et al., 2015). The availability of training opportunities provides critical points of assembly of different adopters to facilitate interpersonal communication, hence accelerating the dissemination process. Kaminski (2011) asserts that training grounds tend to create “peer networks” through which “the influence of innovators and

early adopters serve as opinion leaders that spark the initial “take off” point in the innovation adoption process”. Hence, training opportunities are significant in the spreading of knowledge about data journalism as well as in persuading others to adopt it (Rogers, 2003).

Findings suggested that early adopters of data journalism have not created enough “buzz” to influence other media organisations to feel left out. This has led to relatively low pressure to warrant other media organisations to jump on the bandwagon and focus extensively on adopting data journalism. Dearing (2009) maintains that diffusion occurs as a result of three key factors; (a) the need for individuals to reduce personal uncertainty when presented with new information, and (b) the need for individuals to respond to their perceptions of what specific credible others are thinking and doing, and (c) to general felt social pressure to do as others have done. This may account for the slower rate of diffusion of data journalism practices in Ghana. In order to accelerate practices of data journalism among media organisations in Ghana, organisations with a strong culture of creativity and innovation, a relatively flat hierarchical system, and strong leadership that is committed to effecting change must be seen centring data-driven journalism in their daily activities in the newsroom.

## **6.2 Attitudes and Perceptions of Stakeholders about Data Journalism Uptake in Ghana**

The second objective of this study was to understand the attitudes and perceptions of key stakeholders— (1) practicing journalists (including those with and without formal data training), (2) technology professionals and civic-tech practitioners, (3) newsroom managers and editors, (4) organisations that provide journalism training (universities and NGOs), and (5) relevant government agencies—towards the uptake of data journalism in Ghana. The discussion below separates each group’s views, then synthesises cross-cutting themes.

### **6.2.1 Journalists**

Journalists interviewed widely recognise data journalism's value for explaining complex issues and producing visually compelling, evidence-based stories. Those who have received formal or informal training emphasised improved storytelling, verification and audience engagement. Importantly, many journalists described proactive, self-directed efforts to acquire skills, for example, following online tutorials, attending short workshops, or learning through collaborative projects, demonstrating individual agency in expanding their competencies, despite limited institutional support. The use of online tutorials, in particular, aligns with Bradshaw's (2023) assertion that the internet has expanded the trialability of data journalism, allowing individuals to experiment with new practices more freely. However, non-trained journalists commonly cited perceived complexity, time pressures and lack of clear examples in local practice as reasons for not attempting data work. In diffusion terms, journalists' responses reveal a high perceived relative advantage among early adopters but limited trialability and perceived complexity among later adopters (Rogers, 2003).

### **6.2.2 Technology professionals and civic-tech practitioners**

The sole civic-tech respondent who represented a civic-tech organisation reported enthusiasm about collaborating with newsrooms but also identified practical barriers. There was emphasis on the need for shared tools and processes that allow journalists and technologists to co-produce stories. The study revealed a strong belief among other stakeholders that cross-disciplinary collaboration is essential for accelerating the adoption of data journalism in Ghana. This is consistent with the findings of Fink and Anderson (2015), who noted that data journalists rarely work in isolation; instead, they rely on the expertise of others to authenticate, visualise, and disseminate their reports. While individual skills are important, harnessing diverse perspectives through collaboration enhances the accuracy and credibility of data-driven stories.

### **6.2.3 Newsroom managers and editors**

Newsroom leaders expressed conditional support for data journalism but were often constrained by budgetary priorities and editorial workflows. Editors who had experimented with data projects pointed to the payoff in investigative impact and credibility. Yet some managers stressed operational concerns, staffing, deadlines, and metrics of return on investment, which reduce willingness to reallocate resources to data projects. This finding resonates with Fink and Anderson's (2015) study, which also observed that similar constraints significantly impact data usage in storytelling. Where managers did prioritise data journalism work, they typically did so by designating small pilot teams or by partnering with external partners; where they did not, adoption tended to remain individual-led rather than institutionalised (Rogers, 2003).

### **6.2.4 Training organisations (academia and NGOs)**

Representatives from journalism schools and NGOs acknowledged a curricular gap: most programmes still prioritise qualitative reporting skills and give limited attention to quantitative methods, coding, or data visualisation. NGOs and donor-supported initiatives have filled some of this space through short courses, bootcamps and fellowships. Training actors emphasised the importance of sustained, practice-based learning (mentorship, in-newsroom fellowships) over one-off workshops to build durable capacity.

### **6.2.5 Government agencies**

Government respondents described policy frameworks and steps toward open data, but also admitted uneven data availability and bureaucratic limits to timely release. While some agencies expressed willingness to collaborate with media, journalists reported difficulty obtaining clean, machine-readable datasets or navigating clearance procedures. Thus, although policy exists in principle, practical access and quality remain inconsistent. However, the role of institutional support, even if hobbled, cannot be overlooked. The government's initiatives to institutionalise data collection and dissemination prove useful in fostering a culture of data sharing that is

conducive to the growth of data journalism. This creates a collaborative social system where government agencies, media training organizations, and media outlets work together to promote the uptake of data journalism. According to Rogers (2003), a social system comprises interrelated units engaged in joint problem-solving to achieve a common goal, and its structure significantly impacts attitudes towards innovation and the rate of adoption.

### **6.2.6 Cross-cutting concerns and ethical issues**

Across groups, two cross-cutting themes emerged. First, stakeholders uniformly identified time and resource intensity, procuring, cleaning and validating data takes substantial time and skills, as a major deterrent to routine use. Second, ethical concerns surfaced about privacy, data provenance and misinterpretation; both journalists and data professionals warned that haste or inadequate expertise can produce misleading claims. These concerns shape perceptions of complexity and compatibility and therefore affect adoption rates.

### **6.2.7 Summary Implication**

In sum, stakeholders are positively predisposed toward data journalism but differ sharply in capacity, incentives and practical readiness. When mapped onto Rogers's (2003) diffusion attributes, stakeholders generally perceive relative advantage (better explanation, transparency) but are deterred by perceived complexity and low trialability within routine workflows. The findings indicate that various stakeholders, acting as change agents, have played pivotal roles in promoting data journalism practices in Ghana (Rogers, 2003). Specifically, the role of change agents (training organisations, donor initiatives, pioneering journalists/editors) in accelerating experimentation. However, to move from scattered experimentation to routine newsroom practice requires targeted measures that increase trialability, reduce perceived complexity, support ethical standards, and formalise cross-disciplinary collaboration (Rogers, 2003).

### **6.3 Challenges and Opportunities Faced by Journalists in Adopting Data Journalism**

The adoption of data journalism in Ghana faces several significant challenges, primarily due to the lack of readily accessible data and financial resources. As McBride (2016) observes, the logistical and ethical challenges in finding or collecting data are substantial, particularly for journalists who may lack the necessary skills and tools for effective data collection and visualization. The study's findings align with this, revealing that data available on public platforms is often insufficient, which hinders journalists from producing data-driven stories. To overcome this, McBride (2016) suggests that journalists must acquire the skills to create their own data. This perspective underscores the role of complexity, as defined in the Diffusion of Innovation Theory, where the perceived difficulty in mastering data journalism acts as a barrier to its widespread adoption.

Furthermore, Fink and Anderson (2015) note that the limitations of available tools, especially in smaller institutions, restrict journalists' ability to access non-public data. The findings highlight that data journalism is cost-intensive, and the lack of financial resources can severely limit a journalist's ability to use sophisticated tools for data mining and visualization. This financial barrier echoes Bradley and Stewart's (2002) assertion that costs, coupled with the lack of a robust innovation culture, are common inhibitors to innovation adoption. In this context, the study's findings reveal that many Ghanaian media organizations, particularly those that have not yet fully embraced data journalism, struggle with these financial constraints, which in turn slows the diffusion of data journalism practices.

The organisational culture within media firms also plays a crucial role in the adoption of data journalism. As Bradley and Stewart (2002) suggest, a lack of influence and communication within the industry can stifle innovation. The study found that early adopters of data journalism in Ghana are more likely to recognise and articulate the positive impacts of this practice, while those lagging remain hesitant, partly due to concerns of the potential risks associated with data-driven reporting.

This supports the Diffusion of Innovation concept that innovations spread more readily within environments that foster open communication and where the benefits of the innovation are communicated and demonstrated.

Despite these challenges, there is a general sense of optimism among data journalists regarding the opportunities that data journalism presents. This aligns with Pavlik's (2013) view that innovation is critical to the viability of news media in the digital age. The findings suggest that data journalism, as an innovative approach, has the potential to enhance the quality of journalistic output, leading to better services and increased audience engagement, as highlighted by García et al. (2019). This optimism suggests that, over time, as more journalists acquire the necessary skills and resources, and as more media organizations begin to see the value in data-driven reporting, the adoption of data journalism will likely accelerate, further supported by the growing need for transparency and evidence-based reporting.

#### **6.4 Chapter Summary**

This chapter discussed the findings from the study with related literature that have been reviewed and the theory that underpins the study. The chapter was dedicated to examining data journalism practices in Ghana, the attitudes and perceptions of stakeholders regarding data journalism adoption and uptake and finally, to outline some of the challenges journalists face in practicing data journalism as well as the perceived opportunities of practicing data journalism. The overall goal of the chapter has been to explore the current state of data journalism in Ghana, capturing the experiences, challenges, and opportunities faced by these stakeholders to understand the dynamics shaping the incorporation of data journalism in Ghanaian newsrooms.

## CHAPTER SEVEN

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 7.0 Introduction

This chapter presents the summary, conclusions, limitations, and recommendations of this study. It summarises the study from the problem statement, aim, research objectives and questions, the theory applied, findings and discussions. Furthermore, the limitations of the study and proposed solutions are provided as recommendations for academia and industry. The chapter ends with the conclusions of the study.

#### 7.1 Summary

The proliferation of various media and media-adjacent organizations in Ghana has established the country as a vibrant landscape for adopting digital innovations. Despite having supportive frameworks like the National Data Sharing Policy, the implementation of data journalism in Ghana remains underexplored compared to other African nations. Largely, studies on data journalism adoption have flourished amidst global interest in the prospect of technology to accelerate journalism. In several African countries, the uptake of data journalism has been studied with notable exception to Ghana, whose contributions remain underrepresented despite active participation in global and continental initiatives. This study aims to address this gap by investigating the state of data journalism in Ghanaian newsrooms through interviews with journalists and stakeholders, using Diffusion of Innovation Theory to analyse the findings. In achieving this aim, three main objectives were outlined:

1. explore data-driven journalism practices among journalists in Ghana;
2. understand the attitudes and perceptions of data journalism stakeholders about data journalism uptake in Ghana and examine the challenges and
3. opportunities faced by journalists in adopting data journalism.

The study utilised Rogers (2003) diffusion of innovation theory as the theoretical framework underpinning the discussion of emerging issues. The theory is used to account for and explain the spread of innovation within a populace. The theory generally posits that for people to adopt any innovation they must undergo the five processes of knowledge, persuasion, decision, implementation and confirmation. About the innovation itself, the theory highlights five perceived attributes including relative advantage, compatibility, complexity, trialability, and observability as its core determinants. Relative advantage is how much better an innovation is compared to what it replaces, with a higher perceived advantage leading to faster adoption. Compatibility is the alignment of the innovation with existing values and needs, with greater compatibility resulting in quicker adoption. Complexity refers to how difficult the innovation is to understand and use, where higher complexity slows adoption. Trialability is the ability to experiment with the innovation on a limited basis, promoting faster adoption when it's high. Observability is how visible the results of the innovation are, with greater visibility leading to quicker adoption.

The first major finding of the study showed that data journalism is recognised among Ghanaian journalists as a valuable tool for storytelling, with an emphasis on its ability to break down complex issues through data visualization. However, despite its perceived benefits, its adoption remains slow, with limited engagement by media organizations. This indicates a gap between awareness and practical implementation, which could be attributed to the nascent stage of data journalism in the country. It was also found that a lack of resources or the technical expertise required to fully integrate data journalism into news production routines slowed the realisation of data journalism in the newsroom. There is the need for concerted efforts to provide the necessary tools, training, and support to journalists, to enable them to harness the power of data-driven storytelling effectively.

The second finding showed that stakeholders view data journalism as a promising innovation for enhancing news delivery in Ghana. However, the uptake is hindered by challenges like inadequate training and the need for cross-disciplinary collaboration. The positive perception of data journalism among stakeholders underscores its potential as a transformative innovation in Ghana's media landscape. The finding revealed that embracing the full potential of data journalism requires cross-disciplinary collaboration and sufficient training. Specifically, government agencies and corporate media organisations working together promotes shared knowledge and instil best practices among journalists and media stakeholders regarding the adoption of data journalism. Fostering an environment that encourages sharing knowledge and skills between journalists, data analysts, and other relevant professionals is essential for creating a culture that values data journalism as a key component of modern news reporting.

The third finding specifically examined significant obstacles facing the adoption of data journalism, including limited access to data, financial constraints, and a lack of necessary skills and tools. Findings revealed that these issues reflect broader structural and systemic problems within the media industry, which require comprehensive solutions. However, the optimism surrounding the potential of data journalism suggests that there is a willingness to overcome these obstacles. To capitalise on the opportunities presented by data journalism, the findings highlighted the government's strategic investments in capacity-building, policy support, and infrastructure development.



## 7.2 Study Conclusions

This study concludes, based on the evidence collected and analysed through the lens of Diffusion of Innovation, that:

- a) Data journalism is recognised as a legitimate, high-value journalistic innovation in Ghana, but adoption remains partial and uneven. Practitioners and other stakeholders accept the relative advantage of data approaches (better explanation, visualization, accountability), yet organisational uptake is constrained; data journalism is more visible at the level of individual practitioners than as an institutionalised newsroom practice.
- b) A perceptual and structural gap, not lack of interest, is the principal impediment to diffusion. The principal impediments are structural (resource shortages, limited access to quality data, weak institutional support) and perceptual (viewing the innovation as complex and high effort). These factors reduce the innovation's trialability and perceived compatibility with existing newsroom routines, slowing the rate of adoption.
- c) Adoption follows a recognisable diffusion pattern but with a pronounced clustering among early adopters. Small groups of innovators and early adopters are driving experimentation and demonstrating benefits; however, the broader early and late majority remain hesitant. Without mechanisms to bridge these gaps between the various groups (sustained training, high impact demonstrable use-cases, institutional champions), the innovation risks remaining marginal.
- d) Interdisciplinary collaboration (for example between data analysis professionals, journalists, graphic designers, web development experts as noted in the discussions) is a necessary condition for the sustained adoption of data journalism. Where such cross-disciplinary practices exist, data projects are more feasible; where they do not, data tasks revert to sporadic, individual efforts.

- e) Policy and organisational frameworks exist but are under-operationalised. National and organisational policies that could facilitate open data and newsroom data work are present in draft or partial form; however, the lack of implementation, funding and technical support limits their capacity to accelerate diffusion.
- f) Capacity building and locally relevant approaches are critical to long-term sustainability. Short-term training and one-off projects have value, but sustained routinization will require repeated skill development, in-newsroom mentorship, locally-adapted tools and opportunities to trial methods on real reporting tasks (increasing trialability and observability).
- g) The diffusion process in Ghana is shaped by both global influences and local constraints. International actors (donors, training initiatives, civic tech organisations) have catalysed early experimentation, but exclusive reliance on external resources risks misaligned priorities and sustainability problems. Locally anchored institutional support and integration into journalism education are essential complements.

Collectively, these conclusions indicate that Ghanaian data journalism currently sits at an exploratory stage of diffusion: recognised and championed by a motivated minority, yet still awaiting the structural supports and practice architectures that will permit wider, routinised adoption.

### **7.3 Study Recommendations**

Recommendations emanating from the findings of the study are presented below. Admittedly, the study presents the views of only a fraction of media stakeholders in Ghana. Given this, future studies can consider a more widescale survey of media stakeholders.

### **7.3.1 Recommendations to Media Stakeholders**

The findings of the study revealed that the adoption of data journalism has been hindered significantly by limited training of journalists in data journalism. Undoubtedly, the lack of knowledge of data extraction and usage stands as a major inhibitor to the diffusion of data journalism as an innovation. The study therefore recommends that there should be increased investment in training programs to build the technical skills of journalists, enabling them to effectively analyse and visualise data. Moreover, newsrooms are encouraged to foster partnerships with tech companies and academic institutions to access resources and expertise necessary for data-driven journalism.

Additionally, the findings of the study highlighted the long chain of bureaucratic processes that impede data access acquisition. The study recommends that it is vital to streamline and improve access to public data through the effective implementation of policies like the Right to Information Law.

The study also suggests promoting a culture of innovation within newsrooms to encourage experimentation with data journalism techniques, and it emphasises the importance of mentorship programs to support journalists in navigating the complexities of this emerging field.

### **7.4 Study Limitations and Suggestions for Future Research**

Considering the objectives of the study and the questions the study sought to answer, the research design is apt, however it could also be argued and this is duly acknowledged that a reliance on qualitative methods, such as in-depth interviews, may lead to subjective interpretations of the data. While valuable for capturing detailed insights and efforts have been made to ensure validity through triangulation, the choice of research design may lack the statistical rigour needed to make broader claims about the prevalence and impact of data journalism across different contexts.

Another limitation of this study is the sample size of 17 participants. While this is adequate for a qualitative study it limits the degree of generalisability for the present study. For the generalisability of the study, it is recommended that in the future, a larger sample and a quantitative or mixed methods approach can be used. The larger sample may result in findings to confirm the current findings.

Future studies on data journalism in Ghana could focus on the investigation of focused case studies of high-profile data projects (e.g., Ghanaian media participation in cross-border investigations such as the Panama Papers) to trace production processes and cross-disciplinary best practices.

Also, future studies could conduct platform comparative studies on how data journalism is practised and received across online, radio and television formats to identify format-specific affordances, constraints and best practices.

Additionally, future research could investigate the long-term impact of data journalism on public discourse and accountability, as well as its role in shaping narratives around key issues such as governance, health, and education.

Finally, further studies should be conducted on public perception of data journalism, especially, in ascertaining Bradshaw's (2023) belief that data journalism often goes unnoticed by news consumers.

### **7.5 Chapter Summary**

The section presented a summary of the study, drew informed conclusions, outline the limitations, and offer recommendations for future studies. The summary comprised an overview of the problem statement, objectives and questions of the research, the theory that underpinned the study, major findings, and discussions of the study.

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## APPENDIX

### SEMI-STRUCTURED INTERVIEW GUIDE

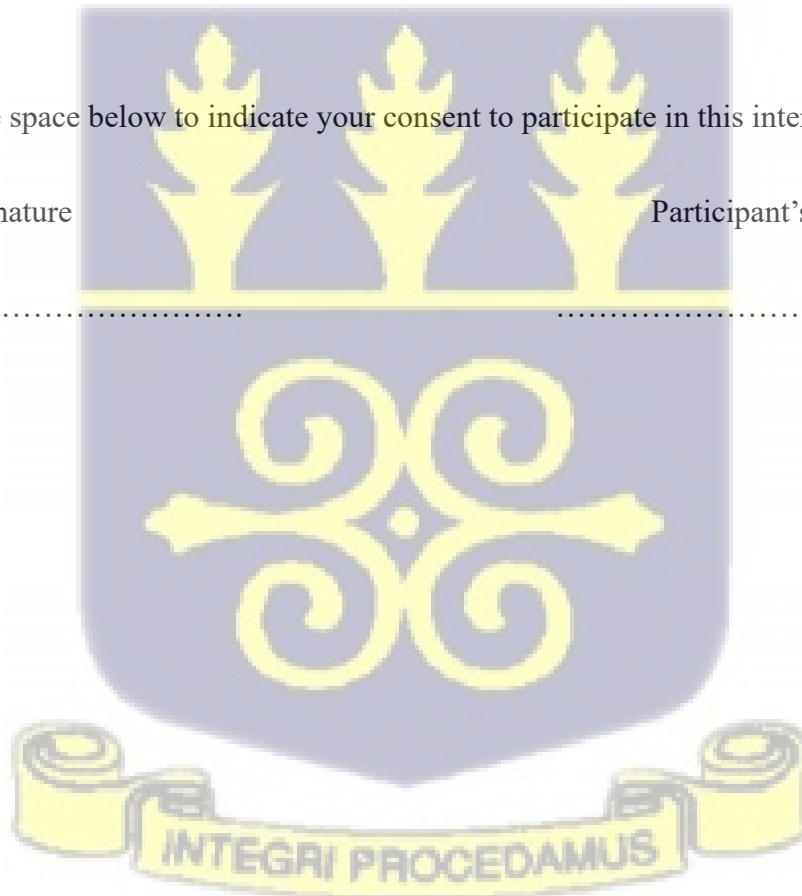
I am Michael Etrue, a student at the University of Ghana studying MPhil Communication Studies. I am conducting a study on the adoption of data journalism in Ghana as part of my MPhil degree requirements. I would like to seek your consent to grant me a research interview related to the study. The conversation from this interview is purely confidential, solely for academic purposes and, your name would be anonymised in data representation. You are free to withdraw from participation in the interview without consequence.

Thank you.

Kindly fill in the space below to indicate your consent to participate in this interview

Participant's signature

Participant's role



### **Interview Guide for Journalists**

1. How many years have you practiced journalism and how many of that has been spent on practicing data journalism?
2. What is data journalism to you?
3. Tell me about your journey with data journalism
4. How do you choose a story to publish?
5. Where do you get data for your stories?
6. What skills are needed to do this?
7. How did you acquire skills to do this?
8. What areas do you need to upskill to practice more effectively?
9. What are the merits of data journalism?
10. What are some challenges/opportunities in adopting data journalism?
11. What factors drive the adoption of data journalism in your newsroom?
12. Which people or groups of people do you collaborate with and how do you do it?
13. What is your assessment of data journalism in Ghana?

### **Interview Guide for Media Training Organizations/CSOs**

1. How does your organisation understand data journalism?
2. Tell us about your organisation's experiences/initiatives/journey with data journalism?
3. What is the role of your institution as far as data journalism is concerned?
4. What are the goals of your organisation with respect to data journalism?
5. What skills do you teach data journalists?
6. How do you select facilitators for training events?

7. In what ways does data journalism transform journalism practice in Ghana?
8. What advantages does data journalism bring to the media practice?
9. How do you choose your media/CSO partnerships for your trainings?
10. What are some challenges you face in data journalism training?
11. Who are your funding partners and what is the extent of their partnership with you in delivering this training?
12. What is your assessment of data journalism in Ghana?

### **Interview Guide for NITA Participant**

1. Tell me about NITA's journey with Open Data and other initiatives aimed at fostering data journalism?
2. What have been the highlights for you?
3. How do you understand data journalism?
4. What advantages do you think data journalism brings to media practice?
5. What role do you think NITA plays as far as data journalism is concerned?
6. What has been some challenges in carrying this out?
7. What specific legal or policy provisions do you think can be relied to achieve the above?
8. What has been your efforts so far in partnering with journalists and media organisations?  
Are there opportunities for future collaborations?
9. What challenges are often reported by journalists/ other applicants when it comes to obtaining data from government institutions?
10. What challenges do you think government institutions like yours also face in making data available to applicants?
11. What are the opportunities for technology in easing some of these challenges highlighted?
12. What is your assessment of data journalism as practiced so far in Ghana?

### **Interview Guide for RTI Commission**

1. Tell me about your Commission's efforts so far in operationalizing the RTI Law?
2. What has been the highlights for you?
3. How do you understand data journalism?
4. What advantages do you think data journalism brings to media practice?
5. What role do you think the Commission plays as far as data journalism is concerned?
6. What specific legal or policy provisions do you think can be relied to achieve the above?
7. What has been your efforts so far in partnering with journalists and media organisations?  
Are there opportunities for future collaborations?
8. What challenges are often reported by journalists/ other applicants when it comes to obtaining data from government institutions?
9. What challenges do you think government institutions also face in making data available to applicants?
10. What are the opportunities for technology in easing some of these challenges highlighted?
11. What opportunities are there in training information officers or other stakeholders in adopting technology enabled platforms in data sharing?
12. What is your assessment of data journalism as practiced so far in Ghana?

