AN ASSESSMENT OF THE STATE OF SCIENCE JOURNALISM IN NAMIBIA: A CASE STUDY OF *THE NAMIBIAN*, *NAMIBIAN SUN*, AND *NEW ERA* NEWSPAPERS

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ABSTRACT

Science journalism is a form of reporting that conveys news about science-related topics in a simplified manner. Fields vary from health, environmental and animal science, amongst others. As this field gradually broadens, the duty of science journalists to communicate verified information to ordinary citizens has been amplified. Equally, this underpins the need for scientists to communicate their work to the public, and take their work beyond academic circles to the layman. This is often done by science journalists who have the expertise to report scientific news in a fashion that is less technical. The main objectives of the study were to assess the criteria used by the Namibian print media to determine the newsworthiness of science news, and to determine the challenges and opportunities for the media in the science journalism field. Furthermore, the study sought to examine the perceptions that scientists have of the media. The study aimed to contribute to bridging the gap between scientists and the public. This thesis includes an analysis of qualitative data collected from newspaper editors from Namibia's main newspapers. In addition, quantitative data were collected from scientists in different fields. The key findings revealed that there is a communication gap between journalists and scientists, stemming from mistrust and generally the lack of appreciation for each other's profession, which ultimately has an effect on the public's consumption of science news. It is recommended that various activities and tools be put in place to strengthen relations between the media and scientists and ensure accuracy in the popularisation of science.

Keywords: *Science journalism, layman, newspapers, public education*

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ABBREVIATIONS AND ACRONYMS

3MT	Three Minute Thesis
BRC	Biodiversity Research Institute
COVID-19	Coronavirus Disease 2019
CCF	Cheetah Conservation Fund
DRFN	Desert Research Foundation Namibia
DST	Department of Science and Technology
EFN	Editors' Forum of Namibia
GCF	Giraffe Conservation Fund
HPP	Harambe Prosperity Plan
NASA	The National Aeronautics and Space Administration
NASW	National Association of Science Writers
NBC	Namibia Broadcasting Cooperation
NCRST	National Commission for Research, Science and Technology
NDP	National Development Plans
NEPC	New Era Publication Corporation
NGHRI	Namibia Green Hydrogen Research Institute
NHA	Namibia Hydrogeological Association
NMH	Namibia Media Holdings
NMT	Namibia Media Trust
NNF	Namibia Nature Foundation
NUST	Namibia University of Science and Technology
NUNW	National Union of Namibian Workers
NSS	Namibia Scientific Society
NCDs	Non-Communicable Diseases

PR	Public Relations
PCRF	Pangolin Conservation and Research Foundation
UNAM	University of Namibia
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USA	United States of America
SADC	Southern Africa Development Community
SASSCAL	Southern African Scientific Service for Climate Change Adaptive Land Management
SDGs	Sustainable Development Goals
SGSP-IWRM	SASSCAL Graduate Studies Programme in Integrated Water Resources Management
WSF	World Science Forum

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To the scientists, I appreciate the time you took to fill-in the survey. I learnt during this journey that people are not always open to completing surveys, but you made time for this one, which I truly appreciate.

DEDICATION

I dedicate this to my husband and son. I know that at times you could not understand why this journey took so long, but not once did you let go of my hand, and I am forever indebted to both of you. I could not have done this without you.

DECLARATION

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CHAPTER ONE

ORIENTATION OF THE STUDY

1.1 Introduction

This chapter introduces the study titled 'An assessment of the state of science journalism in Namibia: A case study of *The Namibian*, *Namibian Sun* and *New Era* newspapers'. The chapter begins by giving an orientation of the study, then proceeds to discuss the statement of the problem. The orientation of the study provides a background of what the study is about and the varying opinions and sentiments of different authors on the subject under study. The problem statement speaks to the shortcomings in science journalism and the significance of the study and the gaps in the literature. This is followed by the research objectives, then an outline of the limitations and delimitations of the study. The study setting as well as issues of reliability and validity are also addressed and the chapter concludes with a summary.

1.2 Background of the study

The word science is borrowed from Latin *scientia*, meaning knowledge, and "it is a field that systematically builds and organizes knowledge in the form of testable explanations and predictions about the universe" (Olusegun et al., 2019, p. 62). Shapiro (2014), states that "journalism comprises of the activities involved in an independent pursuit of accurate information about current or recent events and its original presentation for public edification," (p. 561).

Murcot and Williams (2021, as cited by Cawdrey, 2022), define science journalism as "reports of scientific developments to an audience beyond academic journals, namely, the public. In doing so, a journalist may provide analysis of research, conduct investigations into the reliability of researchers, and break stories of major significance to a wider audience" (p. 7).

Marrying science and journalism to create science journalism may simply be defined as a form of reporting that conveys news about topics science. Shehab (2020) defines science journalism as "any story that seeks to present a scientific explanation constitutes science journalism. While a piece on the damage caused by an earthquake, for example, would not be science journalism, but one on the timing of this particular earthquake and its implications for future seismic activity certainly would be" (p. 3).

There exists a considerable body of literature on what constitutes science news. Vestergård (2016) defines science news as "editorial content focusing on scientific knowledge, findings, methods, processes, opinions, events or institutions within all scientific fields" (p.74). Trench (2007) defines it as information that represents various forms of journalistic activity around science. The field has gradually broadened and members of the general public can easily publish science information. Trench (2007) argues that what distinguishes science journalism from the rest is that it is news published by professionals that are bound by a code of ethics.

Recent examples of science journalism can be observed in the news coverage of the novel Coronavirus Disease (COVID-19) pandemic worldwide. As this field gradually broadens, it is the role of journalists to communicate verified information to ordinary citizens. Namibia is no exception. It is also one of the many countries that have been affected by COVID-19 and journalists are essential actors to disseminate scientific information to its citizens. Moreover, topics such as climate change, drought, renewable energy and management of marine resources are embedded in the country's National Development Plans (NDP) as priority areas that need urgent attention. These topics are aligned with scientific matters and the media plays a key role in disseminating information concerning these goals.

For instance, Brunckhorst (2020), posits that pollution, degradation, and overfishing have taken their toll on the reduction of biodiversity and a general understanding of the ramifications will propel the government into taking action. Brunckhorst (2020) further divulges that there is very limited public awareness about the marine environment thus incapacitating citizens to be able to take action or responsibility at an individual level. Brunckhorst (2020) called on governments to specifically target coastal communities for targeting specific educational campaigns and science journalists would be some of the key partners to serve as communication channels (Brunckhorst, 2020). This supports the value of science journalists.

The Sustainable Development Goals Report (2022) also supports the perception of scientists. The report places emphasis on the impact of effective communication strategies, specifically to help combat misinformation and disinformation. This can be achieved through traditional media appearances, media releases and general awareness campaigns.

1.2.1 Newspapers

Namibia has five daily newspapers, namely, *The Namibian*, *New Era*, *Namibian Sun*, *Die Republikein*, and *Algeimeine Zeitung*, and they also publish thematic supplements regularly (African Media Barometer, 2018). *The Namibian*, *New Era* and *Namibian Sun* publish in English, whilst *Die Republikein* and *Algemeine* publish in Afrikaans and German, respectively. All of the abovementioned papers have a social media presence, particularly Facebook and Twitter, mostly accessed via mobile (African Media Barometer, 2018).

Inevitably, the COVID-19 pandemic brought lasting effects on the media industry. The health and safety measures that were imposed to contain the virus had detrimental effects such as retrenchments, salary cuts, and in some cases, the closure of some media organisations (African

Media Barometer, 2022). To broaden this discourse, Shikongo (2020), highlights that The Namibian laid off 50% of its staff, whilst Namibia Media Holdings (NMH), which owns Namibian Sun, cut the salaries of 20% of its employees. "Subsequently, journalists have come under strain – forced to work longer hours and take pay cuts with very little or no support from their employers" (African Media Barometer, 2022, p. 6).

For the purposes of the present study, the three main newspapers that were be the focal point are *The Namibian, Namibian Sun and New Era* newspapers. These have the widest English-speaking audiences in Namibia (International Research and Exchanges Board, 2013). Based on above, the present study was premised on these newspapers.

1.2.2 *The Namibian Newspaper*

The Namibian is the largest daily newspaper in Namibia, with a circulation of over 40 000 a day (International Research and Exchanges Board, 2013). It was established in 1985 and it has managed to keep a steady readership over the years and it is privately owned by the Namibia Media Trust (Shaw & ter Haar, 2013). It has a print and online version of the publication and the majority of the readership is between "25 to 34, majority have Oshiwambo as their home language, and the majority of readers are in urban areas" (NMT, 2015). Over the years, the newspaper has been subjected to violent attacks, primarily during the pre-independence era as it was a vocal critic of the then government (Rothe, 2010). This continued to the post-independence government which led to boycotting of the newspaper through the banning of adverts in the publication. This was, however, lifted after a 10-year hiatus (Lister, 2015).

The paper is funded through donors and advertisements, and it is founded on furthering the principles of press freedom and freedom of expression in Namibia (Shihepo et al., 2021).

1.2.3 *New Era Newspaper*

The *New Era* on the other hand is owned by the state and it was established in 1992. It has a daily circulation of just over 8 000 (Belakang, 2011). It also has print and online versions and the readership is people aged between 18 and 42 and the majority of readers are in urban areas (NEPC, 2021). Kivikuru (2013) posits that this publication was established chiefly to counterattack reports in The Namibian and prioritise the coverage and favourable coverage of the state.

1.2.4 The Namibian Sun Newspaper

The Namibian Sun is privately-owned by Namibia Media Holdings (NMH) and it was established in 2007, making it the youngest amongst the three newspapers (Belakang, 2011). NMH publishes other newspapers for readers of different languages such as Afrikaans and German, thus the Namibian Sun caters to the English-speaking readers. The print run is about 36 000 and the readers are between 18 and 40 (Belakang, 2011).

1.2.5 Research institutes

In terms of scientific bodies, a number of institutions in the academic and non-academic space exist. For example, the Namibia Scientific Society (NSS), founded in 1925, is a society that aims to promote scientific developments in the country through hosting public lectures, presentations and book launches, thus promoting science communication (Jamu, 2020). Jamu (2020) adds that the NSS informs the media about its events and gives opportunities for journalists to engage scientists and get in-depth insights on related topics.

Other institutes and foundations exist with members from the science community, mandated to enhance research in the sciences. These include: Desert Research Foundation Namibia (DRFN); Giraffe Conservation Fund (GCF); Pangolin Conservation and Research Foundation (PCRF); Gobabeb Namib Research Institute; Namibia Nature Foundation (NNF); Biodiversity Research Institute (BRC); Namibia Green Hydrogen Research Institute (NGHRI), Namibia Bird Club, Namibia Hydrogeological Association (NHA), and Cheetah Conservation Fund (CCF), amongst others (Namibia Scientific Society, 2022).

1.2.6 Growth of science journalism

As journalism matures, the field of science journalism is gaining momentum in various countries (Dobson, 1999). In 1999, a United Nations Educational, Scientific and Cultural Organization (UNESCO) sponsored conference on science declared the need to share scientific information with the public. This was preceded by another recommendation by the Science and Technology Committee of the House of Lords in the United Kingdom which echoed the need for sharing science information with the public following the "mad cow" disease which hit the United Kingdom in 1996 (de Semir, 2010). Weigold (2001) goes as far as saying that scientists have an obligation to communicate to the public specifically when their research is funded by the state. On the other hand, Jaafar and Giam (2012) caution that whilst science journalism is effective in raising awareness, a number of scientific events are reported inaccurately and the onus is thus not only on journalists to verify information, but also on scientists to play an active role to correct information through published articles.

This is after Jaafar and Giam (2012) conducted a study to verify the scientific accuracy of information that was published in the media about the demise of one of the largest whale sharks in the Arabian Sea. The findings revealed that 53% of the articles were misinforming as they

lacked verified scientific content. This may result in science journalism truly becoming an ineffective tool in public education.

These recommendations underpin the need for scientists to communicate with the media and educate the public. This is often done through science journalists who have the expertise to report scientific news in a fashion that is free of jargon and can easily be consumed by the layman (Vestergård, 2016). Therefore, the print media can offer a breadth and depth of coverage and is one of the best vehicles through which information on scientific research can be disseminated. They reach the wider public but also allow for detail and contextual placement of information, more so in a digital world where various electronic methods can also be used to distribute newspapers.

Whilst there is evidently the need to report science news to the public, there are challenges in the promotion of this field. This stems from a number of reasons such as a lack of capacity in relation to the number of journalists with scientific knowledge, as well as other factors such as the reliance on foreign news sources, normally from the West. This is mainly because record-breaking science news stories tend to originate from laboratories and universities in developed nations (Ziman, 1991). Similarly, findings in a study conducted by Shimhanda (2021) focussing on the coverage of climate change in selected Namibian newspapers revealed that out of the 108 articles analysed, approximately half of the stories were taken from secondary sources and published in their original form.

Shimhanda (2021) further argues that "the over-dependency of foreign news on climate change may limit the opportunities of participation to combat climate change at a local level" (p. 20).

Additionally, this heavy reliance on external news hampers the development of science communication at large as this creates a gap for local news to be shared with in-depth analyses.

1.3 Statement of the problem

Lugalambi (2011) conducted a study in six African countries including Namibia and the study findings show that there is limited or no coverage of science and technology news which is attributed to many factors including the impeded communication between journalists and scientists. The report further attributes this to a number of reasons such as a lack of adequate training of journalists on scientific matters stemming from limited resources for media houses to invest in such skills development. Waithera (n.d., p. 6) is of the opinion that "Africa's researchers produce significant scientific output, a fact generally lost on the public because of lack of media coverage". Whilst many scientists acknowledge the value of science communication, participation remains low due to limited resources and the general perception that outreach is a secondary role in research (Yawson & Quansah, 2014). These problems have received substantial interest and they have influenced this assessment on the state of science journalism in Namibian newspapers, in an effort to understand the local context.

1.4 Research objectives

The main objective of the present study was to assess the state of science journalism in the Namibian print newspapers, namely, *The Namibian, Namibian Sun, and New Era newspapers*. The three specific objectives of the study were to:

1. Assess the criteria used by the Namibian print media to determine the newsworthiness of science news;
2. Determine the challenges and opportunities for the media in the science journalism field; and

3. Examine the perceptions that scientists have of science journalism in the Namibian print media.

1.5 Significance of the study

Most countries around the world have embraced science journalism as a new and modern trend in journalism (Hedman & Djerf-Pierre, 2013). The present study aimed to illuminate this uncharted area, thereby contributing to the body of knowledge in this area. A UNESCO (2011) report opines that there is minimal coverage of science and technology news, which is "attributed to lack of capacity coupled with the little investment made by media houses to enhance the competences of their journalists to enable them to give science and technology issues informed coverage" (p.11). As far as the present researcher knows, science journalism in the Namibian context is still an uncharted area of study. The present research therefore aimed to make a key contribution to this field.

1.6 Limitations of the study

The focus of the study was Namibian-based scientists, journalists and editors-in-chief from three Namibian print media houses based in Windhoek. This is due to time and financial constraints. However, the head offices of the newspapers are housed in the capital city, Windhoek. The results are thus not generalisable to all journalists in Namibia as well as all scientists in the country, as they were not given an equal chance of being selected to participate in the study.

1.7 Delimitation of the study

This study did not look at any other media, apart from three Namibian newspapers: Namibian Sun; The New Era and The Namibian; because of their popularity and longstanding history.

There are various institutions that employ scientists but for relevance to the topic, this study focused on scientists from selected research institutes in Namibia.

1.8 Definition of key terms

A number of key terms are used in this study, and for the purposes of ensuring that the reader understands the terms, specifically in the context of this research, they are defined as follows:

Articles – refers to news stories

Beat - refers to the theme or area of news

Infotainment – this is information that is both educational and entertaining

Science communication - refers to all reporting related to science events through a variety of platforms such as exhibitions, workshops and seminars to a variety of audiences

Paper – refers to a newspaper

Platforms – social media networks

News angle - this is the perspective from which a news article is written or reported

Science journalism - is a branch of science communication that specifically refers to news reporting in the media

The media - are the practitioners that work for the newspapers under study.

1.9 Summary of chapter

This introductory chapter gave a synopsis of the topic under study by giving a background of science journalism and its importance thereof. It illustrated the value of science reporting and the gaps that are available, specifically in the Namibian content. To have a full picture of the key role players in science journalism, brief backgrounds of each of the newspapers were given, as well as an overview of the key research institutes in Namibia. The objectives of this study, which are mainly to assess science journalism in the Namibian print media and the perceptions

of scientists were unpacked. The current gaps in science journalism were also highlighted. The next chapter reviews literature relating to this study and the theoretical framework and how it relates to the topic at hand.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews the literature related to the present study. Kivunja (2018) defines a literature review as "an overview of what has been said, who the key writers are, what the prevailing theories and hypotheses are, what questions are being asked, and what methods and methodologies are appropriate and useful" (p. 48). Ramdhani et al. (2014), define it as an expansion of more diversified knowledge base as the topic continues to develop.

The present chapter begins by examining the background of science journalism and outlines its roots and how it evolved over the years to date. This sets the tone for this study and shows the origins of this news genre and what has changed in the 21st century in comparison to the past and further synthesising the available literature. Thereafter, different literature sources are reviewed in line with the topic such as the topics that commonly receive coverage and the reasons thereof, the importance of science to nation-building and the predicaments faced by professionals in the field. The untapped opportunities for the growth of science news are further discussed, with particular reference to the African, and specifically the Namibian context.

Lastly, this chapter discusses the News Values and The Agenda-Setting Theories, and how they relate to this study, from the philosophical assumptions, concepts, explanations and principles. The News Values Theory is based on a set of criteria that media practitioners use to determine the worth of information for publication and this chapter assesses these criteria to establish if they are applicable to science journalism. The Agenda-Setting Theory is analysed to determine the influence of the media in science news reportage in order to determine a framework.

2.2 The roots of science journalism

Several articles, as cited by Massarani and Moreira (2016) and Bennet (2013) shed light on the roots of science journalism, with many presenting varying timelines of when this type of news was first reported. However, the common factor in the publications is that since approximately the 17th century, journalists and scientists have been unofficially working towards finding ways to promote science.

In conjunction with the second industrial revolution, science communication intensified around the world as it became paramount for technological and scientific advancements to be shared with the public (Massarani & Moreira, 2016).

In 1919, a newspaper publisher, Edward Scripps, and a biologist, William Ritter, came together with the mission to popularise science in America by forming an organisation known as Science Service, dedicated to the dissemination of accurate and objective science news in the mainstream media (Bennet, 2013). Their goal was not only to raise awareness about science to the average citizen, but to help gain support for scientific research from the government.

In 1934, a group of science writers in the United States of America banded together to establish the National Association of Science Writers (NASW) which focusses on mainly communicating science to the public (Russell, 2010). The Association is still running and continues to honour its mandate to this current day. Among historians of science, these public communication activities were seen as part of a “science for all” movement which spread in parallel with education reforms that would boost the literacy level of the public (Vestergård, 2016).

“In the second half of the 19th century, science communication intensified throughout the world, in conjunction with the second Industrial Revolution” (Massarani & Moreira, 2016. p.178). The Second Industrial Revolution is the era which brought inventions such as electricity, running water, and chemical industries amongst others (Haradhan et al., 2020). This brought science to the fore more than before, thus creating the need for raising awareness in different circles of society.

However, when it comes to the African context, as far as the present researcher has established, there is a scarcity of prior studies that have examined the roots of science journalism on the continent. Many articles appear to have placed their focus on the future and not the past, in this regard. The general history of science in Africa appears limited and Helene (2014) attributes this to Africa’s oral traditions and the absence of writing to record facts. This, Helene (2014) argues, gave Europe the upper hand as it had the ability to write and record history in accordance with their social contexts and not that of Africa.

2.2.3 Sources of science news

2.3.1 Global Relevance

Journalists use different methods to gather news and these are also applicable when gathering science related content. In 2019, when the novel Coronavirus was first detected, initially the attention that was given to the virus was minimal, but when it began to spread widely and rapidly, and it was declared a pandemic by the World Health Organisation, panic spread across the globe and more people took notice (Long, 2020). Media houses started dedicating significant portions of their air time and space to COVID-19, publicising varied information about scientists’ expert discoveries and opinions (Capurro et al., 2021). Capurro et al. (2021)

conducted extensive interviews with scientists in order to understand this new variant of the coronaviruses. Speaking to experts in such cases is one way to get scientific information (Jamu, 2020).

2.3.2 Social media

With the fast-paced advances in technology, the way in which people consume news is changing just as fast, with online platforms such as Facebook, Twitter and YouTube becoming popular information providers (Mueller-herbst et al., 2020). Scheufele (2014) posits that typically individuals do not get science information directly from scientists themselves, but through mass media platforms. Scheufele (2014), however, cautions that mass communication tends to abandon complex issues as the information is crafted to reach wide audiences with varying levels of comprehension.

Nevertheless, with the rise in popularity of social media use, a number of scientists have become accustomed to the use of online platforms and often write and publish opinion pieces about their work. Following and keeping an eye on various scientists is beneficial to understanding their work and this makes for more open commentary if they have willingly published the information in the public realm (de Maeyer, 2020). The comments from followers can guide journalists on angles to take when writing articles and they would have had insights into some reactions from a variety of followers (Van Rooyen, 2017). Recent studies in the United States of America (USA) have shown that the most popular social media platform is Facebook, and platforms such as Reddit and Instagram are less popular (Mueller-herbst et al., 2020). Tracy (2022) attributes Facebook's popularity to its flexibility in sharing content, unlike platforms like Twitter that have content limitations in terms of words and videos or images.

2.3.4 Academic publications

Through scientific journals, scientists make their work available to the public. The papers published explain the purpose of the study, the methods used for data collection, and ultimately the recommendations. These can be accessed on digital repositories or physically in libraries. The articles are mostly peer-reviewed, a factor which is considered to be the highest tool to measure accuracy and trustworthiness (Tenopir et al., 2015). However, the articles are "often incomprehensible to anyone except for researchers in the field and advanced students" (p. 3).

2.3.5 Workshops, seminars and conferences

A number of workshops and seminars are regularly organised by universities and science societies and the discussion in spaces of this nature are good sources of news (Vestergård, 2016). The engagements may either be local or on a global stage and journalists can use such events to listen-in and identify key persons to approach for further insights into topics of interest. For example, the World Science Forum, one of the biggest global platforms that brings together policy makers, scientists, representatives of international organisations, academic institutions, and media, is a great platform for knowledge sharing (Stellenbosch, 2022). The event, and others, is held in a hybrid format, thus making it easy for one to access.

2.3.6 Universities and research institutes

As research hubs, many universities and research institutes are required to raise awareness about science through various channels. Traditionally, there is a central point for the dissemination of information at most universities, which is through the Public Relations (PR) office (Williams, 2015). The PR officers are trained to disseminate information in a manner that positions them as ideal mediators to convey messages in a digestible form. One of the most tools that PR Officers use to communicate to the media is through press releases. These are

documents that highlight the core points of an event or news, and essentially answer the who, what, when, why and how, commonly referred to as the 5Ws and H.

The media releases summarise lengthy information and make it easier for journalists to pick up stories. These can be published in print copies of newspapers and they can be disseminated electronically. At a time when the journalism profession is becoming more demanding as resources are dwindling, journalists highly value media releases as this lessens their workloads (Williams, 2015). When a well-written media release is issued, it covers the basic principles of an article, such as who, what, when, where and how. And although it gives the basic information, it may not be considered as a journalistic piece as it lacks critical analyses and dependency on such statements has a bearing on the autonomy of the media (Williams, 2015).

Shebab (2020) lists the following as the best ways to find science news:

> Subscribe to science journals and website; Question everything; Look for scientific explanations for everything; Ask yourself about the scientific dimensions of public policy; Follow developments in the scientific community; Join scientific societies and organisations; Develop a network of expert contacts from different fields; and Participate in conferences, seminars, and other scientific activities. (p. 32)

In the academic space, several universities and research institutes require scientists to conduct community engagement initiatives. These are traditionally centred on sensitising the public about various topics to raise awareness for the greater good. Such platforms are an easy way to get scientific news as this is presented in a way that is easy for the average person to understand (Ashwell, 2016). Joubert and Falade (2019) state that centres and institutes funded by the South African National Research foundation are traditionally expected to allocate a portion of their

funding from the South African National Research Foundation to science communication activities. This is particularly in cases where research is funded by the public and this increases accountability. Beyond this, a number of universities have embedded science communication activities into their research agendas, and/or implement various innovative ways to promote the popularisation of science. The following case studies, are such examples:

2.3.7 Case Study: Stellenbosch University Science Communication Research Chair

In 2015, Stellenbosch University in South Africa established the first Science Communication Research Chair in Africa. The Chair focusses on advancing scientific knowledge amongst the public to promote social justice (Imidibaniso, n.d.). Moreover, the Chair capacitates postgraduate students in science communication activities by offering training in the field, from short courses to fully-fledged programmes. Other activities include writer's workshops, focus groups, webinars, and colloquiums pivoted on science communication (Imidibaniso, n.d.). Additionally, the Faculty of Science at the University hosts a variety of unique activities such as the Science Café, which is a platform that brings together members of the public and academics in a restaurant set-up. The attendees are given the opportunity to engage in a restaurant-like environment and have science-related conversations (Stellenbosch University, n.d.)

In 2022, the University hosted a science journalism short course for journalists across the continent, in partnership with development partners such as UNESCO, South Africa's Department of Science and Innovation, and the SADC Secretariat. The objectives of the workshop were to unpack the role of policy and decision-making, develop a framework that can be used by other journalists to communicate science, and to distinguish between pseudoscience and credible sources, amongst others (Building Science Communication and

Capacity in the SADC Region and Africa, 2022). The event was a build-up to the World Science Forum (WSF).

2.3.8 Case Study: University of Queens 3MT Competition

Although not specifically linked to science communication, a competition that is founded by Australia's University of Queens in 2008 specifically aims to promote research to lay audiences (Three Minute Thesis, n.d.). The competition, known as Three Minute Thesis (3MT), is designed for doctoral candidates to take part in a competition where they highlight what their dissertation is about in three minutes or less.

The idea is to package the presentation in a way that is understood by average people, but at the same time ensuring that the essence of what the study is about is not lost. The competition has since been adopted by renowned universities around the world and it serves as one of the ways to promote science communication between researchers and the general public (University of Queensland, 2008).

2.3.9 Case Study: The Biodiversity Research Centre

The Institute was established at the Namibia University of Science and Technology (NUST) in 2019, to enhance the university's efforts in natural resources management. The Institute has an active online presence particularly on social media where they promote their activities in ordinary language that is applicable to wide audiences. Other common platforms that the Biodiversity Research Centre (BRC) uses is newsletters, radio, blogs, websites and community outreach campaigns. The BRC further works on engaging communities on pertinent issues such as wildlife-human conflict and how to mitigate such challenges. The project aims to "equip

communal farmers with knowledge to better understand elephant movement within the area, and the possible cause of their movement onto farmland" (Hauptfleisch, 2020).

2.3.10 Case Study: Makerere University Script Programme

In 2018, Makerere University in Uganda launched a programme known as Script, a training and networking initiative aimed at equipping both scientists and the media with skills to effectively communicate science (Digital & Terms, 2022). It gives researchers, scientists and the media the platform to understand each other's roles and to find 'middle ground' in terms of reaching the masses in a manner that satisfies the interests of all the groups. The courses offered under Script were at no cost, in efforts to reach wide audiences. "As of December 2021, the Script programme has supported four universities in Africa to embed science journalism and communication into their undergraduate and postgraduate curricula. The support included training-of-trainer (ToT) sessions for academic staff, technical support for curriculum development, as well as the provision of reading and teaching materials" (Digital & Terms, 2022, p. 35).

2.3.11 Case Study: SASSCAL Graduate Studies Programme in Integrated Water Resources Management

Ofori (2021) highlights that "water is deemed critical in achieving sustainable development and the protection of the environment. Hence, human health, welfare, food, and ecosystems are put at risk in the face of water insecurity and scarcity," (p. 1). This emphasises the value of this precious resource. In 2021, the Namibia University of Science and Technology (NUST) established the first Southern African Scientific Service for Climate Change and Adaptive Land Management (SASSCAL) Graduate Studies Programme in Integrated Water Resources Management (SGSP-IWRM). The programme, targeted at advancing studies at doctoral level,

aims to address the SADC region's capacity needs in water resources management by enhancing the human resources in this field (SGSP-IWRM Prospectus, 2022). The programme is guided by a Science Plan, which is the blueprint of research activities undertaken under the programme. "Notions which are reflected in the SADC Water Research Agenda is that the water sector is critical to economic development of the SADC Member States, such that the benefits of related investment will lead to sustainable health and livelihoods of SADC citizens" (WaterNet, 2015).

The introduction of this programme is indicative of the Institution's efforts to promote science, particularly in the field of natural resources. Students from five SASSCAL member countries, namely, Angola, Botswana, South Africa, Namibia and Zambia, were handpicked to be enrolled in the programme. Their studies span across different science programmes from engineering, health and computer science, with a bias in integrated water resources management.

2.4 Prominent science news themes

There are several themes that fall under the definition of science, but specific themes tend to dominate media spaces. This is attributed to a number of reasons ranging from impact to generally the complexity of the subjects. Journalists use a standard set of criteria to determine the value of news which include exclusivity, the number of people involved, where it happened, the relevance of the event, the conflict and mainly the overall agenda or mandate of the media house (Harcup & O'Neill, 2017). If a media house is a tabloid paper, for example, it will naturally gravitate towards news that is shocking and sensationalised, whilst publications that are state-funded tend to publish articles that serve the interests of their sponsors (Valenzuela & McCombs, 2019).

The Theory of News Values developed by Norwegian scholars Johan Galtung and Mari Ruge in 1965, outlines specific criteria to determine what makes news worthy of reporting. The theory supports Harcup and O'Neill's observations that there are specific events that need to be applicable to a story to make it valuable information. These include timeliness, proximity, impact, prominence and conflict (Araujo & van der Meer, 2020). Stories that fall into these categories are often given prominence by journalists. This theory mostly applies to news in general, but the same principles are applicable to science news. For example, news that affects the majority of the population, such as the outbreak of a virus, tends to be given more attention as these tie in with the overall goals of journalism, which is to inform, coupled with keeping audiences engaged. This ultimately translates to selling copies and increased revenue. This is highlighted in a study conducted by Dunwoody (2015) in the U.S., Canada and Britain, where Dunwoody found the bulk of what qualifies as science reporting, which is about health and medicine. This is because health matters concern every human being and this heightens the interest in such a topic.

In 2020 when the novel Coronavirus was first detected, initially the attention that was given to the virus was minimal, but when it began to spread widely and rapidly, and it was declared a pandemic by the World Health Organisation, panic spread across the globe and more people took notice. Media houses started dedicating significant portions of their publications to COVID-19, publicising various information about scientists' expert discoveries and opinions (Capurro et al., 2021).

In the Western part of the world, several countries are legalising the use of marijuana for medicinal purposes. This remains a highly controversial topic as critics strongly perceive

marijuana as a harmful drug despite scientific evidence that opposes such findings (Rettew, 2021).

Therefore, due to the interest amongst the public and scientists alike, topics of this nature generate significant interest thus they are prioritised. Another influence of science news coverage lies in countries' national development goals. Development policies have agendas that are aligned with promoting science and corporates and institutions are called up to follow suit (Biermann et al., 2022).

Kjaergaard (2008, as cited by Vestergård, 2016), reviewed nanotechnology articles published in Danish newspapers between 1996 and 2006, and suggested that "the framing of sciences news is closely linked to the national agenda provided by government policy-making and research initiatives," (p. 54).

In a survey conducted by Peters (2013) in Germany, researchers in specific fields showed more frequent communication with the media in comparison to others, partially because of the interests of journalists and their respective audiences. Informatics, mathematics, chemistry, and material science recorded the least interaction, with 10% of the respondents indicating frequent contact with the media. Over 50% were recorded in the fields of law, history, archaeology and philosophy.

2.5 The role of science journalism in nation building

The core functions of the media are to inform, educate and entertain. The media is responsible for disseminating verified information to the public, in line with Namibia's national agenda. Khalid, Ahmed and Mufti (2015) state that because traditionally newspapers are the chief source of information, newspapers should act to educate the masses and promote enlightened public opinion, and generally shape the development process of a country. In fact, "the Theory

of Social Responsibility proffers that the media should play an important role to define issues and set the public agenda. Therefore, the press should assume the role of agenda setter in a society" (Zahra et al., 2015, p. 50). However, they are quick to caution that "the media must however play their role in national development in an environment that is free and independent, with fair ownership spread. Biases, sensationalism, propaganda and media vices are inimical to the media role in national development and has been a subject of discourse in communication literature" (Zahra et al., p.47). Olusegun et al. (2019), opine that good reporting enhances the ability to evaluate related policy issues and poor coverage misleads and disempowers citizens.

The need for disseminating scientific information to the public is that there is an inherent need for individuals to increase their knowledge of the world, and scientific knowledge can contribute to socio-economic developments of countries. Science journalism contributes to society's education and it has a bearing on people's personal, civic and economic lives (Mittal & Mittal, 2013). For example, information on health sciences can aid in people make better dietary decisions, and renewable energy news can encourage users to make better choices for electricity options. On a larger scale, new developments in science have improved the livelihoods of society by improving economies, for instance, by applying scientific methods in the agricultural sectors, thereby improving the yields and food production. These methods include using pesticides and automated farming, which contributes to the alleviation of world hunger (Olusegun et al., 2019). Additionally, as the access to information becomes easily available, the public's reliance on media for verified science news has increased (Entradas et al., 2020).

Kenya, Nigeria, Senegal and South Africa are amongst the leaders of science and technology investing countries on the African continent, and they are the major producers of scientific

output in the region (Waithera, n.d.). Waithera adds that in these countries, the investment is visible through the amount of PhD scholars produced annually which results in an increased research output which impacts development.

Russell (2010) attests that "having a minority in a democracy conversant with science and technology produces a low level of public discussion and makes for impoverished policy-making," (p.75). This is conveying the message that whilst policy-makers have the responsibility of making decisions aligned to national agendas, this is informed by the general public and discussions that affect them. The more educated the populous is, the more informed the discussions. The decisions of politicians affect research-funding and shape the spectrum of policies, thus making science and politics inseparable (Modi, 2020). Although not all governments are willing to engage scientists, especially when their findings do not support the agendas of non-democratic states, some have invested in working closely with scientists.

The South African government is one such example. When the COVID-19 pandemic began, the government establishment a committee of leading scientists signalling that they "had chosen to respond to the virus armed with the best available information and evidence" (Joubert, 2020, p. 2). One of the leading scientists was Prof. Salim Abdool Karim who engaged the media on a regular basis, thereby debunking false information and providing evidence-based information about the virus (Academy of Science of South Africa, 2017). Prof. Karim was not new to media engagement because when HIV and AIDS was plaguing South Africa in the early 2000s, he was vocal about curbing the virus and stood out boldly against the then regime that had questioned scientific evidence about the pandemic (Joubert, 2020).

In America, Dr Antony Fauci was one of the leading scientists during the pandemic although he faced numerous challenges in gaining political support during President Donald Trump's term in office (Smith & Wanless, 2020). This later changed when President Joe Biden took office and scientific principles were once again given prominence. Around the world, many scientists were turned into public figures due to the pandemic.

Equally important, many academic and research institutions have made science communication mandatory amongst scientists as a means of visibility and attracting donors.

> Scientists in open democratic societies are under increasing strain from the state, funders and other societal actors to make scientific knowledge accessible, to de-commodify knowledge and to conduct research that impacts on society and contributes to the global knowledge economy. (Joubert & Falade, 2019)

2.5.1 Case Study: Sugar Tax

Herald LIVE

/S BUSINESS SPORT OPINION MULTIMEDIA LIFESTYLE BUSINESS DIRECTORY

LEISURE

Almost half SA women are obese

BY HERALD CORRESPONDENT - 27 JULY 2017

South African women have the highest obesity rate (42%) in sub-Saharan Africa, according to a recent study.

About 14% of men and almost nine percent of SA children are also considered obese, the study shows.

Image 1: Screenshot showing a news article on a study conducted on obesity (Herald Live, 2017)

The article above was published in the *Herald Live*, a South African publication. The article reveals the findings of a study that was conducted by the University of Washington and it states that South Africa has the highest rates of obesity in the SADC region, pegged at 42% (Herald Live, 2017). It further highlights the possible reasons for these alarming statistics such as high sugar consumption. The article goes on to recommend what can be done both at individual and national levels to curb this situation.

Informative articles such as this one play a crucial role in influencing policy. In this regard, the prolonged reporting on the detrimental health effects on sugar, led to the introduction of sugar tax in 2017 in South Africa, a first for the continent (National Treasury, 2016).

According to the National Treasury (2016), "obesity is a global epidemic and a major risk factor linked to the growing burden of non-communicable diseases (NCDs) including heart diseases, type 2 diabetes and some forms of cancers," (p. 2). The tax is also implemented in countries such as Denmark, Hungary and Chile. Research has shown that sugar is amongst the leading causes of obesity in South Africa, with the country having the highest overweight and obesity rate in sub-Saharan Africa. The Strategic Plan for the Prevention and Control of Obesity in South Africa outlines key steps that the government follows to curb this health crisis.

One of them is the taxation of sugary beverages because these drinks are the top source for calories. However, the association between sugar intake and obesity remains under investigation (World Health Organization, 2017). Nonetheless, the repetitive reportage of studies on this topic has eventually led to public discussions from different quarters of society, which has eventually led to policy change (Van Rooyen, 2017). Jeong et al. (2014) further argue that "news coverage could adjust the beliefs of higher-level socio-political groups that obesity is not purely an individual issue but one that needs to be dealt with at multiple levels, including public policy" (p. 586).

2.5.2 Case Study: Plastic Tax

Image 2: A screenshot photo showing a "delicate seahorse dragging a mask in the waters off northern Greece" (GeekReporter, 2021).

The screenshot above is of an image that was published showing a seahorse with a disposable mask which is made of thermoplastic. The image, which won an award for Ocean Photography, serves as a reminder of how plastic has invaded the seas. The image went viral and again reinforced the need to scale up efforts to protect the environment.

In Namibia, the wasteful dumping of plastic in riverbeds and the constant reports in the media about the impact of plastic on marine life and the environment at large, which has led to policymakers taking notice (Tax First, 2013). Environment activists have intensified their

efforts to bring attention to the effects of plastics. In Namibia, the environmental tax on additional products including plastic was introduced in 2019 to curb the use of these products based on their harmful impact (Tax First, 2013).

2.6 Science journalism in Namibia

Science journalism is not a new phenomenon in Namibia. Many scientific developments have been published in the print media and themes relating to agriculture and water resources management are often prioritised due to the common occurrence of drought caused by the country's dry climate (Shimhanda, 2021) . Yet, science news has been sporadically published and one may say that it has indeed existed, but not formally. This is mainly because this is a specialised field and there has been a lack of capacity amongst journalists to take up this beat. Various Namibian higher education institutions such as the Namibia University of Science and Technology (NUST), and the University of Namibia (UNAM), offer programmes in media studies, mainly in journalism and communication, at undergraduate and postgraduate levels, which all have theoretical and practical components (Africa Media Baromoter, 2018).

Prior to 2020, there was no or little focus on science journalism until NUST introduced a Master's programme in Journalism, where one of the modules is specifically centred on Science Journalism (NUST, n.d.). However, the quality of the graduates produced by the aforementioned is at times questioned, due to the sub-standard quality of work produced by some of the graduates (African Media Barometer, 2018). "There have been cases where media students have not attended classes, or have had other people writing their exams for them. So, they have no training! It is unclear how common this practice is" (African Media Barometer, 2018, p. 6).

This shows the value that is gradually becoming attached to science from a journalistic perspective. Such a module will play a part in capacitating local journalists to gain knowledge in this area. Whilst a number of universities globally offer science journalism as a standalone programme, the fact that it is now being recognised as a genre that needs to be offered in academic programmes in Namibia attests to the growth of the field. Around the globe, courses focused on health, the environment and agriculture journalism, amongst others, now form part of the university curricula (Mulwo, 2022). Trench (2017) states that "the spread of science communication education programmes, mainly - but not exclusively - postgraduate diplomas or Masters that 'convert' science and (sometimes) other graduates into science communicators, has been widely observed" (p. 3). Whilst Pearson (2017) corroborates the importance of science education, the author also challenges the necessity of one needing a postgraduate qualification in this field, arguing that motivated students with hands-on experience can make a meaningful contribution in this career.

2.7 Challenges journalists experience in reporting science news globally

The core of journalism is often premised on giving information to the target audience that is current and if it is unusual and sudden, this is often termed as breaking news. The term stems from news that is broadcast or published urgently, thus breaking regular scheduling. This attracts more audiences and increases the media house's popularity and eventually revenue figures (Ekblad, 2013). This puts pressure and urgency to publish and this often comes with a set of challenges that compromise the reliability of information (Jaafar & Giam, 2012). Moreover, with the rise of the popularity of social media, this has changed the landscape of journalism and the competition to break news has intensified. This at times compromises quality and increases the chances of publishing unverified information. "A reporter who breaks a story is given far more credit than one who follows up with detail" (Weigold, 2001, p. 313).

This perception puts a strain on publishing speedily but for journalists that are not seasoned, this can result in irregularities in the reports. It poses challenges of mistrust and scepticism amongst scientists who would then rather disassociate themselves from the media. It can take just one bad experience with a journalist for a scientist to permanently detach themselves from the media (Russell, 2010). This becomes a great challenge for reporters, including those who may not necessarily have been guilty of this misconduct.

Whilst the popularisation of science is mostly encouraged, in some quarters scientists are of the opinion that by attempting to communicate science to the masses, complex matters are oversimplified, thus losing the essence of what should be the focal point (Ashwell, 2016).

"The media often dumps down complex issues because they want to appeal to the largest possible number of people especially when commercial media, which privilege profit, are involved (UNESCO, 2011). It adds that with financial constraints being experienced in several newsrooms worldwide, fewer journalists are able to focus on specific beats but rather report on a variety of genres. Science journalism is not a beat that is common in newsrooms although there are news stories that are often covered in this area. This has also been explored in prior studies by Williams and Clifford (2009, as cited by Ashwell, 2016), who found that 61% of the science journalists surveyed in the United Kingdom opined that "in terms of staffing levels, the UK national science beat is neither stagnant nor in decline" (p. 2). This makes it challenging to gain extensive experience on a specific field such as science. Russell (2010) observes that "cutbacks in the news business, particularly newspapers, have brought a severe decline in the number of jobs for full-time staff science writers as well as a drop in the number of weekly science sections," (p. 27).

This is further exacerbated by the lack of resources to invest in news stories that may take time to investigate and fully grasp before publishing. Williams and Clifford (2009, as cited in Ashwell, 2016), suggest that increased workloads result in time constraints for journalists when it comes to investigating stories which then leads to a reliance on media releases and other content from public relations practitioners. In a study conducted by Larsson (2009), it was highlighted that this dependency can lead to a "risk that journalists will get caught up in it and thereby decrease their ability to control the news agenda" (p.135).

2.8 Science Journalism challenges in Africa

Although there may be similarities in terms of the challenges that affect science news reportage from a global context and that of the African continent, some are more prominent in the latter. For example, Joubert (2007, as cited by Ziman, 1991), highlights that science news is often sourced from the West because "big science achievements are rarely originated from local laboratories or universities" in the developing world. This may be attributed to funding constraints experienced at many African universities.

Another challenge is what is termed scientific illiteracy. Scientific literacy is defined as understanding scientific topics to an extent that one can objectively come to a conclusion about the reliability of the information being shared (Jgunkola & Ogunkola, 2013). Science illiteracy is thus having little or no knowledge of topics in this field. This can be experienced by journalists due to the field being a specialised one and not many have the expertise in this area. This consequently has an effect on the stories that are given priority and or the manner in which they are reported. A journalist with in-depth knowledge about the filed will be able to bring unique angles to a science story, whilst at the same time keeping the reader engaged. Without this know-how, journalists will not have the capacity to disseminate such information effectively and if they attempt to without this expertise, it results in misinformation, and

subsequently public distrust and disinterest. The disinterest also comes from the fact that if events are not within close proximity and do not directly affect the reader, the interest diminishes (UNESCO, 2011).

Weingart et al. (2000, as cited in Vestergård, 2016), state that "some scientific fields are becoming politicised because scientific results are increasingly being used in political decision-making" (p. 72). This presence challenges in ensuring 'academic freedom' as scientists might reserve their expert comments from the public sphere, specifically when it opposes the views of politicians and threatens their funding. In 2016, a company was reported to have been given clearance by the Namibian government to extract marine phosphate from the sea. This caused an uproar amongst some government officials and environmentalists who strongly advised against it, saying it is harmful to the environment (The Namibian, 2016, p.1). The Business and Human Rights Resource Centre published an article in which the Head of the National Union of Namibian Workers (NUNW) was quoted saying "marine phosphate mining was being promoted by a few whose love for money outweighs the well-being of the majority of Namibians and the Namibian economy. He accused the prospective mining companies of blackmailing Namibians and its leaders to get an environmental clearance certificate" (Business & Human Rights Resource Centre, 2019).

Murukutla, et al. (2022) postulate that as is the case around the globe, news about science rarely makes it in the African media and the focus is more on sports, business and political news. But this is gradually changing as more news about health, climate change and other developmental-related topics come to the fore. According to Nakazzi (2012), science journalism in Africa began to grow in the 2000s, which was ironic because during this era, science news desks were shutting down in Europe. The author attributes this growth to mentorship and training from key organisations such as the World Federation of Science Journalists (Nakazzi, 2012).

The need to popularise science and technology research is articulated in Nigeria's National Science, Technology and Policy, under the Federal Ministry of Science and Technology (Falade & Batta, 2020). The policy emphasises the importance of giving visibility to science initiatives through various activities such as fairs, exhibitions, clubs and the mass media. However, Falade and Batta (2020) argue that "the synergy among these policies and the extent to which science communication and popularisation components are implemented is not visible," (p. 625). With regards to specifically science journalism in the country, this is a growing trend and the media tends to focus on beats that attract the audience as well as the advertisers, and inevitably, editors tend to assign journalists to stories that are lucrative. "For instance, the telecommunications industry is highly reported in the Nigerian media because the industry is a major player in today's economy" (Adeniran & Adenle 2012). Despite this, a study by Falade (2016, as cited by Falade, et al. (2020), discovered that the coverage of science news in the Nigerian print media has intensified and overall as more scientists were writing stories and taking a more active role is science communication. At individual level, scientists such as Mahmoud Main, a Nigerian neuroscientist, have initiated a number of science communication activities that have a direct impact on science journalism. For example, in 2019, Main launched Science Communication Hub Nigeria, to promote public understanding of science and curate a database for journalists and scientists (Maina et al., 2021).

In Egypt, similar trends appear in terms of observing science deficits in the media. Gamal (2020), attests that one of the biggest challenges is the lack of training amongst journalists in science reportage and this inevitably has a bearing on the quality of news, thereby presenting a number of missed opportunities. For instance, the phenomenon of the Supermoon (March 2019) was reported without putting the matter into context and the relevance thereof (Manriquez Alvarez, 2019). Murukutla, et. al (2022) echoes this by stating that many science reports in Africa in general, lack contextual information and it has become common for

journalists to quote media releases verbatim. El Awady (2019) states that a number of universities and newspapers attempt to host trainings for science journalists, but the attendance is at times very low due to the strained human resources in newsrooms.

2.8.1 Print media challenges

"Newspaper readership, especially among the younger generation, is declining and lost to internet bulletins. In consequence, advertising spending also shifts" (Howard, 2013, p. 4). This shift from traditional media to more advanced forms of media has fuelled the notion that print media is dying. This uncertainty means less room for specialised reporting such as science news that needs additional resources such as time and manpower in comparison to news that is readily consumable (Howard, 2013). Also, due to the pandemic, several newsrooms have had to shut their doors or retrench their staff (Remmert, n.d.). Other than the pandemic, many newsrooms have been experiencing challenges. Finlay (2018) describes the 'dissolution of "the newsroom" as we know it', evidenced by the closing down of many print titles and widespread retrenchments in both the print and broadcast media in South Africa, including the proposed retrenchment of over 900 staff at the South African Broadcasting Corporation. This also leads to 'churnalism' a term that describes the recycling of information and reproducing it as is instead of interrogating and reporting it objectively as s journalist should (Johnston & Forde, 2017). For example, when PR officers circulate media statements, journalists are supposed to look at them with an impartial eye and further ask questions where necessary, but if resources are constrained, the norm becomes publishing the content as is. Johnston and Forde (2017), argue that this compromises the quality of journalism as it will no longer be objective, which is the very core of this profession.

In addition, according to the African Media Barometer (2022), journalists sometimes struggle to secure interviews. In Namibia, in particular, "several bottlenecks exist when trying to access

information from government or from public institutions, not only for citizens, but also for journalists" (African Media Barometer, 2018, p.16). The reasons are said to include a bias for the state-owned broadcaster, particularly the Namibia Broadcasting Corporation (NBC), where most politicians' loyalty lies; the general bureaucracy in the country when it comes to accessing information; as well as the general veil of secrecy amongst institutions that believe engaging the media may lead to controversy.

2.8.2 Opportunities for print media in line with technological advancements

With ongoing heated debates about whether print media is dying out or not, in line with the technological developments of the 21st century, several newspapers have welcomed media convergence by incorporating online and traditional information dissemination methods (Ivar, 2017). This trend is also observed in efforts to operate lucratively and many newspapers now have digital versions available on their websites and on social media platforms. The content is generated from print versions and adjusted into formats that are suitable for the digital platforms (Van Rooyen, 2017). "Many online editions of newspapers now routinely produce text and photos, as they always have, but with additional content in the form of audio, photo galleries, moving images, computer simulations and graphics, online quizzes and glossaries, links to other selected and recommended websites, and so on" (Araya, 2014, p. 5. Remmert (2019), however, argues that although the media are adjusting accordingly due to digitalisation, there are little benefits to publishing online in comparison to selling copies. Remmert says that "consumers are increasingly likely to only access a few stories from newspapers or TV stations, rather than reading a newspaper from cover to cover or watching an entire news bulletin. These stories are accessed online via social media platforms, digital media or search engines – mostly for little or no monetary gain for the respective media outlet," (p.17). Remmert further implores media houses to continuously seek innovative ways to stay afloat.

2.9 Scientists' perceptions of science journalism

The Science Council (2023), defines a scientist as someone who systematically gathers and uses research and evidence, to make hypotheses and test them, to gain and share understanding and knowledge. The fields of journalism and that of scientists are quite different and this at times works as a barrier between the two. Journalists work on very strict deadlines, whilst the nature of science or research tend to take time (Elliott, 2019). Scientists then perceive the media as too fast-paced and in some cases, this compromises the quality of reports. Dudo (2015, as cited by Cawdrey, 2022), says that "scientists see news as a product of long-term, laboured, vetted research, while journalists see news as current, dramatic, and entertaining. In terms of sources, some journalists desire celebrity science sources who talk beyond their field of expertise, while scientists tend to dislike these types of sources" (p. 3). In agreement, Fleeman (2020) states that science journalists need conflict, drama or exclusives to make science appealing to news editors, whilst scientists deemphasise single studies and rather promote the full body of science in context" (p.113).

The need to 'break' news and make it informative and entertaining at the same time, can lead to sensationalism and inaccuracy. Ransohoff and Pract (2001) argue that sensationalism is problematic because it can distort news and create false hope of fears. They attribute sensationalism to miscommunication emanating from the different styles between the work of journalists and that of scientists. This results in scientists mistrusting journalists and ultimately their disengagement from mass media platforms (Cawdrey, 2022). The African Media Barometer (2018), supports this by stating that "in Namibia, newspapers regularly publish corrections of articles. Some see this as a sign that there is not enough accuracy in reporting" (p.6). It further adds that the majority of the complaints reported to the Media Ombudsman are allegations of inaccuracy in articles and that journalists do not take time to verify information.

The Office of the Media Ombudsman was established by the Editors' Forum of Namibia (EFN) as a self-regulatory mechanism aimed at upholding the principles of media accountability (Media Ombudsman Namibia, n.d.).

Another perception that scientists tend to have of science journalism and particularly communicating to non-science audiences, is that this can oversimplify very complex matters and thus 'dumbing down' issues that are otherwise not suitable for public consumption (Dunwoody, 2015). Some even go as far as believing that certain scientific matters are not meant to be popularised for fear of misinterpretation, therefore it is now ideal to simplify scientific terminologies. Also, they do not see the relevance of some matters for the public, for example, when the deep fake technology was reported in the media, one could argue that this was not information that was crucial to the general public, but more for tech companies (Shehab, 2020). These elitist perceptions serve as a stumbling block for some scientists to fully appreciate the need or relevance of communicating science on a mass scale. They would rather publish in journals that have direct benefits to the organisations they are affiliated to as well as the trajectory of their careers.

However, not all scientists are uncomfortable with mass media. A number of scientists couple as journalists, either due to past professional training in the field or they are simply driven by their passion and understanding of the media. Scientists are becoming increasingly skilled in media management (Franklin, 2004). Below are examples of African scientists in the SADC region that have experience in both science and journalism/communication and have embedded journalism in their careers. They gave presentations at a science journalism training that was held in 2022 by the Stellenbosch University, under the theme: Building Science Journalism Capacity in SADC and Africa.

Juliette Muthey-Asego, has a background in osteoarthritis and malaria research and is currently the head of the Corporate and Science Communication unit at the Science for Africa Foundation (SFA Foundation). Her work entails championing digital strategies in science communication and leveraging on the continent's strengths in research and innovation. In 2021, she was amongst the top ten finalists of the BBC international podcast competition (Building Science Communication Capacity in the SADC-region and Africa, 2022).

Dr Dominic Ayegba Okoliko is an environmental science communicator with a background in human rights. His work is centred on the intersection between communication, public sense making, and sustainability practice. He has published works on governance and climate change communication in the *Journal of Media Ethics*, *African Journalism Studies*, and the *Journal of Public Affairs* (Building Science Communication Capacity in the SADC-region and Africa, 2022).

Dr Ebrahim Samodien, is a Science Writer and Editor at the South African Medical Research Council. In this role he is involved in research translation, one of the key strategic goals of the organisation. His research interests include diseases of lifestyle, nutrition and nutraceuticals, neurogenesis, and natural medicine, with a keen focus on holistic wellness (Building Science Communication Capacity in the SADC-region and Africa, 2022).

2.10 Theoretical framework

Grant and Osanloo (2014) define a theoretical framework as "the guide on which to build and support your study, and also provides the structure to define how you will philosophically, epistemologically, methodologically, and analytically approach the dissertation as a whole" (p. 13). Mouza (2018) defines a theory as a statement or concept that attempts to provide an explanation about a phenomena and does not have a single meaning. De Maeyer (2020) states

that a theory is a "plausible or scientifically acceptable general principle or body of principles offered to explain phenomena" (p.112).

2.10.1 News Values Theory

The theory that underpinned this study is Galtung and Ruge's (1965) News Values Theory. This theory states that the mainstream media uses a common set of values to determine what is newsworthy. According to Harcup and O'Neill (2017), the characteristics are: Frequency, Threshold, Unambiguity, Meaningfulness, Consonance, Unexpectedness, Continuity, Composition, Reference to elite nations, Reference to elite persons, Reference to people, and Reference to negativity. The philosophical assumptions are that the more these characteristics feature in a certain event or happening, the more chances the item will be likely reported in the news.

Whilst the News Values Theory is generally used in relation to all genres of news, Badenschier and Wormer (2012) caution that "this concept obviously does not describe the selection of science news sufficiently. For the last 20 years, journalism researchers have suggested several times that science journalists may have special selection criteria" (p. 67). Cotter (2010, as cited by de Maeyer, 2020), conducted a study that went beyond a content analysis that constituted observing media practitioners in editorial meetings. Cotter (2010) observed that confining decisions of what makes something newsworthy goes beyond a set of predefined characteristics as some in some cases, various debates take place before the editor decides to approve or shelf a story. For example, she says that a story can be defended because of the editor's childhood attachment for the protagonist.

This has also been explored in prior studies by Mañoso-Pacheco (2020), who argues that there are many dimensions to be considered when selecting events as newsworthy such as deadlines

and commercial imperatives. The latter is when the media house depends on advertising for its operations and this may have an impact on editorial decisions as they are obligated to report on certain events in efforts sustain themselves. Allern (2002, as cited by Ekblad, 2013), argues that "coverage should be analysed in both terms of market objectives and journalistic practice instead of in terms of journalistic practice alone" (p. 7). The author further cautions that no News Values Theory can explain everything as there are a number of arbitrary determining factors including luck. For example, if there suddenly is extra space in the publication because a source is no longer avail to give commentary, a story might be dropped, thereby making room for another story to be considered for publication.

For this study, the researcher took cognisance of the criticism as well as the strengths of this theory and concluded that the strengths formed a strong basis to underpin this study. The researcher aimed to determine the criteria the media uses to establish the values of science news in particular, and the overall importance that the media places on this news genre. By assessing this, the researcher's intent was to give science communicators insights into how journalists have an appreciation of newsworthiness, which is important for them to know how to craft their messages and enhance the chances of getting visibility in the mass media alongside general news (Tse, 2020).

2.10.2 The Public Engagement Model

According to Kang (2014), the Public Engagement Model, also known as the Participation Model of Science Communication, theorises that scientists, the public and policymakers participate equally in discussions and debates about issues in science and technology. The philosopher behind the model is known as Philip Kitcher, and while it is difficult to pinpoint an exact year when he initiated the public engagement model, his work in this area can be

traced back to the 1990s (Kang, 2014). Tropp (2018) states that the Public Engagement Model is applicable to situations where collaboration is the desired communication objective, and whilst it does not have specific philosophical assumptions, the model is informed by principles such as inclusivity, participation, transparency and shared learning. These principles provide a framework for practitioners to design and implement public engagement initiatives that are foster meaningful dialogue and influence decision-making processes. The image below articulates the vision for public engagement to provide "a common framework, language, and research-based foundation for the many professionals involved in public engagement with science activities, and to serve as a starting point to enable scientists, practitioners, and researchers to continually improve and develop collective understanding of effective practices in public engagement with science," (Wagenknecht, 2012, p. 293).

Inputs	Participants & Activities	Short-term Outcomes	Medium-term Outcomes	Long-term Outcomes	Vision
▪ Research ▪ Evaluation ▪ Practitioners ▪ Leadership programs ▪ Support to scientists ▪ Communication & engagement training ▪ Institutional support for scientists and publics ▪ Funding (including Broader Impacts and other funding requirements) ▪ Strategy of communication	Participants ▪ Scientists ▪ Publics ▪ Practitioners Activities ▪ Public Dialogue Approaches ▪ Policy Deliberation Approaches ▪ Knowledge co-production approaches ▪ University-led, cooperative engagement approaches ▪ Everyday engagements ▪ Note: see typology for more details and examples	Scientists humanized/ publics individualized	Build trust between publics and scientists	Build trust between publics and scientists	Sound, evidence-informed public decision-making on science-related issues Dialogue on critical science-society issues embedded in public discourse Influence individual and collective action and behavior Influence policy Influence research agendas Research that is responsive to societal needs and interests Resilient STEM workforce Science embedded in daily life
		Positive effect	Longer-term positive effect about science	Long term positive effect	
		Increased sense of public engagement identity	Shared appreciation of public engagement Do more & better engagement (more able and comfortable) Build relationships to continue public engagement with science	Engagement is part of work and life (proposals, plans) in strategic and reflective ways Institutional change	
		Intention to act or engage again Increase skills/ability to engage civically Increased self-efficacy	Act on something from engagement Be ready to advocate/amplify Increased preparation to engage between science and society	Share scientific or social content and understanding with networks	
		Increased interest and motivation around topic	Increased willingness to consider science-society intersections	Improve goals or focus of research Hear/understand others' views about science	
		Increased understanding of the process of science and social institutions	Increased ability to discuss science-society intersections	Frame science to be relevant to publics Framing knowledge outcomes for use by scientists and decision-makers	

Image 3: Logic Model for Public Engagement with Science (American Association for the Advancement of Science, 2023).

For this study, the researcher uses this theory to determine the scientist's willingness to make intentional interactions with opportunities for mutual, two-way learning, thus the public engagement model of science communication is closely linked to scientists' perceptions of the media. The model recognises that scientists' engagement with the media plays a crucial role in shaping public understanding of science (Wray, et. al 2016). Scientists' perceptions of the media can vary widely, ranging from viewing it as a valuable tool for communicating research to being skeptical of its accuracy and potential to sensationalise scientific findings (Horst, 2012).

Scientists are encouraged to actively engage with the media to ensure accurate representation of scientific knowledge and to promote informed public discourse. This engagement can involve participating in interviews, writing opinion editorials, or collaborating with science communicators to convey their research accurately. By engaging with the media, scientists have the opportunity to bridge the gap between scientific expertise and public understanding, fostering a more informed and nuanced public discourse on science-related topics (Wray, et. al 2016).

2.10.3 Summary of Chapter

Science journalism has proven to be an important topic of discussion and this chapter provided an overview of contributions that various authors have made to drive the further development of this news genre. The aim of the chapter was to analyse the gaps in the study and highlight the areas that still need attention in terms of delving deeper into the topic. Likewise, the chapter underscored the theory that underpins the study. The next chapter focuses on the research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Igwenagu (2016) states that research methodology may be understood as "the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge" (p. 4). This chapter, therefore, highlights the steps that the researcher took to answer the research problems, with justifications for the methodology and particularly the processes taken for data collection.

3.2 Philosophical assumptions

According to the Evolution of Communication Systems (2020), philosophical assumptions can be described as a set of beliefs that all researchers tend to have about their studies, whether they are aware of it or not, and these assumptions guide our research. The Evolution of Communication Systems (2020) goes on to highlight the four types of philosophical assumptions, namely, ontological, epistemological, axiological, and methodological (Evolution of Communication Systems, 2020). Ontology is the researcher's views of the world; epistemology is the researcher's relationship between the subjects of study; axiology is what the researcher believes is ethical and valuable; and lastly, methodology is the approach the researcher takes in discovering knowledge (Alzahrani, 2019). However, assumptions are condoned as failure to be cautious of assumptions which can lead to bias, which ultimately distorts findings and conclusions, and in some instances lead to harm (Šimundić, 2013). For this study, the researcher asked standardised questions to all the respondents and furthermore, the respondents were not coerced into responding in a particular manner.

3.3 Research design

This study applied a mixed methods design approach consisting of both qualitative and quantitative approaches. Creswell (2013) attests that mixed methods involve integrating data from close-ended and open-ended information in a single study. This method allows for a more complete analysis of research as an alternative to a one track approach (Small, 1995). However, Creswell (2013), contends that although this method is quite thorough, it is quite time-intensive in nature, thus researchers should make use of clear visual models in this design. The research is exploratory in nature, as according to the researcher's knowledge, this topic has not been explored in-depth in Namibia. The major emphasis in such studies is on the discovery of ideas and insights.

This study used the Convergent Parallel Mixed-Methods Design to collect data using face-to-face interviews and questionnaires. Schoonenboom and Johnson (2017), Shorten and Smith (2017), Creswell and Plano Clark (2018) and Wisdom and Creswell (2013, as cited by Dawadi et al., 2021) term the Convergent Parallel Mixed-Methods Design as two types of data sets that are collected concurrently, and secondly, they are analysed independently using quantitative and qualitative analytical approaches. This procedure was regarded as the most suitable for this thesis as it allows for triangulation. This procedure is the most suitable for this thesis as it allows for triangulation. Triangulation is the use of multiple data sources and it is a method that enhances the validity of a study (Creswell, 2013). The figure that follows is a brief illustration of the mixed methods design that was used by the researcher.

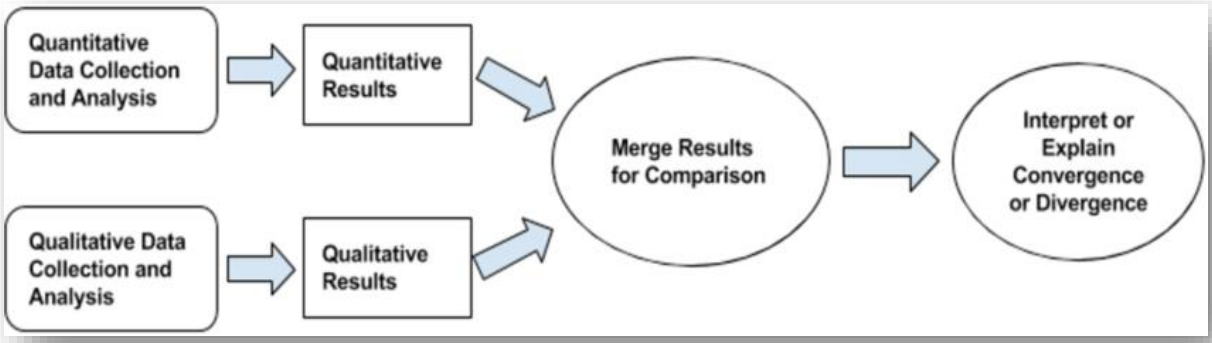


Figure 1: *Illustration of mixed-methods design: Convergent parallel mixed-methods design* (Razali et al., 2019)

3.3 Population of the study

According to Shukla (2020), population can be defined as all the set of units that possess variable characteristics under study. Creswell (2013) adds that a population is the group from which the research results will be generalised. The population of the study in this case, are five daily national print newspapers in Namibia (Remmert, 2019.) This is in addition to the 749 scientists in Namibia (African Innovation Outlook III, 2019).

3.4 Sampling procedures

The purposive sampling technique, which is a non-probability type of sampling, was employed for the qualitative part of this research to select a representative sample of editors and journalists. Purposive sampling or judgmental sampling is deliberately selecting respondents who possess specific attributes (Naderifar et al., 2017). The editors and journalists that took part in the interviews were therefore selected based on their subject knowledge.

The snowball sampling technique, which is also a non-probability type of sampling was used for the quantitative part to select scientists for the online questionnaires. Naderifar et al. (2017),

define snowball sampling as identifying a few respondents who then refer you to other respondents that are relevant for the study. This allowed the researcher to recruit respondents through referrals from the scientists themselves.

A 70% confidence level was used to calculate the sample for the 749 scientists which equalled to 95. The researcher was able to disseminate questionnaires to 184 scientists, of which 107 responded whereas 77 questionnaires were unanswered as some of the respondents were unavailable.

Entity	Population Size	Sample
New Era	1 Editor-in-Chief 12 Journalists	1 Editor-in-Chief 1 Science Journalist
Namibian	1 Editor-in-Chief 9 Journalists	1 Editor-in-Chief 1 Science Journalist
Namibian Sun	1 Editor-in-Chief 10 Journalists	1 Editor-in-Chief 1 Science Journalist
Namibian-based Research Institutes Namibia	749 Scientists	107 Scientists

Figure 2: *Sample Sizes*

3.5 Research instruments

Interview guides were used for the editors and journalists, thus enabling the researcher to collect in-depth information from knowledgeable sources. An interview guide is a set of high questions that guide the researcher in asking the right questions during an interview (Creswell, 2013). The interview guide is a set of high questions that guide the researcher in asking the right questions during an interview (Creswell, 2013). The interview approach for the editors and journalists proved to be the most appropriate instrument as the sample was small, therefore participants were within reach. The questionnaire approach was the most appropriate to collect the data from scientists given the sizable population. The scientists, identified through referrals,

received online questionnaires as they can be can circulated with ease. The scientists received online questionnaires as they can be easily circulated. Questionnaires were administered to 184 scientists via the Google Forms software. This gave a thorough and broad base to draw conclusions and generate quantitative and qualitative data.

3.6 Reliability

Segal and Coolidge (2018), define reliability as the extent to which a measurement shows stability and consistency. Marian et al. (2019) state that there are two three types of reliability; " the first type refers to the degree to which a measurement repeatedly made, reveals the same result. The second one is related to the stability of measurement over time, and the third one is related to the similarity of measurement within a period of time" (p. 2224). This is with reference to quantitative research as it is numerical in nature, but differs when it comes to qualitative data that is in a narrative and subjective form (Zohrabi, 2013). Reliability for qualitative method is simply said to be the level in which the research can be trusted.

To augment the reliability of this study, the researcher conducted a pilot study on a small group of scientists to assess the manner in which they responded to the questions. Thereafter, a few adjustments were made to eliminate ambiguity in the questions and the final survey was disseminated to the sample group. Furthermore, the study employed different types of procedures to collect data, i.e. obtaining information through different sources, namely editors, journalists and scientists. A reminder email was sent to all the scientists that had not responded to the questions before the due date. However, the researcher was cautious to ensure that the unresponsive scientists were not coerced into participation to avoid survey challenges such as prestige bias or agreement bias. Prestige bias relates to social desirability and it occurs when a respondent wants to be perceived as an optimist so they respond to the questions with a positive

outlook only, and agreement bias is when they agree to all statements (Berl et al., 2021). This may occur in instances where participants are forced to respond to questions.

3.7 Validity

Zohrabi (2013) states that "validity is concerned with whether our research is believable and true and whether it is evaluating what it is supposed or purports to evaluate," (p. 258). Researcher bias is one of the key elements that are detrimental to the validity of a study. By nature of being human, naturally, researchers tend to have their own beliefs, values and world views (Zohrabi, 2013). The researcher guarded against this throughout the study and remained impartial, as guided by the University of Namibia (UNAM) ethical guidelines.

3.8 Data collection methods/procedures

The researcher obtained ethical clearance (see appendices) from UNAM and sought permission from the editors and journalists to participate in the study. Upon acceptance, the researcher made appointments with respondents and requested them to sign consent forms (see appendices). The interviews were recorded using an electronic device and transcribed using Otter.ai, which is an artificial intelligence software. The objectives of the study were explained via email as well as face-to-face and the respondents were given the opportunity to seek clarity, where needed.

The questionnaires were administered to scientists at various research institutes in Namibia using the Google Forms software. The email addresses were obtained from randomly selected scientists featured in publications featured on the website of the Namibia Scientific Society (NSS), as the central body for scientists in Namibia. Thereafter, the researcher appealed to the selected scientists to circulate the survey to their respective networks.

When the survey was closed, the data was collected and presented in graphs using the Google Forms software. Subsequently, the data was transferred into a Microsoft Excel spreadsheet allowing for cross tabulation of the data, thereby allowing the researcher to identify patterns and trends.

3.9 Data analysis

Data analysis is a process that transpires after data has been collection and it entails further extracting pertinent information with the aim of interpreting the data (Cuschieri, 2021). Ashirwadam (2014) goes further to highlight that data analysis is a process that is done with the aim of solving a research problem. In this study, the qualitative data collected through interviews was transcribed and analysed thematically, and the researcher made use of descriptive statistics to analyse questionnaires. Braun and Clarke (2022), define thematic analysis as a method for analysing qualitative data that involves reading through a set of data and looking for patterns in the meaning of the data to find themes. It is an active process of reflexivity in which the researcher's subjective experience is at the center of making sense of the data. Thematic analysis provides a structured approach to uncovering underlying meanings, experiences, or perspectives within qualitative data. It allows researchers to identify key themes that capture the essence of participants' responses and provides insights into the research questions or objectives (Braun & Clarke, 2022). The qualitative data was presented in a narrative form under each respondent group, whilst the quantitative data presented in pie charts and tables.

3.10 Research ethics

Research ethics are essentially a set of rules that guide a researcher's behaviour and govern our conduct when human beings are participants of a study (Creswell, 2013). In this study, the researcher obtained ethical clearance from the University of Namibia before embarking on the study. The nature and purpose of the study was clarified to respondents and their rights were explained to them. Respondents were required to sign a consent form before participation and their identity was and will be kept anonymous. The data collected will only be used for academic purposes as per UNAM's prescribed rules (UNAM Research Ethics Policy, Regulations and Guidelines, 2018).

3.11 Summary

This chapter outlined the roadmap for the thesis from a mixed-methods approach angle, using both qualitative and quantitative procedures. It outlined how the data was collected and analysed, and the reasons thereof. Questionnaires and interviews formed an integral part of the study as these were two instruments used for data collection. The questionnaires proved to be the most effective choice due to the size of the scientists' population and interviews were suitable for the much smaller group of journalists and editors. The latter also provided the researcher to get in-depth insights into the experience and perceptions of media practitioners in relation to science journalism. Data was analysed in a thematic manner, grouping the transcribed data under each instrument and the quantitative data was presented using Google Forms and analysed through Microsoft Excel. The next chapter is centred on data presentation and analysis.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the core findings of the study in line with the objectives of the research. Three editors were interviewed, as well as three journalists. Additionally, an online questionnaire was administered and this targeted scientists in Namibia, among whom 107 responded.

4.2 SECTION A – Responses from editors

The interviews were conducted face-to-face and transcribed as seen below, and the responses are presented in a narrative form. The questions to the editors were asked in order to fulfil the following objectives: *to determine the challenges and opportunities for the media in the science journalism field;* and *to assess the criteria used by the Namibian print media to determine the newsworthiness of science news*

For the purposes of this thesis, the editors are identified as E1, E2 and E3.

4.2.1 Demographic characteristics of interviewees

Highest Qualifications

The editors were asked about the qualifications they have as a means to determine if they had professional training related to the media field and the level thereof. All the respondents indicated that they had qualifications that are related to the media field. E1 has an Honours Degree in Media Technology; E2 a Bachelor's Degree in Media studies and E3 has an Honours Degree in Media Studies, and thereafter he obtained a Master's degree in Policy Development. Whilst E3's postgraduate qualification is not directly linked to media studies, given the editor position is managerial in nature, it may prove to be applicable to contributing to policy

development at the media house. Furthermore, the findings may be interpreted as evidence that the respondents have the expertise in their fields from a training point of view, which equips them with the necessary tools to make informed editorial decisions. Familiarity with media theories and principles may be perceived as an advantage to the sound knowledge to determine the newsworthiness of news.

4.2.2 Years of experience in the media

In addition to the qualifications that the editors have, the researcher was also interested in knowing their years of experience in the media field. E1 and E3 have both been in the print media industry for 17 years whilst E2 has 14 years' experience. This was valid information as it was a means of gauging their level of experience. This showed their vast experience in the field and enabled to give expert insights into the state of science journalism in Namibia, over a lengthy period.

4.2.3 Science news coverage

In this study, it was pivotal to know whether the newspapers published science news and to what extent. E1 highlighted that their newspaper covers science news and they attempt to publish as many different topics as possible. Although this was a haphazard approach, the editor emphasised that they were keen to cover science news whenever it was possible. This was determined by the availability of journalists and the complexity of the story, and it also depended on the importance of the story. E2 stated that their paper has a section for science news although it is not at the standard it should be, and the respondent further clarified that, "we are still lagging behind, but I think I can see reasonably we do cover but it's not as convincing as what it's supposed to be". This too showed an appetite for publishing science news and the editor's willingness to scale up their efforts in this regard. E3 on the other hand

hand a different approach. Their media house covered science news, but it was more of content generated from secondary sources due to limited resources thus they do not have the in-house capacity to scrutinise and question the content they receive. The secondary sources are mainly from international news agencies such as Reuters, which is an international company, meaning the news is not Namibian, but from across the globe.

4.2.4 Topics that mostly get coverage and the reasons

Considering the broadness of science as a field, it was important to find out if there were any topics that received more attention than others and the reasons. E1 attributed the rise in health news to the global coronavirus pandemic, hence science news in this field has been enjoying a lot of coverage more than other fields of science. It was also mentioned that technology is another area that has seen a rise of coverage in the media as the world moves towards the fourth industrial revolution. Whilst E2 also alluded to aligning the newsworthiness of news to the global relevance, they prioritised different matters such as climate change placing the emphasis on the impact it had internationally and locally, therefore, this is the news that has been given prominence in their paper. The impact of climate change such as drought have had adverse effects on Namibia and the world at large and this is why they choose to give it prominence.

E3 placed emphasis on the fourth industrial revolution and the ongoing COVID pandemic saying "nowadays, of course, nothing will happen in the absence of ICT. For example, since the COVID-19 pandemic, ICT became even became bigger during that time from Zoom calls, Zoom meetings, working from home and so forth, so we move with the times and report accordingly". The respondent added that "it is also a staffing issue in the sense that there is no room to invest resources in this kind of field, for instance, because you know, sometimes it's some first world countries that are privileged enough to have science reporters and everything, so that is why they can give a wide range of science fields in-depth coverage".

It appears that global matters are highly prioritised in comparison to local matters due to limited resources.

4.2.5 Number of journalists

This question was posed as a means to determine the staff in the newsrooms and to assess if there was any impact on news coverage. A well-staffed newsroom could mean there would be more news output in comparison to one that is understaffed. Newsrooms have various employment agreements when it comes to staffing. Some are permanent employees, but some are freelancers, meaning that they are only paid for the articles they submit. This makes it difficult for the editors to give specific numbers of their staffing, but when asked approximately how many staff they have that are permanent, they responded as follows:

E1 – 12; E2 – 9 and E3 – 10

Approximately the newsrooms of the newspapers under study have about 10 staff each to give coverage to various fields of news such as business, politics, sport, lifestyle, and science, amongst others. This could inevitably have an impact on the type of news that is prioritised owing to the limited staff numbers.

4.2.6 Journalists that specifically cover science news

Moreover, it is common practice for newspapers to assign particular beats to specific journalists with expertise in specialised areas. The editors were asked if this is the case for their respective newsrooms and particularly if there are journalists that focus on science.

E1 indicated that they have journalists that cover news beats, but not necessarily science. “We have about seven news pages just for news, then the other areas are for business and sport, and we still have room for features, and so on. But we have a number of contributors as well from the staff at the Ministry of Information and also our own staff in other parts of the country”.

This gives the media house the flexibility to enable journalists to cover specific topics, but not exclusively.

E2 and E3 highlighted resource constraints, therefore, they did not have journalists that cover science news only. Whilst one or two journalists have a specific area of specialisation, this does not constrain them to reporting in a particular field. This could mean that although the journalists are exposed to vast experiences which could enhance their skills-sets, it may also be interpreted in a negative manner as it does not present them with the opportunity to be focused on science and enhance their experience in this particular beat. The limited time and human resources may put pressure on quantity rather than quality.

4.2.7 Role of the media in public education

It was strongly highlighted that the media has the responsibility to not only inform and entertain, but specifically to educate the masses about science. The respondents were asked if they are of the opinion that the media had they duty to educate the public. All three were in agreement with the abovementioned statement, with some reservations.

E1 made reference to bodies such as the National Commission for Research, Science and Technology (NCSRT) that need to be capacitated in terms of funding and human resources so that this can truly be a research hub. “It will be always a struggle for the media to be at the forefront of leading the coverage when it comes to site related news. So it has to start from the top for us to get the information”. The issue of limited access to information was continuously mentioned by all the editors hence incapacitating them to fully contribute to public education.

E2 admitted that the media has a key role to play in educating the public and they need to do better on prioritising scientific issues. “We are probably being not doing enough because obviously of the lack of understanding or the journalists themselves might not have interest in it. Or maybe certain news such as politics sells better, but we do have the responsibility”.

E3 “Education has always been at the centre again of journalism so as to inform but information in isolation is nothing - information must be indicative. How do people make choices in the ballot box if they are not integrated enough to understand you know?”. These responses showed that whilst the respondents acknowledged the importance of public education, there were limitations in fulfilling this role.

4.2.8 Strengthening relations between media and scientists

It came out very strongly amongst the editors that there is a need to strengthen relations between the media and scientists. It was specifically mentioned that scientists need to be more approachable especially where expert inputs are required for complex matters. They all highlighted the value of face to face interactions/interviews as an alternative to media releases which do not offer journalists the opportunity to seek clarity or to ask follow-up questions.

E1 said, “just as an example, when COVID broke out, we really struggled to get some of these educated opinions from scientists. In some instances, some were shy to speak to the media or they were blocked from just you know, opening up to the media, by their respective institutions”. The respondent added that “universities and other stakeholders really need to, to sort of organise themselves in such a way that they are open up to the media. So it has been a struggle and I think, having learned from this pandemic, one would have thought that the importance of information sharing cannot be overemphasised. Credible and accurate information is important and avoids having a population that is misinformed”.

E2 encouraged scientists to offer regular trainings to journalists as a means of educating journalists on scientific matters. Moreover, E3 highlighted that science needs to be brought to the forefront so that it becomes part of our daily lives. “The thing is, science is not something

that a lot of us like to do without having to do it. I did science in high school. And once I was done with that, I went to university and never touched the method metrics. Until I did statistics at UCT. Now sometimes you Google up words, and even then, the explanation is even more complicated. So just leave it there. But we need to make science, really simplify things, give examples, produce materials, demonstrations that can be easily understood in the form of infographics. If it's for television, maybe some sort of sketches so that people can follow more easily. So I think that will make it because science is a tricky area. So make it interesting and give real life examples to the possibilities. See that science is actually at the centre of human existence".

4.3 SECTION B – Responses from journalists

The interviews were conducted face-to-face and transcribed as presented below, and the responses are presented in a narrative form. Five journalists were approached for the study, but one indicated that they were not comfortable with being recorded as they felt that they were not comfortable with speaking about science, despite being a health reporter, therefore the researcher could not conduct the interview. The other did not respond to the request for the interview despite several efforts from the researcher. This left three journalists being interviewed, one from each of the newspapers.

For the purposes of this thesis, the journalists are identified as J1, J2, and J3. The questions to the journalist were asked in order to attain the following objectives: *to determine the challenges and opportunities for the media in the science journalism field;* and *to assess the criteria used by the Namibian print media to determine the newsworthiness of science news.*

4.3.1 Highest qualification

All three respondents have university qualifications but one of the journalist's is qualified in a field not related to media, which was interesting to note that a relevant qualification was not necessarily a pre-requisite to becoming a journalist. This raised the question of whether this would have an impact on the quality of news reports.

J1 Bachelor's Degree in Marketing. This is evidently not related to media studies, but the respondent managed to get an opportunity to write articles for the newspaper and they eventually became a journalist over the years.

J2 Bachelor had an Honours Degree in Media Studies, whilst, J3 Bachelor's Degree in Media Technology.

4.3.2 Years of experience

As was the case with the editor's, it was key for the researcher to ask the journalist about the years of experience they had in the media.

J1 Nine years in the print media with two years' experience in radio

J2 Eight years with two years in print media and six in radio broadcasting

J3 Ten years in the print media with one in radio broadcasting

4.3.3 Defining science journalism

Gauging the journalist's understanding of what science journalism is, in their own words was important in order to assess their level of expertise or experience in this field. J2 and J3 had a clear understanding of what science journalism was but they spoke extensively about health news as this is the beat they normally cover. Throughout the data collection, health stood out more than most of the other science journalism fields and this may be attributed to the coronavirus which was affecting the world during this period. Meanwhile, J1, whose

qualification is not in media studies but in marketing, admitted to not having much exposure to the field although they have reported on topics such as green hydrogen but this was more from an economics news perspective. They went on to say “I think of health news. That is really the main thing that comes to mind”.

J2 also made reference to health news, but slightly delved into other areas of science, saying “Whenever science comes up, I just think of medicine, I think of mostly because of the type of content which I write and it is mostly health related. Also, it’s talking about natural sciences, life sciences, climate change”.

J3 had broader knowledge beyond health, stating that “I think of chemistry, medicine and things like green hydrogen that have become very popular in Namibia. These are some of the topical issues right now, so naturally this is what comes to mind. Other than that though, in my opinion, science journalism doesn't really exist in Namibia besides just health. And I have realised that even sometimes with new things like green hydrogen, even the so called experts do not have answers. I was at a conference, and I tried to get interviews, in layman's terms, what this is about, but no one could or was willing to speak to me. I had to actually go and find myself a physics lecturer to break this down for me. When COVID broke out, I think one can say this was the first time we were confronted with the term science journalism. In fact, in Namibia, we haven't had any trainings for science journalism. I've done a science journalism training with Bhekisisa in South Africa, through The Mail and Guardian. And so basically, as journalists, sometimes we are forced to educate ourselves, like we had to read up every single day, we had to find these resources. Nobody really cared, and we were just thrown into the deep end to make sense of what is happening. I think we should first go back to our physics teachers, and then to make sense of what is happening.”

4.3.4 Science news genres normally covered

The most common genre amongst the respondents was health news which was attributed to the ongoing COVID-19 pandemic. However, as the pandemic became more contained, the prominence of health in relation to the pandemic is becoming less.

According to J2, "In the main sections of the paper, that is the front page and the pages thereafter, it is definitely health related, because normally that affects more people. Then we have supplements that are focused on certain types of news that I suppose can count as science news. Things like agriculture and this is targeted at the farming communities, as you know, agriculture makes a significant contribution to Namibia's economy".

4.3.5 Sources of science journalism

The journalists placed emphasis on the challenges they face in getting sources for science news. There are either not familiar with the experts in the field or the ones they know are not always willing to speak on record due to restrictive working environments or they are generally uncomfortable with engaging the media. Most of their content comes via press releases from local universities, research institutes, social media, international news outlets and at times press conferences.

J1 "Press releases, definitely. But then also press conferences as well. And then of course, let's say something is happening in South Africa, and then I sort of get that inspiration, then I look at an angle to localize it? So you read it somewhere, you see what's happening elsewhere and you just localise it".

J2 "Apart from close people who are my source of information, social media is also another way of getting ideas, not really information, but generating ideas for stories. But other than

that, events and networking, these are the very obvious things and platforms of getting this type of information".

J3 "Essentially, people will invite you to either a conference, seminar, or something. And from there, it's usually, it's just scratching the surface. So if you are serious about your career, as a journalist, you are going to go back to the office, and you're going to look at these things you need to start researching".

4.3.6 Challenges in reporting science

One of the recurring concerns amongst the journalists when it comes to challenges in this area, was the lack or shortage of expert voices and also the general perception of journalists towards science. The journalists work in fast paced environments with daily deadlines and this makes it challenging to spend a lot of time on complex matters. The scientists themselves are also unavailable to offer insights within stipulated deadlines.

J1 "For instance, when we talk about climate change, it's always very complicated, for instance, to report on because it's like, you sometimes don't even understand what you're writing, you know, as journalists, mostly you have to be a jack of all trades, master of none. And mostly, I think this is why people focus on having beats like business or health that are a bit simpler to understand. You know, some words that scientists use are really complicated words".

J2 "There was a time I did a NASA story and I was supposed to talk to a certain scientist but I couldn't reach him. And a colleague did a story and the study was just full of very complicated terminologies which were used. So because of this, it also makes us just not have an interest. But apart from the interest is just the structure of the field. It's sort of very difficult to simplify. I must be also be very blunt and say whilst science is important, it just doesn't sell. There is no

interest amongst our people and maybe it should start being nurtured in school, but something is certainly off".

J3 "In Namibia, you send urgent questions of a story that just broke but you will be asked "please email me" or they say, "I'll probably get back to you tomorrow afternoon". It's very frustrating. But the irony is that once you go ahead and write the story without their input, tomorrow, once the story has been published, then they send out information in a public statement showing that they were deliberately withholding information from you. Also, just the limited resources in terms of having enough reporters in the newsroom is becoming a big challenge. Burn out is becoming the norm. I feel in Africa we don't worry about mental health as it has been a taboo for such a long time. So even if I do feel like I'm under the weather, I need to go to work, because you need to be strong all the time. Then there is also the challenge of access to information. So many people, scientists and the like, don't share information. If you are lucky, you get it bit by bit. You sometimes hope that a story lands in court, that way it becomes a public matter and that's the only place where you get comprehensive information, because people need to file the papers. People are just not comfortable with the media".

4.3.7 Newsworthiness of science news

The respondents all made reference to the impact and ease of understanding as the two main characteristics that make science news relevant. If it impacts a lot of people, this means that there would be more interest amongst readers and also if it is easy to understand. The latter was also linked to availability of information, meaning that if the information is available, it makes it easier for the journalists to write and feature certain topics regularly.

4.3.8 Preferred methods of getting science news

They all indicated that face-to-face interviews were the most preferred method of getting news as it gave the opportunity for the interviewer to ask follow-up questions in real time and read other communication cues besides verbal ones, such as facial expressions and overall body language. At the same time, press releases were also appreciated, but with the opportunity to seek clarity, so the availability of a contact person was emphasised.

J1 "I might read something complicated, and then I will not understand. So if I can just call you for clarity, maybe that will be perfect. Other than that, I normally get news from press releases, definitely. But then also press conferences as well. And then of course, let's say something is happening in South Africa, and then I sort of get that inspiration, then look at an angle to localize it? So you read it somewhere, you see what's happening elsewhere and you just localise it. And press releases were a lot of press conferences. And I think most of our stories come from that. We'll find your own stories as well."

J2 "15 journalists can recap on a press conference. And we go back to the office and write the same story. I am always looking for that special story. And these are things that are usually said off the cuff. When questions are being posted the way your body language, the way you're responding to questions says a lot. So these are the very unique things that I try look at. I always try to create content that is of human based interest. So it can be a personalised story. For example, I remember a story that a colleague of mine did of a very energetic, bubbly, sporty girl who doesn't have legs. So I would, if it was me, I would write that story from an angle of this very passionate young girl who loves playing football, but she doesn't have legs, and then get the experts expert opinion on how a person like that could be born without limbs. How did that happen from a scientific perspective? So orthopaedic surgeons, and all of these scientists are the people that I would consult, but it depends on the topic as well. But if it is a science niche, it's very important for you to get expert advice, whether it's artificial intelligence or not.

I've had conversations with Prof. Anicia Peters from UNAM for example. So my angle because I deal with a lot of youth, who are interested in AI, I would firstly focus on why they are passionate about artificial intelligence, and then talk to the experts on the relevance of such a field in Namibia, and what contributions affect us would, you know, propel or, you know, ignite this passion for people to have an interest in artificial intelligence. But it's very important to get expert advice, especially in science, you can just write a side story, and you don't have an expert advice."

J3 "There are just some things you cannot do over the phone. It's much easier for someone to dismiss you over the phone unlike when you actually sit down with them, they feel inclined to stay longer and to indulge you. Emails and phone calls can end very abruptly. So my preferred way of getting news is one on one interviews because you can always go back for clarity. So, when you actually sit down with them, they feel inclined to stay longer and to indulge you. Seminars are a good thing, because you get to speak to a lot of people. And sometimes people are usually people who are not part of the country and want people from outside, they'll give you all this information. And sometimes it's not even relevant to your situation. And but yeah, seminars, wherever you can find a person face to face is definitely the most ideal. Then I suppose emails can work if people are forthcoming with information, which is unfortunately not the case in Namibia".

4.3.9 Ensuring reliability of science news

The fact that the journalists repeatedly highlighted that they do not always have easy access to scientists and get responses from the 'horse's mouth', this meant that ensuring reliability of the information they publish was not always easy. However, they alluded to applying the standard journalism fact-checking practices such as doing online research, speaking to alternative sources, where possible, and checking what has been done in other countries, where applicable.

4.3.10 Strengthening relations between journalists and media

The respondents showed great enthusiasm to strengthen relations with scientists. Not only would this help them to have more factual content in their articles, but it would help them in boosting their careers and most importantly, educating the public.

J1 "Regular training workshops might help to make sense of complicated information but they should also be presented in a way that is not boring"

J2 "We need to educate each other. The education system is sometimes just messed up somehow as we are not paying a lot to science journalism, especially at university level. Obviously, it is not something that can be done at secondary level or primary. But we have concentrated so much on the social science aspects and not really the hard sciences. So I believe the responsibility lies with the education system. Also, universities for instance must have regular media engagement sessions. I think maybe you'd also agree that by January already, everybody knows their activities calendar for the year, everybody knows that they are going to be launching something and this is something to talk to the media about. If you are going to communicate 24 hours before your event and tell me that you are launching a solar panel something, and my day is already planned, it makes it difficult to give certain events the attention they deserve.".

J3 "Great lessons can be drawn from Bhekisisa, a centre in south Africa focusses on promoting health journalism. What they did during that time at the heart of COVID, is they regularly hosted webinars and facilitated conversations between journalists and scientists. It would be nice for this to be done locally through universities Also, I would love for universities to have open door policies."

4.4 SECTION C – Responses from scientists

The online questionnaire was administered using Google Forms and all questions were made compulsory, therefore to proceed to the next question, respondents were required to complete all sections of the survey. The responses below are presented in pie charts. The survey questions were structured in a manner that enables the researcher to meet the following objective: *to examine the perception that scientists have of science journalism in the Namibian print media.*

4.4.1 Demographic characteristics of survey respondents

4.4.2 Area of specialisation

The respondents were required to indicate their area of specialisation. This information was required in an attempt to determine which were the most common science fields amongst the respondents. There were various categories that were listed, with the option to indicate alternative fields. The responses in the latter were grouped together for ease of reference. The majority of respondents were in the Technology sector (19.6%), followed by Health (17.8), Ecology (17.8), Chemistry (10.2%), Biology (8.4%), Hydrology (5.6%), Natural Resources (6.5%), Geoscience (5.5%), Engineering (2.8%), Physics (1.9%), Humanities (0.9%), Agroforestry (1%), Energy (0.9%) and Urbanism (0.9%).

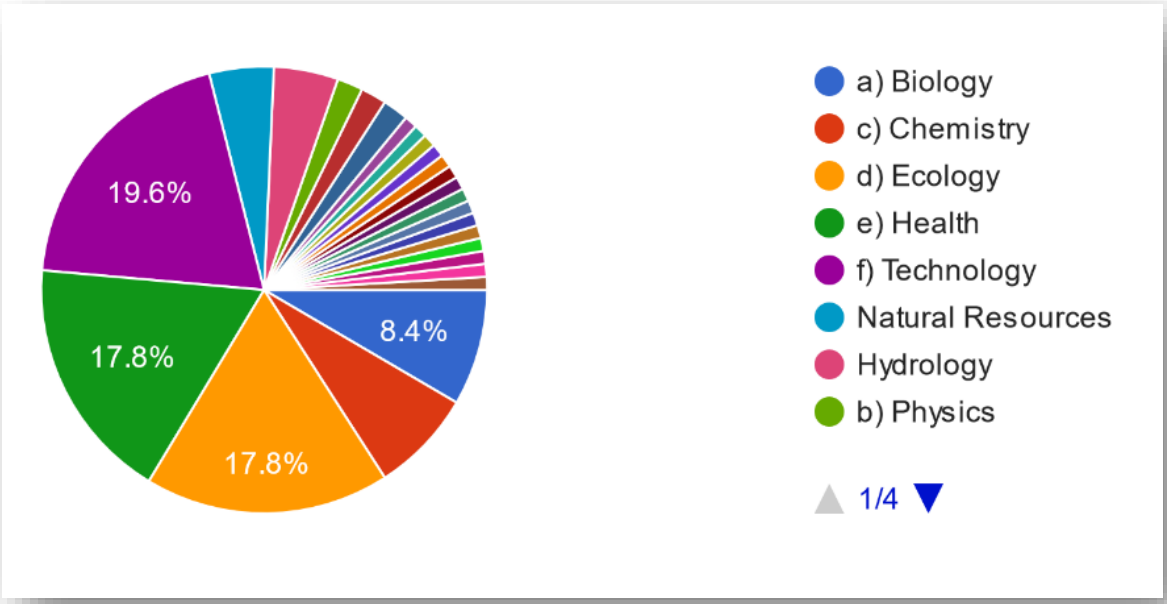
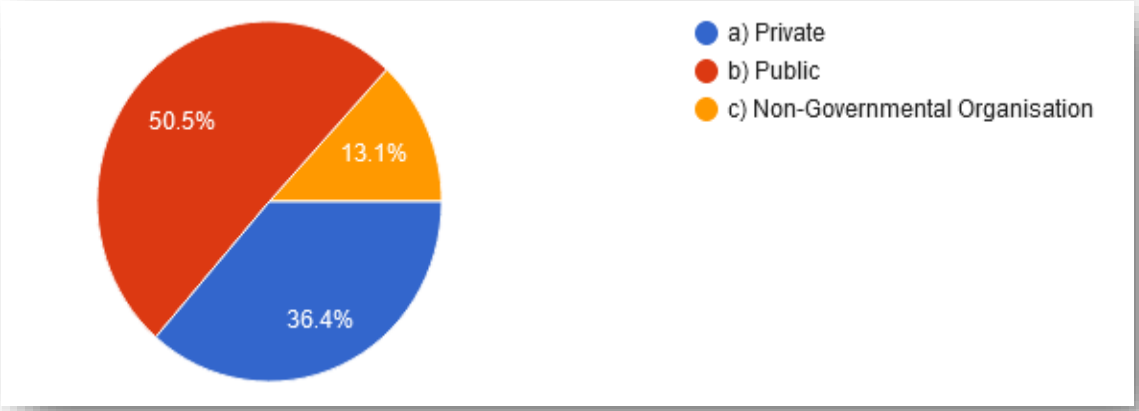


Figure 3 Area of specialisation

4.4.3 Sectors represented

The respondents were given three options to choose from and with regards to the sector they represent and the majority were in the public sector (50.5%). This was preceded by the private sector (36.4%) and the Non-Governmental Organisations (13.1%). This information aided in establishing which sector had the highest representation in terms of science expertise.

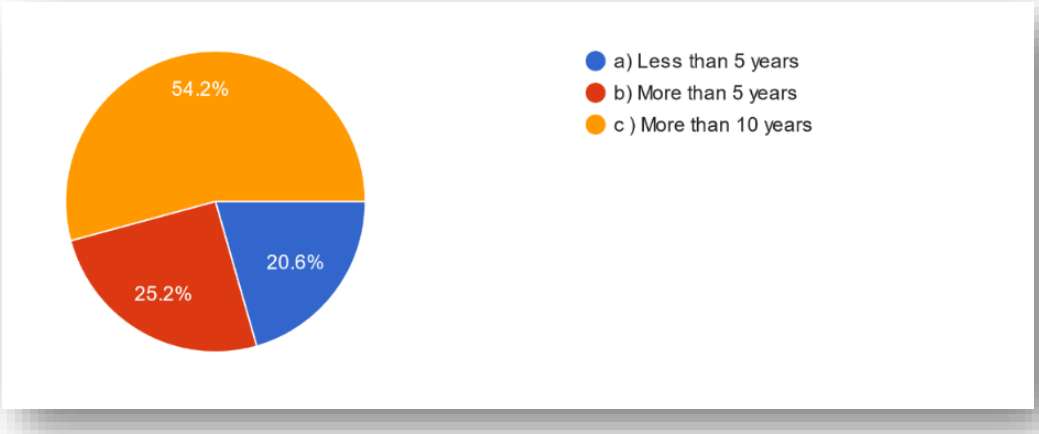
Figure 4 Sectors represented



4.4.4 Years of experience

This section gave the respondents three options to select with regards to their years of experience. The most respondents had more than 10 years' experience (54.2%), followed by those with more than 5 years' experience (25.2%) and less than 5 years (20.6%). This information was required to establish the different experiences, if any, based on age.

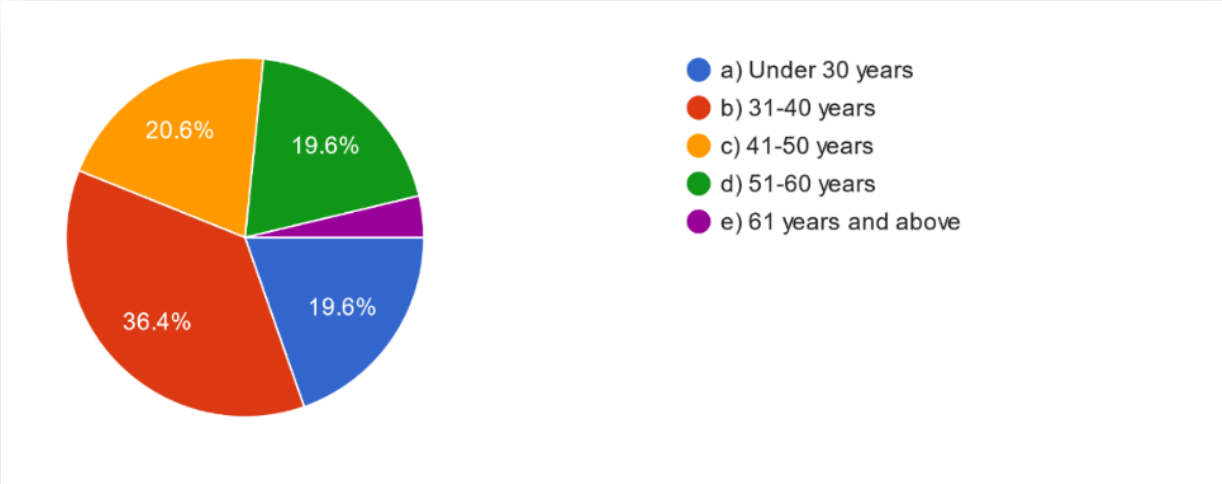
Figure 5 Years of experience



4.4.5 Age

The ages were grouped in categories ranging from under 30 to over 61. The largest group was in the 31 - 40 years (36.4%), followed by under 30 (19.6%), 41 – 50 years (20.6%), 51 – 60 years (19.6%) and lastly, over 61 years (3.7%).

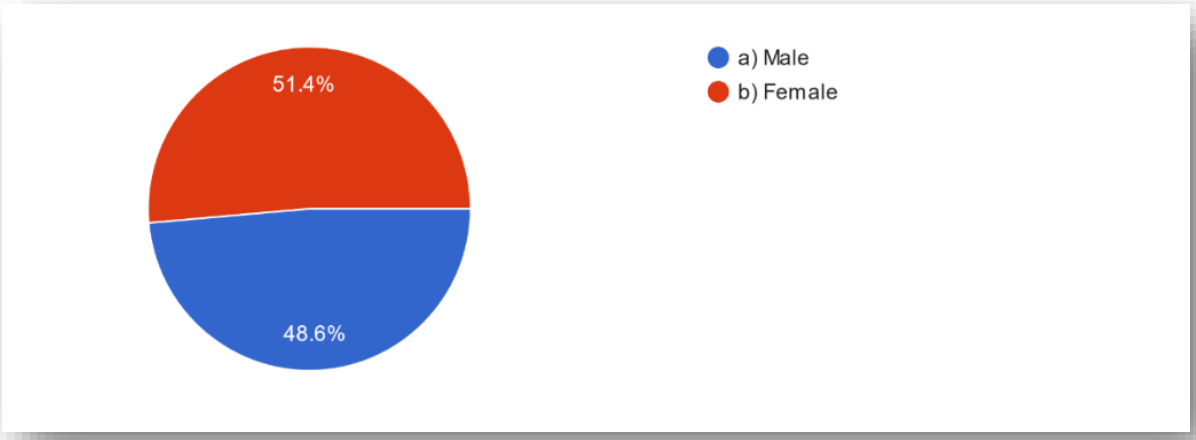
Figure 6 Ages



4.4.6 Gender

Two categories were listed in relation to gender, and the respondents were nearly equal in terms of representation. However, there were more female participants (51.4%) than males (48.6%).

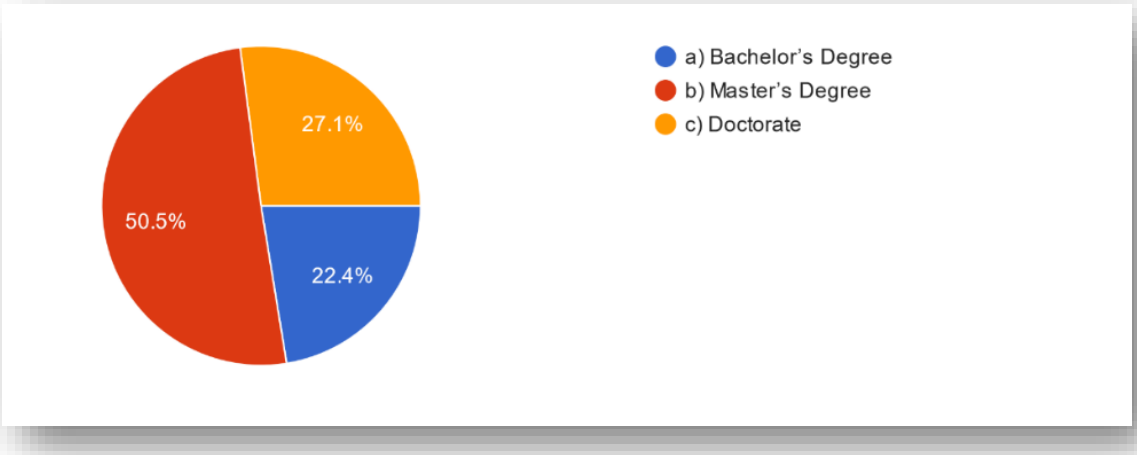
Figure 7 Gender



4.4.7 Qualifications

The majority of the respondents held Master's Degrees (50.5%), followed by Doctorates (27.1%), and then the smallest group indicated that their highest qualifications were Bachelor's Degrees (22.4

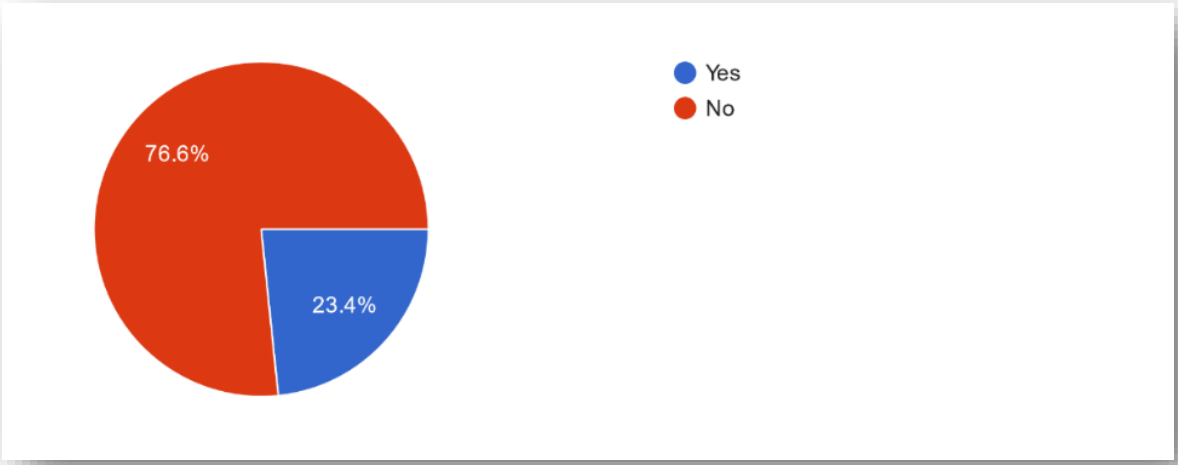
Figure 8 Qualifications



4.4.8 Publications in The Namibian Newspaper

The majority (76.6%) of the respondents' work had never been published in the Namibian Newspaper, whilst the minority (23.4%) indicated that their work has featured in this publication.

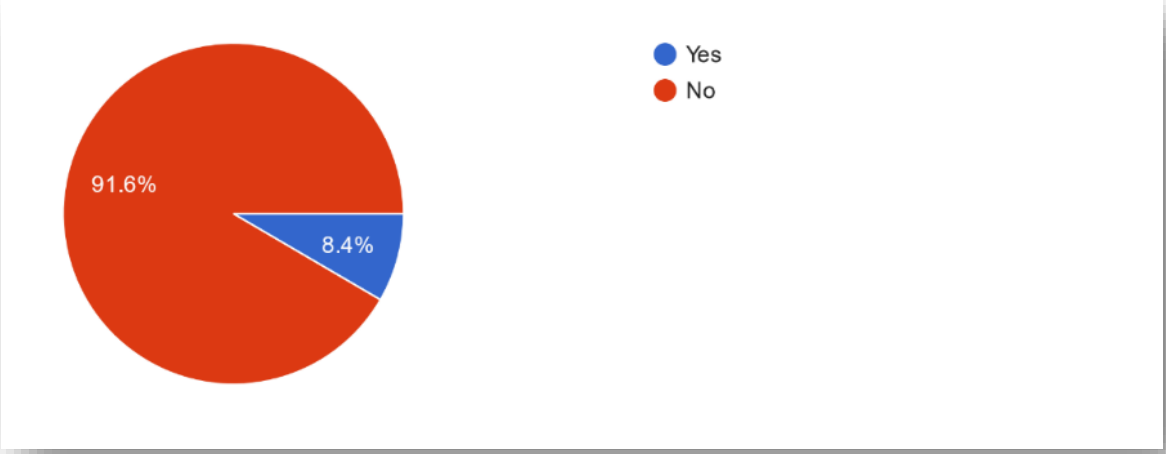
Figure 9 Publications in The Namibian Newspaper



4.4.9 Publications in the Namibian Sun

The majority (91.6%) of the respondents' work had never been published in the Namibian Sun Newspaper, whilst the minority (8.4%) indicated that their work has featured in this publication.

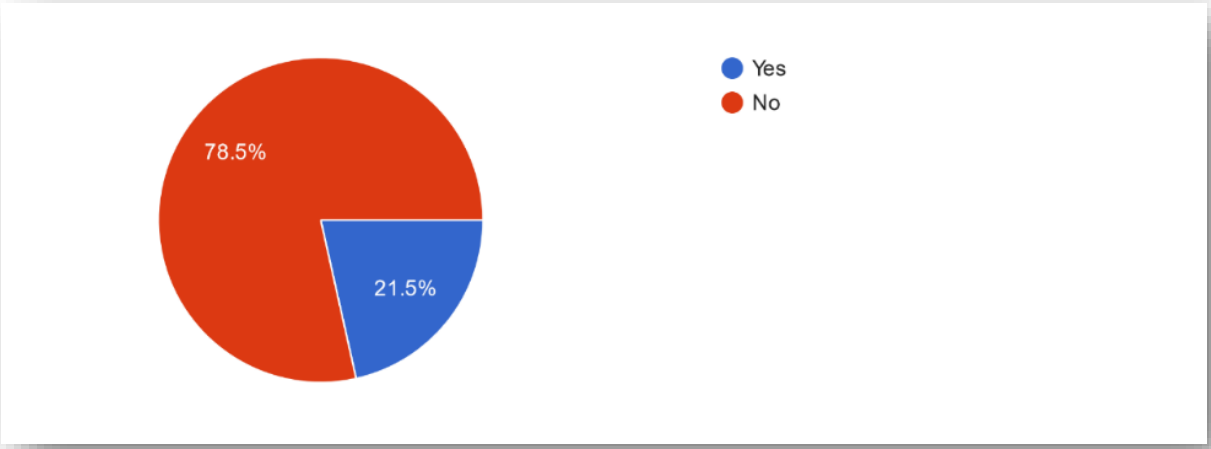
Figure 10 Publications in the Namibian Sun



4.4.10 Publications in the New Era

The majority (78.5%) of the respondents' work had never been published in the New Era Newspaper, whilst the minority (21.5%) indicated that their work had featured in this publication.

Figure 11 Publications in the New Era



4.4.11 Media focus and keenness to interact with scientists

News angles are an important component when reporting news as they steer the reader in a direction that places importance on a particular focus area. More than half of the respondents (57%) indicated that they are of the opinion that the media only sometimes focuses on core points in their coverage of science news. A total of 32.7% felt that the media misses the mark and they do not focus on the right issues, whilst the minority were in favour of the focal points. This information was asked to establish if the scientists were open to strengthening relations with the media.

Figure 12 Focus on core points

	Yes	No	Sometimes
Does the media focus on core points when they cover science news?	10.3%	32.7%	57%

4.4.12 Keenness on interacting with experts

One of the fundamentals of journalism is to get expert opinions in order to ensure accuracy and objectivity. A total of 40.2% of the respondents opined that it is only sometimes that journalists are keen on interacting with scientists to get expert insights, whilst the least felt that they are not at all interested.

Figure 13 Keenness on interacting with experts

	Yes	No	Sometimes
Do you believe media professionals are keen on interacting with scientists to get expert insights?	30.8%	29%	40.2%

4.4.13 Prominence to scientific issues

Although there are several scientific fields, the respondents (57%) indicated that they believed that sometimes the media actually gives prominence to the right scientific issues. What is prominent may vary from scientist to scientist, but overall, the majority felt that the media does not always get it right.

Figure 14 Prominence to scientific issues

	Yes	No	Sometimes
Do you think the media gives prominence to the right scientific issues?	3.7%	39.3%	57%

4.4.14 Understanding of scientific content

In order to report news accurately, reporters need to fully grasp the matters at hand. Most of the respondents (43%) could not confidently state whether they felt the media fully understood scientific issues or not.

Figure 15 Understanding of scientific content

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Print media professionals demonstrate an understanding of scientific content.	12.1%	26.2%	43%	17.8%	0.9%

4.4.15 Use of press releases

Press releases are amongst the most common forms of communicating to the media. They allow writers to summarise the core issues from their perspective and set as a guide for journalists. The majority of the scientists (35.5%) indicated that they could not accurately state whether the media made use of these documents or not.

Figure 16 Use of press releases

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The local print media make use of scientific press releases.	10.3%	22.4%	35.5%	28%	3.7%

4.4.16 Effective reportage from face-to-face interactions with scientists.

Face-to-face interactions are said to give interviewers more in-depth content in comparison to written statements. However, the majority of the respondents (38.3%) highlighted that they were undecided if face-to-face interactions had a positive impact on the way journalists reported news.

Figure 17 Effectively correcting reports

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The local print media effectively and correctly reports facts emanating from face-to-face interactions with scientists	8.4%	22.4%	38.3%	25.2%	5.6%

4.4.17 Prioritisation of factual reporting

The respondents were asked so indicate whether they believed the media prioritised reporting accurate information and nearly half (46.7%) of the respondents could not decide whether they could state with certainty that the media prioritises factual reporting.

Figure 18 Prioritisation of factual reporting

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Factual reporting of science news is not a priority to the local print media.	2.8%	10.3%	46.7%	29.9%	10.3%

4.4.18 Correcting/rectifying scientific misinformation

In a space where the media are bombarded with information, it is not uncommon to sometimes make errors in publications which are then rectified through apologies and stating the facts. However, 44.9% of the respondents are undecided as to whether the media is actually open to rectifying misinformation or not.

Figure 19 Willingness to correct misinformation

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The local print media are open to correcting/rectifying scientific misinformation.	8.4%	20.6%	44.9%	24.3%	1.9%

4.4.19 Valuing regular interactions with scientists

Most of the scientists (29%) believed that the media see value in interactions such as workshops, interviews and other events, and perceive it as an effective communication tool.

Figure 20 Valuing regular interactions

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The local print media value regular interactions with scientists as an effective communication tool. i.e. workshops, interviews, events.	5.6%	22.4%	27.1%	29%	15.9%

4.4.20 Preference of written communication

The majority (36.4%) of the respondents indicated that they are undecided as to whether written communication is the best option of communicating with the media to avoid misinterpretation.

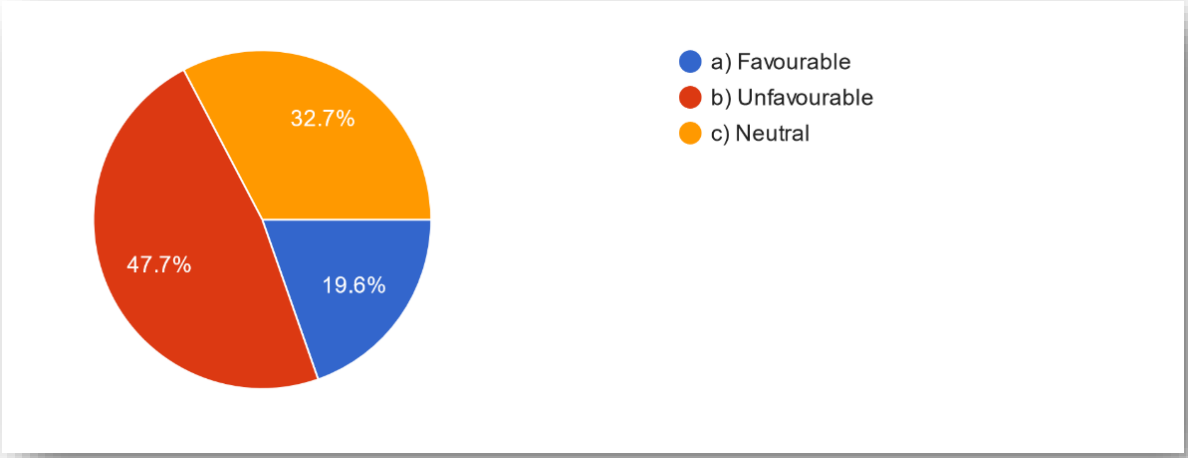
Figure 21 Preference of written communication

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The local print media botch scientific information hence I prefer written communication to avoid miscommunication/misinformation being passed on to readers	2.8%	8.4%	36.4%	35.5%	16.8%

4.4.21 Overall impression of scientific journalism

Overall, the majority of respondents indicated an unfavourable (47.7%) impression of print journalism in the country, whilst 32.7% were neutral and 19.6% had a favourable impression.

Figure 22 Overall impression of science journalism



4.5 Summary

The research findings show that editors of the newspapers under study all have a high level of expertise in their fields, each with more than ten years. They also have university qualifications related to the media field and they value science news and they acknowledge the duty that the media has in educating the public. This is evident in the editors' repeated responses for the need to strengthen relationships between the media and scientists. However, due to a number of constraints such as financial and human resources, there is not always an opportunity to give news in this genre extensive coverage. The findings revealed that there are skills shortages amongst journalists and most seem to only have experience in health matters as this proved to be the most commonly discussed field.

The findings also revealed that sometimes science news does not receive coverage because it does not always meet many of the News Values Theory criteria. For example, the News Values Theory states that to increase the chances of getting news coverage, an event or an activity must be unambiguous and easy to understand in addition to being relatable to a wide audience (Harcup & O'Neill, 2017). This is rarely the case with science news as it tends to be complex

and applicable to a select few, unless it is a health matter that the lay population can easily understand.

Furthermore, the journalists also had university qualifications but not all of them had media related ones, despite having several years' experience in the field. One journalist had a marketing degree but has since joined the media. The findings showed that the journalists have a strong preference or understanding of health matters, especially due to the ongoing COVID-19 pandemic that the world is experiencing. However, even in this field, access to information remains a big challenge as many health practitioners tend to shy away from engaging the media. The journalists are of the perception that scientists do not understand the role of the media or see the value in engaging them hence there is no regular communication between the two sides.

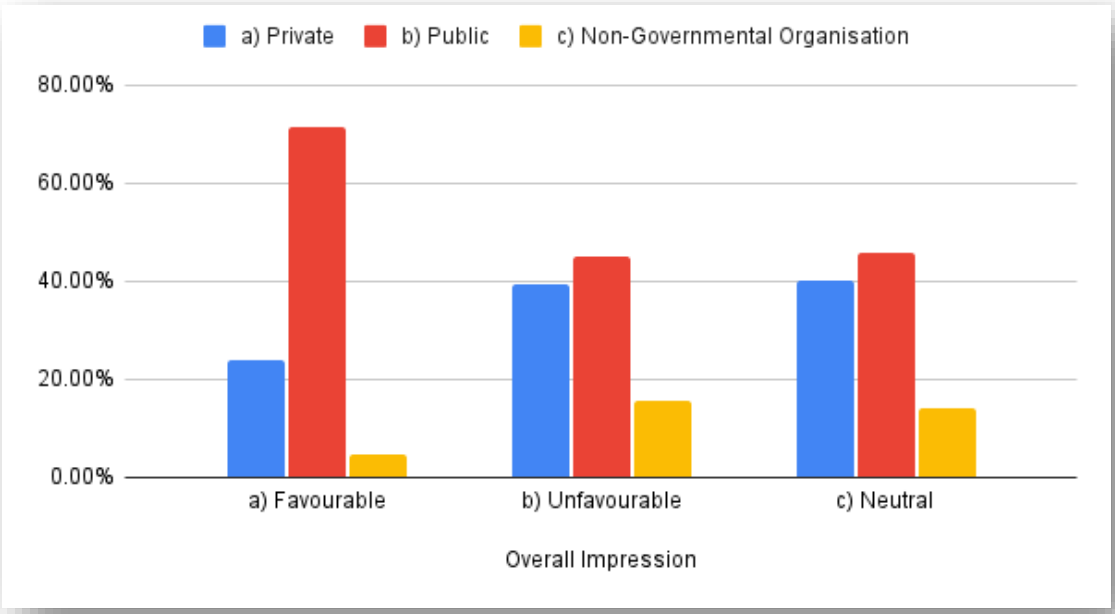
Most of the scientists that took part in this study indicated that they had an unfavourable perception of the print media. This, the results show, is because they do not believe that the media has the capacity to fully grasp scientific matters.

A cross analysis of the data revealed that most of the scientists in the public sector had a favourable overall impression of the media, whilst those in the private sector were more neutral and the participants from the non-governmental sector had more unfavourable perceptions. Most of the editors and journalists, with the exception of one, had qualifications that were related to media, and wide ranging experience in the field. While the editors predominantly had a good understanding of science, the journalists had some knowledge, although it was mainly in relation to health. All of the journalists spoke extensively about the COVID pandemic, a period they say, was a great learning curve for them in relation to science news reporting and its value. On the contrary, whilst the editors also made reference to COVID, they

accentuated other fields such as climate change and technology. They were able to speak beyond the pandemic.

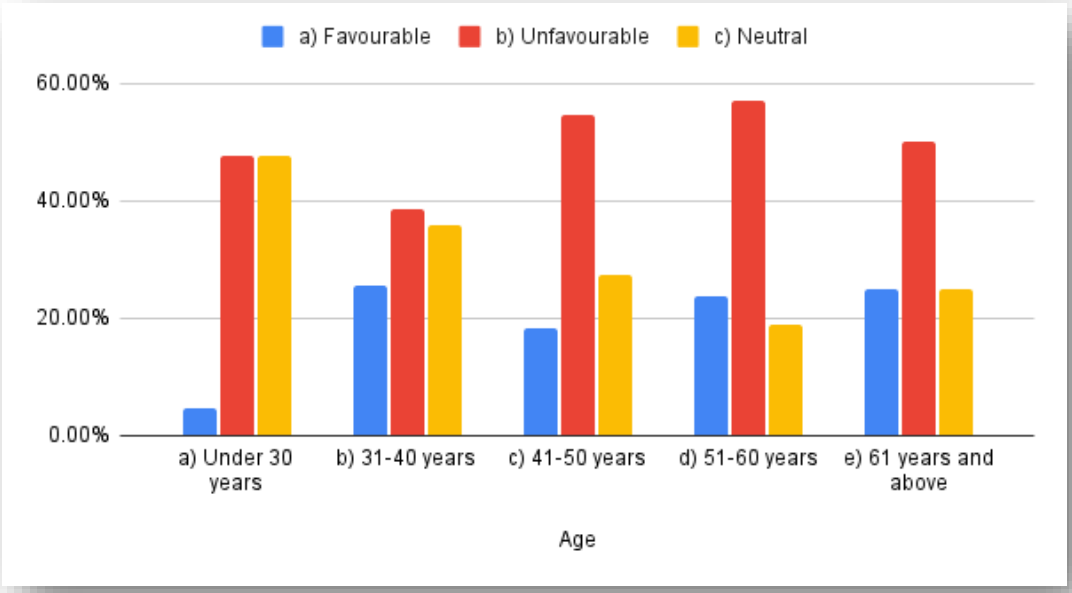
Both sets of respondents strongly expressed the preference for face-to-face interactions with scientists to get in-depth information and not only written statements that leave little or no room to get clarification on matters in real-time. They also expressed concern on what they perceived as a lack of willingness for the scientists to speak to the media stating that many of the said professionals prefer to avoid the mass media, therefore, many queries go unanswered. Another matter that was highlighted by all the respondents was a lack of resources in the newsroom relating to both financial and human resources, which proved to be a hindrance in them performing their work diligently.

Figure 23 Overall impression by sector



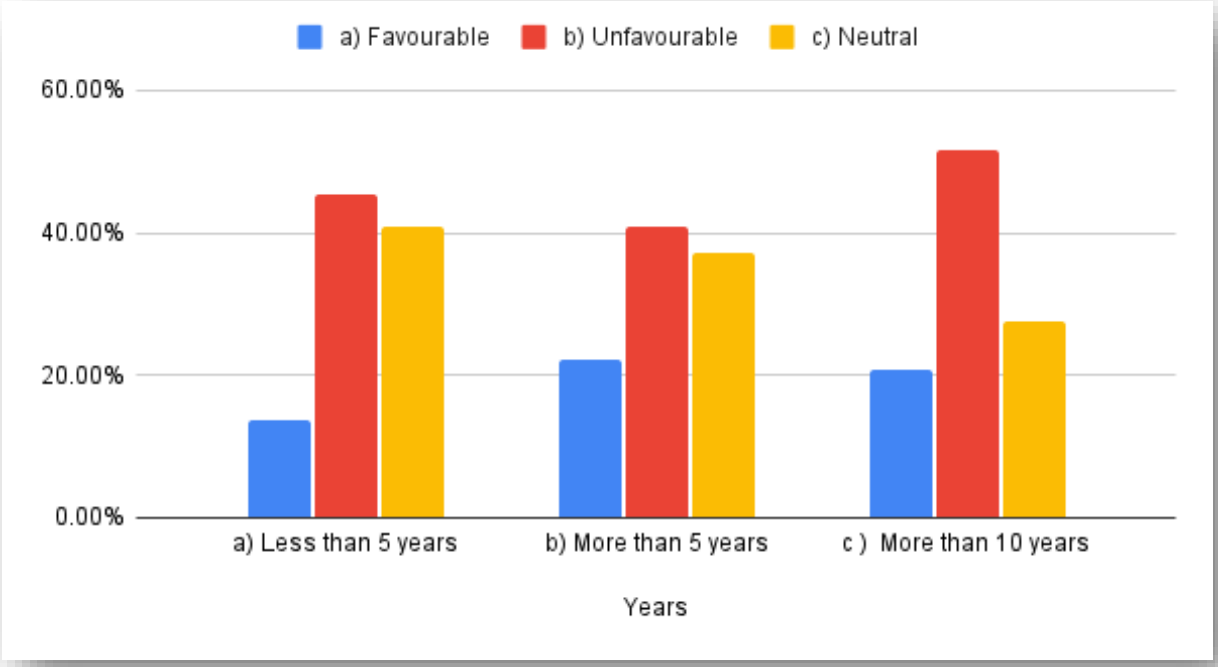
The respondents that had the most unfavourable perceptions are in the 51-60 years' category. The 31-40 year olds group was the most optimistic and the youngest, under 30, were neutral.

Figure 24 Overall impression by age



Moreover, the group with more than 10 years of experience had the unfavourable perception of the media and those with more than 5 years were more optimistic. The respondents with less than 5 years remained neutral.

Figure 25 Overall impression by experience



4.6 Chapter summary

This chapter presented the qualitative and quantitative findings of the study. The results of each question were presented individually. Thereafter, the overall impressions of the scientists' perceptions were presented. The next chapter discusses the interpretation of the findings.

CHAPTER FIVE

DISCUSSIONS AND INTERPRETATION OF FINDINGS

5.1 Introduction

This chapter discusses the research findings and how they contributed to attaining the objectives of the study. The findings are grouped and discussed under each objective. Furthermore, this chapter makes linkages to the data presented in Chapter Four as well as the literature in Chapter Two.

5.2 Discussions

5.2.1 Assess the criteria used by the Namibian print media to determine the newsworthiness of science news

Based on the findings, the Namibian print media apply standard journalist practices of using a set criterion to determine the value of information. Elements such as novelty, local and or global relevance, timeliness and overall newspapers' mandate were given prominence as revealed in the literature review of this study.

With reference to the mandate, ownership proved to be a strong influence concerning the types of stories that are reported and the sources thereof. For example, the New Era is a state-owned newspaper, therefore, they are mandated to report matters aligned with the government's development agendas, as well as showcase the work of public institutions. For science news in particular, this means that the New Era would then be obligated to have close links to institutions such as the National Commission on Research, Science and Technology (NCRST), public universities, and other state-owned institutions. The Namibian Newspaper, as a privately-owned media house, prioritises reportage for the private sector, non-governmental

organisations, and civil societies such as the NSS. The same is applicable to the Namibian Sun that is privately-owned. A media practitioner that was quoted in the African Media Barometer (2018) said that "he who pays the piper plays the tune," (p. 26), making reference to the impact of ownership on editorial strategy.

Moreover, the newspapers give prominence to news that is easy to understand for the journalists themselves, as well as the general public. If it is too complex and relatable to a small audience only, this lessens the chances of coverage as the papers are keen on reaching a wide number of people. This is key as it has a direct impact on sales which the newspapers depend on to stay afloat. The less interest there is from readers, the less the sales. One of the respondents quoted in Chapter Two of this study said, "We are probably not doing enough because obviously of the lack of understanding or the journalists themselves might not have interest in it. Or maybe certain news such as politics sells better." This confirms the theory that the media tends to cover stories that are easy to understand. This is not to say they do not at all give attention to complex matters, but to say the publication of stories that take time to unpack are scattered.

For this reason, all the editors emphasised on the need for scientists to be able to unpack complex issues in a way that the journalist can fully grasp. Thereafter, the journalist has the responsibility to further unpack the matters and pass them on to the reader in a manner that makes it consumable.

Additionally, the editors strongly emphasised access to information as a key point in determining the newsworthiness of science. They all indicated that there are several challenges in getting information from experts and this hinders their attempts to place science at the forefront of the news agenda. They may not publish unbalanced reports or unverified

information and for these reasons some science news stories end up being shelved. One of the editors spoke extensively about Namibia's Access to Information Bill that will give individuals the right to access information held by public authorities (Centre for Law and Democracy, 2021). The Bill is yet to be passed, but this, the editors said, would be a great benefit to their profession.

Whilst the News Values Theory proved to match the findings, there were some shortcomings. For example, the availability of resources is not addressed in the criteria determined by the Theory. In the findings, it was highlighted that a potential story can meet all the news values criteria, but if the resources are unavailable, the story will have to be shelved. These resources may be either financial as well as human resources. One of the respondents specifically stated that due to constrained resources, they do not have the luxury of having journalists that are dedicated to specific beats such as science.

5.2.2 Determine the challenges and opportunities for the media in the science journalism field

The respondents that provided data for this objective were the journalists. They echoed the same sentiments as the editors who alluded to the challenges pertaining to access to information. Due to the fact that scientists were not easily accessible, it made it challenging to write well-rounded stories without complete information. The journalists are of the opinion that the scientists are uncomfortable to speak publicly as they fear criticism, do not see the value in engaging the media, or they do not have the right to speak directly to the media as this is reserved for specific individuals in organisations. This fuels the frustration amongst the journalists who all admitted to not having expertise in science journalism hence they heavily rely on the experts.

In developed nations with more financial resources, science journalism is an established profession and persons in this profession are also normally scientists. This inevitably gives them an added advantage as they have in-depth subject knowledge. In Namibia, this is not the case. One of the journalists highlighted that resources are strained and in the recent past there have been retrenchments in the sector due to financial challenges. This then means that focussing on a specific beat is not ideal and journalists have to stretch themselves to cover news in different fields. This leaves limited room to be able to focus on a specific genre and fully master it. Additionally, this also means that the competition has intensified in relation to ensuring job security.

On the brighter side, the findings showed that despite the myriad of challenges, the journalists are keen to undergo training to enhance their skills and gain more insights into complex matters and build relationships with scientists. Both scientists and the media spoke of the need for engagement between the two parties. This is evidence that although the journalists might be thinking along the lines of conversations stemming from interviews, whilst the scientists think along the lines of seminars, the fact that there is willingness to engage is certainly an opportunity to promote science.

5.2.3 Examine the perception that scientists have of science journalism in Namibian print media

The majority of scientists had an overall unfavourable perception of the Namibian print media. The group that had this perception was mostly that with more than 10 years' experience in the science field and older than 50 years old. In a nutshell, the older and more experienced scientists had a more unfavourable perception of the media.

They were of the opinion that the media is not science-savvy in most cases, therefore, they tend to focus on non-core issues and factual reporting is not prioritised. The respondents (57%) indicated that they believe that it is only in some cases that the media gives prominence to the right scientific issues. Thus stating that the media framing of science news is poorly done.

Furthermore, most of the scientists indicated that they believed the media value regular interactions with them as a means to promote science. This is, however, contradictory to the perceptions of media practitioners that were interviewed for this study who were of the opinion that the scientists do not see the value of interacting with them. This is evidence that there are communication gaps between these two groups which is also reflected in the number of scientists that have not published their work in the three media. The ones that answered yes had mainly published in the Namibian Newspaper and this may be attributed to the fact that this is the most popular newspaper in the country, followed by the New Era. The paper where the least scientists published their work in was the Namibian Sun.

Most of the respondents indicated that they prefer written communication to prevent botched reporting which is in direct contradiction of the journalists' perceptions, who argue that written communication is impersonal and does not give them the opportunity to seek clarity on complex matters or to read body language. The majority of the respondents (38.3%), highlighted that they were undecided with regards to whether face-to-face interactions had any positive impact on the way journalists reported news. Whereas the journalists were keen on face-to-face engagements.

The Public Engagement Model, on which this study is based, accurately indicates that scientists' perceptions of the media can vary widely, ranging from viewing it as a valuable tool for communicating research to being sceptical of its accuracy and potential to sensationalise

scientific findings (Horst, 2012). This too was observed in the data collected from the scientists in this study.

44.9% of the scientists indicated that they either agree or strongly agree that there is value in regular interaction with the media. This was through workshops and interview, amongst others. However, only 18.7% of the respondents were of the opinion that media professionals demonstrate an understanding of scientific content. This, as indicated in the Public Engagement Theory, fuels skeptism amongst scientists in their interactions with the media, and overall informs their perceptions.

Furthermore, the Public Engagement Model emphasises the importance of two-way communication, between scientists, policymakers, and the public. It encourages meaningful interactions, not only providing information to the public but also actively seeking their input, insights, and concerns. However, on the contrary, 52.3% of the scientists that took part in this study expressed their preference for written communication, so as to avoid botched reports. This stance was condemned by the media that were of the opinion that written communication is restrictive and they would opt for face to face interactions. With written communication only, the two-way communication is limited.

5.3 Chapter summary

This chapter discussed the findings in relation to each objective. It started with the objective concerning the criteria used by journalists to determine the newsworthiness of science. It was revealed that journalists use standard news values to decide on whether something counts as news or not. There were no specific criteria used in relation to science. This was based on the News Values Theory that suggests that the media generally has some key criteria to determine the value of a potential news story.

The researcher further discussed the challenges and opportunities for journalists in the science field. This revealed that whilst the stumbling blocks are many, if media houses intentionally and strategically invest in capacitating science journalists, there are a multitude of benefits for the public and the country at large.

The discussion further revealed the perceptions that scientists have of science journalism in Namibia, which was overall unfavourable. The scientists were of the opinion that science journalism in the country is sub-standard and it would be beneficial to increase engagement with this group as a means of enhancing the media's understanding of scientific matters. It was also highlighted that effective science communication requires scientists to navigate the media landscape and engage with journalists in a way that promotes accurate reporting and meaningful public understanding of science. The next chapter focuses on the study conclusions and recommendations.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter sums up the conclusions and recommendations of this study titled "An Assessment of the State of Science Journalism in Namibia: A Case Study of The Namibian, New Era and Namibian Sun Newspapers. The conclusions are presented under each objective. The shortcomings of the study and the further possible areas of research are also outlined.

6.2 Conclusions

6.2.1 To assess the criteria used by the Namibian print media to determine the newsworthiness of science news

The findings reveal that although there is gradual growth in the field, the coverage of science journalism in Namibia's print media can be improved. Financial and human resources are constrained which makes it challenging to deliberately prioritise science news. The agenda, where science is related, is more driven by global trends such as in the case of COVID-19 and climate change. These are some of the major themes that are being discussed worldwide, thus they tend to be primed.

6.2.2 To determine the challenges and opportunities for the media in the science journalism field

The findings showed that there a several challenges that hinder journalists from covering stories in the science news field, specifically resources constraints which resulted in a lack or limited experience in the genre. The editors emphasised that with dwindling funds, they are struggling to stay afloat and this has a ripple effect on production. Specialised fields become less of a priority as they normally require resources such as time and money. The time it takes to write

a science news article due to its complex nature, takes more time to research and time to verify information. Additionally, an option could be getting news from the scientists themselves, but again, due to financial constraints, it is challenging for the media houses to make this call attractive for scientists due to the lack of incentives.

Furthermore, none of the respondents that participated in the study had qualifications in the sciences, although they on occasion published science news. This results in a skills gap. However, there is a hunger for knowledge and the media practitioners long to enhance their skills in the field of science journalism. There is therefore an opportunity for the Namibian media to partner with developmental organisations, civil societies, higher education institutions and research institutions to regularly host more platforms for knowledge and skills sharing.

6.2.3 To examine the perception that scientists have of science journalism in the Namibian print media

It was also revealed that the majority of scientists that took part in the study have an unfavourable outlook on science journalism in Namibia. They perceive journalists to be a key component in popularising science, but they are of the opinion that they lack the capacity to factually and effectively promote this field. The scientists are, however, keen on interacting with journalists to change this perception and improve their reportage for the greater good of the nation. In relation to the News Values Theory, it came to light that indeed the media uses a set of factors to determine what is newsworthy and what is not, but these factors are not set in stone. They can change based on a number of factors such as what else is happening on that day that might be of more value in comparison to the science article, thus resulting in it not being published or being pushed to the back pages. In relation to the Public Engagement Model, it was highlighted that building trust and establishing productive relationships between

scientists and the media are essential for successful science communication and public engagement.

Although the study involved in-depth interviews with the media, the time was limited and the fact that not all the targeted journalists were willing or were available to speak proved to be a shortcoming. This is because the number of science journalists proved to be limited already, and having less than the required sample size was not ideal. Furthermore, the same was applicable for the respondents in the science group.

This study may be applied at media houses, particularly print, at universities and other related research institutions, and it can also be of use to scientists in their individual capacities. The sole aim is to promote science to the public and get an appreciation of the reasons thereof, both for scientists and the general public. It is also useful to PR practitioners at universities, who can gain insights into how to promote the work of the researchers at their respective universities.

6.3 Recommendations

Recommendations are derived from findings and they aim to provide solutions to challenges highlighted in the study (Annum, 2019). In essence, this study revealed that there are communication gaps between the media and scientists, which essentially spills over to gaps between science and the public. A number of recommendations were made, for both the media and scientists, based on the data collected and the reviewed literature.

- **Understanding professions on both ends**

One of the key findings that were revealed during the study is that there is a lack of basic understanding amongst the media and scientists, regarding what each profession entails. This results in a lack of appreciation of both sides. In other words, the media does not fully grasp

how scientists work and vice-versa. For example, journalists work on very tight deadlines, whilst science matters require more time and cannot be rushed. Both sides need to be cognisant of the time functions of the other and find common ground. For instance, unless it is an urgent matter, journalists need to give scientists ample time to respond to questions, whilst at the same time, scientists need to appreciate the urgency of news matters, thus they should make room to prioritise certain queries, especially when the matters are of national concern i.e. when the COVID pandemic was at its peak and the public was desperate for information from experts.

- **The use of layman's language**

Additionally, the study recommends that the scientists use layman's language when they communicate in mass media platforms so that the communication is understood by the average person. In the same breath, the scientists should take an active role in public education, therefore, they may also define complex terms for the average person and at the same time highlight the value of possessing such information.

It is also recommended that before posing questions, journalists must conduct research on the subject matter to ensure that they are asking relevant questions that are relatable to the public's appetite.

Scientists must be educated about the News Values Theory such that when they give information to the mass media, they are well aware of the elements that are used to capture the attention of the general public. They need to be able to differentiate between communicating with expert audiences and lay audiences. And whilst simple language is encouraged, it must not 'dumb-down' the work of the scientists, thus the communication must also serve as public education exercises.

- **Face-to-face interactions**

Face-to-face interactions are recommended as this creates room for one to elaborate on complex matters and this lessens the occurrence of misinterpretation. It also makes building trust and strengthening of relations easier. Ideally, these should be recorded so that the journalist can play back the recording for accuracy. This also gives both the interviewer and interviewee the opportunity to elaborate and seek clarity where needed. Moreover, it protects both the scientist and journalist, should the need arise to refer to the content as evidence of what was said. In the event that a physical engagement is not possible, the alternative may be a video call as this allows for more interaction in comparison to a voice call. The ability to see each other builds better connections and promotes familiarity which is key during interviews.

- **Accessibility to the media**

Another recommendation is for scientists to avail themselves to the media and afford them the opportunity to have access to expert information. In an era of infodemic, the media is bombarded with information and it is often a laborious exercise to conduct extensive research to verify facts in-depth, which is why scientists are crucial as information sources due to their expertise in the respective fields. Furthermore, online platforms such as websites and social media platforms must be regularly updated so that the media may have access to information. The information must be packaged and presented in a way that is easy to understand to limit the occurrences of misinterpretation. This information may include recent studies, news items, press releases, statistics and any other short concise information that is self-explanatory. Contact details of spokespersons must also be availed in the case where the media requires clarity on a particular topic. The website may be complimented by a social media page such as Facebook or LinkedIn. These professional platforms can be used to publish snippets of information and the full details can be published on the said website.

- **Science communication activities**

A number of activities can be held to communicate to vast audiences. Online platforms podcasts and videos can be circulated. For more traditional activities, science fairs, community visits, newsletters and developments of promotional items such as brochures, pamphlets and books are ideal. Creativity is key to keep audiences captivated. Local universities must also focus on equipping their scientists with science communication skills and repeatedly accentuate the benefits for the scientists themselves, the institution, and the nation at large. The science communication strategies and goals must be understood by the entire university community.

- **Avoid sensationalism and hold the media accountable**

Whilst journalism in general thrives on breaking news and stories that will raise eyebrows, in order to gain trust from scientists and the public at large, the media is encouraged to shun away from sensationalising science news. This is so because sensationalism may lead to misleading reports. It is of essence to establish a good and trustworthy working relationship founded on trust. This is not to say the story angle should not be unique and enticing. It should be as such so that the writing can grab the attention of readers, but factuality and accuracy must remain on top of the media's agenda.

- **Infotainment**

Whilst the media has the duty to contribute towards nation-building, for reports to entice readers, there needs to be an element of entertainment without losing the seriousness of the crux of the matter. Journalists are encouraged to tell stories in creative ways that not only educate the public, but entertain them as well. An example could be making use of graphics or cartoons to tell a story. The unique approach would make it both informative and memorable.

- **Hold scientists accountable**

Whilst scientists may be the experts in their respective fields, so are the journalists. Journalists must conduct their own research first before engaging scientists so as to uphold the principles of journalism – that is, transparency, objectivity and accountability. The science journalists, as is the case with any other beat, must be able to ask the right questions and remain impartial in order to get a good story. The right questions must be asked, and where possible, journalists must take a further mile to verify the information from the scientists and be aware of pseudoscience.

6.4 Areas for further research

Although this study makes valuable contributions to the state of science journalism in the Namibian print media, which has proven to be a fairly uncharted area in the country, it still presented some limitations that might be addressed in future research. This study only focused on print media which is a small portion of the media activity in the country. This leaves room for future research in additional newspapers, as well as other forms of media such as broadcast and online platforms. It would be crucial to gain more insights into these areas if the world is to achieve its developmental goals in promoting science and improving public literacy.

The study may also go an extra mile to understand the public's perceptions of science journalism to establish gaps from that perspective and ultimately provide lasting solutions, where needed. This would be relevant to all sectors involved and essentially support the country's goals to promote and prioritise research, science, technology, innovation and invention as outlined in Namibia's Research, Science and Technology Act, 2004 (Government Gazette, 2004).

Furthermore, from an industrial psychology angle, it would be interesting to interrogate the mental health effects on journalists, given the challenges that the industry is facing and the expectation for them to work for longer hours in an unfavourable economic climate. Does this have an impact on the quality of the stories they produce?

6.5 Chapter Summary

This chapter discussed the conclusions and recommendations of this study. The overall take away from this study is that there are communication gaps between scientists and the media. The chapter further highlighted the shortcomings of the study as well as its strengths. Lastly, possible further areas of study were mentioned.

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APPENDICES

CENTRE FOR RESEARCH SERVICES
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University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park, Office F223 - Fblock, Second Floor
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RESEARCH PERMISSION LETTER

Date: 04/08/2022

Student Name: Kudakwangu Chisweto

Student Number: 200529552

Programme: Masters of Arts in Media Studies

Approved Research Title: An assessment of the state of science journalism in Namibia: A case study of The Namibian, The Sun and New Era Newspapers.

TO WHOM IT MAY CONCERN:

I hereby confirm that the above-mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

Dr. AEE Shikongo
Head: Postgraduate Research Support Services
Tel: +264 61 206 3129
E-mail: aeshikongo@unam.na

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ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SHS 0040 Date: 29 July 2022

This Ethical Clearance Certificate is issued by the University of Namibia Decentralized Ethics Committee (DEC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the School of Humanities, Society & Development Decentralized Ethics Committee.

Title of Project: An assessment of the state of Science Journalism in the Namibian print media: A case study of the Namibian, Namibian Sun and New Era newspapers.
Researcher: Kudakwangu Chisweto
Student Number: 200529552
Supervisor(s): Prof. E. Akpabio

Centre for Research Services

Take note of the following:

1. Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the ethics committee. An application to make amendments may be necessary.
2. Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the ethics committee
3. The Principal Researcher must report issues of ethical compliance to the ethics committee (through the Chairperson) at the end of the Project or as may be requested by the ethics committee
4. The ethics committee retains the right to:

i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
ii) Request for an ethical compliance report at any point during the course of the research.

The ethics committee wishes you the best in your research.

Prof. Trywell Kalusopa (Chairperson, Decentralised Ethics Committee)

Prof. Davis Mumbengegwi (Head, Multidisciplinary Research)

PARTICIPANT CONSENT FORM

TITLE OF THE RESEARCH PROJECT: An Assessment of Science Journalism in the Namibian Print Media: A Case Study of The Namibian, Namibian Sun and New Era Newspapers

REFERENCE NUMBER: SHS0040

RESEARCHER: Ms Kudakwangu Chisweto

CONTACT DETAILS: +26481794 9647; kchisweto@yahoo.com

You are invited to take part in a research project that seeks to assess the state of science journalism in Namibian daily newspapers. This study has been approved by the Research Ethics Committee at the University of Namibia. Please take some time to read the information presented here, which will explain the details of this project.

I _____ hereby give permission to the abovementioned researcher to quote my responses to a survey in a scholarly research paper.

☐ I agree to participate in this study.

☐ I understand that this participation is entirely voluntary and I can withdraw my consent at any time without penalty.

☐ I understand that I waive any claim for copyright to this material should the researcher publish it in a scholarly journal or in an electronic format online.

I hereby give my permission in the form of my signature below:

Participant	Researcher
Signature_____	Signature_____
Date_____	Date_____

INTERVIEW GUIDE – EDITORS

An Assessment of the State of Science Journalism in the Namibian Print Media: A Case Study of The Namibian, Namibian Sun, and New Era Newspaper

---

1. What is your highest qualification?
2. How many years of experience do you have in the media field?
3. Does your newspaper cover science news?
4. Which topics normally get the most coverage and why?
5. How many journalists do you have in your newsroom overall?
6. How many journalists do you have in your Windhoek newsroom?
7. Are there journalists that specifically cover science news at your media house? If so, what is this based on e.g. interest from the journalist, experience in science journalism, qualifications?
8. How many journalists cover science news?
9. In your opinion/experience is the newsroom sufficiently staffed? Kindly explain.
10. Is there an interest for science news amongst your journalists? Kindly explain.
11. Is there and interest for science news amongst readers of your publication? Kindly explain.
12. Do you consider some fields of science of more value than others? If so, why?
13. Do you think the media's responsibility to educate the public on scientific matters? Kindly elaborate.
14. What do you think can be done to strengthen the relationship between scientists and journalists?

INTERVIEW GUIDE – JOURNALISTS

---

1. What is your highest qualification in the field of specialization, if any?
2. How many years of experience do you have in the media field?
3. When you hear the term *science journalism*, what topics come to mind?
4. What kind of science journalism topics do you normally cover?
5. Where do you get your science journalism stories?
6. Do you have any sources that are scientists?
7. How often do consult scientists for comments on your stories?
8. Do you find challenges in covering certain science journalism topics? If so, what are these challenges?
9. How do you determine what is newsworthy and what is not?
10. What is your preferred method of getting news from scientists? e.g. media releases, interviews, attending events, academic journals?
11. What steps/measures do you take to ensure accuracy in science news reportage?
12. What do you think can be done to strengthen the relationship between scientists and journalists?

QUESTIONNAIRE FOR SCIENTISTS

(mark the relevant box)

My name is Kudakwangu Chisweto and I am conducting a study titled "An Assessment of the State of Science Journalism in the Namibian Print Media: A Case Study of The Namibian, Namibian Sun, and New Era Newspapers," in partial fulfilment of the requirements for the award of a Masters of Arts: Media Studies degree at the University of Namibia.

Kindly participate in this survey by answering questions below:

Section A

1. Which branch of science do you specialize in?

a) Biology	
b) Physics	
c) Chemistry	
d) Ecology	
e) Health	
f) Others, please specify.	

2. Which sector do you represent?

a) Private	
b) Public	
c) Non-Governmental Organisation	

g) Others, please specify.	

3. How many years of experience do you have in the science field?

a) Less than 5 years	
b) More than 5 years	
c) More than 10 years	

4. Indicate your age.

a) Under 30	
b) 31 - 40 years	
c) 41 - 50 years	
c) 51 – 60 years	
d) 61 years and above	

5. Indicate your gender.

a) Male	
b) Female	

6. Indicate your educational qualification.

a) Bachelor's Degree	
b) Master's Degree	
c) Doctoral Degree	

SECTION B

Kindly select one answer on each of the following questions:

	Yes	No
7. My research findings have been published in The Namibian Newspaper.		
8. My research findings have been published in the Namibian Sun Newspaper.		
9. My research findings have been published in the New Era Newspaper.		

SECTION C

Kindly indicate how much do you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
10. Namibian media professionals demonstrate understanding of science content.					

11. The Namibian media focus on core points when they cover science news.					
12. The Namibian media professionals are keen on interacting with scientists to get expert insights.					
13. The Namibian media gives prominence to the right scientific issues.					
14. Written statements such as media releases are an effective way of communicating with the media.					
15. Face-to-Face interactions such as interviews are an effective way of communicating with the media.					
16. I have witnessed inaccurate reporting of science news in at					

least one of the Namibian newspapers under review.					

17. What is your overall impression of scientific journalism in Namibia?

a) Favourable	
b) Unfavourable	
c) Neutral	

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12 March 2023

To whom it may concern

LANGUAGE EDITING – KUDAKWANGU CHISWETO

This letter serves to confirm that a **MASTER OF ARTS: MEDIA STUDIES** thesis titled ***AN ASSESSMENT OF THE STATE OF SCIENCE JOURNALISM IN NAMIBIA: A CASE STUDY OF THE NAMIBIAN, NAMIBIAN SUN, AND NEW ERA NEWSPAPERS*** by KUDAKWANGU CHISWETO was submitted to me for language editing.

The thesis was professionally edited and track changes and suggestions were made in the document. The research content or the author's intentions were not altered during the editing process and the author has the authority to accept or reject my suggestions.

Yours faithfully

DR NELSON MLAMBO
PhD in English
M.A. in Intercultural Communication
M.A. in English
B. A. Special Honours in English – First class
B. A. English & Linguistics