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INQUIRING THE ROLE OF SCIENCE JOURNALISM IN NIGERIA'S SUSTAINABLE DEVELOPMENT

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Abstract

Development is a multidimensional embodiment of progress, which is sometimes qualitative, quantitative or both. It has been an essential ingredient for the growth of societies, nations and continents, but what is equally as important as development itself is the ability to ensure its sustainability. There are misconceptions and gaps in knowledge that have led to various studies concerning how to accelerate the pace of sustainable development around the globe, but the need to continue narrowing the existing knowledge gap remains imperatively clear. The specific objective of this study is to put the role of science journalism in Nigeria's sustainable development under the microscope; with the aim of methodically highlighting some of the strong academic debates that can be used as a compass for recommending a way forward. The study adopted a qualitative library research method to explicate the dynamics of the subject. The ideas within this study are firmly anchored on the framing theory. The study found that science journalism plays the pivotal role of advancing the progress of sustainable development. Hence, science journalism is required for the attainment of Nigeria's sustainable development goals (SDG's). The major recommendation is that similar studies should be replicated using different methods.

Keywords; *Development, Journalism, Science, Science Journalism, Sustainable Development*

Introduction

Development is a term that means different things to different people, just as much as it has been an essential ingredient for the growth of societies. Abuiyada (2018) points out that the term "development" has various meanings to different people and can be explained in different contexts. This point of view explains why developmental needs vary from society to society and from place to place. Onwuliri (1998) argues that development as a concept goes beyond the narrow lines of economic and material advancement. It is all encompassing. Development is a multidimensional process involving the totality of man in his political, economic, psychological

and social relations amongst others. "Development is not a project but a process by which people create and recreate themselves and their life circumstances to realize higher levels of civilization in accordance with their own choice and values," (Ake 2001, p. 140).

The word 'development' is exciting to the ear. It is even more so when it is preceded by the word 'sustainable.' This suggests that not only will there be improvement (sic) it would continue for a reasonable period; not a short-lived occurrence. Not unexpectedly, many scholars and practitioners have attempted a definition of sustainable development. (Nwanne 2018, p. 54).

According to Pearson (1992), as cited in Abuiyada, (2018), development points to an improvement that may be qualitative, quantitative or a combination of both - in the use of available resources. What is more or less as important as development itself is the ability to ensure its sustainability. Sachs (2010, p. 28) argues that "there is no development without sustainability or sustainability without development." This argument buttresses the view that sees sustainability as a strong pillar which upholds the structures of development, while sustainability itself is to a large extent dependent upon development; with the two sharing a multidirectional relationship that strengthens both sides of the equation. Emas (2015), explains that the overall goal of sustainable development is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the process. Hence, it can be said that sustainable development is a three pronged fork that depends on all its three extensions, with the absence of one being tantamount to taking one step forward and two steps backwards, which in essence throws society into a much bigger hole than that which it had crawled out from.

Sustainable development has been defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (United Nations General Assembly, 1987, p. 43). Emas (2015), points out that the concept of conserving resources for future generations is one of the major features that distinguish sustainable development policy processes from traditional environmental policy processes, which also seek to internalize the externalities of environmental degradation. The maximization of scientific knowledge for the purpose of conserving resources for our future generations is surely a crucial step towards the achievement of sustainable development in Nigeria and perhaps Africa at large. It can be said that one of the ways of achieving this goal is by ensuring that science journalism is a central point that connects scientific knowledge with sustainable development. In essence, science journalism should be viewed as an indispensable screw that ties science and sustainable development together.

The birth of science journalism can be historically traced to the seventeenth century when scientific research undertakings mainly appeared in newsletter outlets such as the *Philosophical Transactions* (Jucker, 2009). The importance of science journalism is easily reinforced by an eye opening reality which shows that having a scientific background does not change the fact that even highly educated individuals, some with degrees in science related fields, sometimes have little or no experience researching and making sense of slightly complicated issues such as diet recommendations advocated in the popular press (Polman, Newman, Saul and Farrar, 2014). Nguyen and Tran (2019) explain that today, the effective transfer of science and technology from developed countries to the less developed lies at the core of global policies and priorities, such as the United Nations' previous millennium development goals (MDG's) and the current sustainable development goals (SDG's).

The postulations of researchers within fields such as sociology, psychology and particularly development communication have consistently echoed assertions that show how the proper use of strategic communication, be it through print media, radio, television or the information communication technologies (ICT's), more often than not accelerates the pace and processes of development, while at the same time ensuring that the trajectory of sustainable and accessible development hits top gear. Science journalism has been described by some as a dying profession due to a myriad of challenges that have led to the closure of newsroom science desks across the globe (Waithera, 2018). Though the bleak pictures portraying a sharp decline are debatable, it still remains to be seen whether science journalism can find its way through the maze, so as to play a much more vibrant role towards catalyzing scientific knowledge in a way that will galvanize sustainable development in Nigeria and around Africa.

This study is driven by the need to add more flesh to the growing body of knowledge, and to fill the existing knowledge gap on the subject. The specific intent is to put the role of science journalism in Nigeria's sustainable development under the microscope; with the sole aim of methodically highlighting some of the strong academic debates that can be used as a compass for recommending a way forward. In doing so, it also explores the concept of science journalism as a catalyzer of sustainable development, while using the qualitative library method of research to explicate the dynamics of the subject. Thus, the study is designed to achieve the following objectives: (i) Examine the role of science journalism in Nigeria's sustainable development; (ii) Ascertain whether scientific advancement is an essential ingredient for development; (iii) Ascertain whether science journalism plays the role of directing and accelerating scientific advancement towards sustainable development. It is hoped that the study shall open a new vista for further conversation on the subject area.

Theoretical Framework

The strings of this study are anchored on the framing theory. The framing theory was propounded by Gregory Bateson in 1972 (Arowolo, 2017). Bateson (1972, p. 197) saw psychological frames as "a spatial and temporary bounding of a set of interactive messages." McCombs (2004) explains that a frame is the central organizing idea for news content that supplies a context and suggests what the issue is through the use of selection, emphasis, exclusion and elaboration. According to Arowolo (2017), the framing theory implies that how something is presented to the audience (called 'the frame') influences the choices people make in terms of the how to process such information. The idea of the framing theory revolves around the fact that the media focuses attention on certain events and then places them within a field of meaning (Mass Communication Theory, 2022). In essence, the media create meaning from events, thus the manufacturing of meaning by the media subsequently leads to what is referred to as 'media frames.' It is also true that both 'media frames' and 'personal frames' exist, and sometimes clash. McCombs, Shaw and Weaver (1997) argue that, not only are agenda setting effects and framing effects related, framing is in fact, an extension of agenda setting. It is worthy of note to state that science journalism also plays the agenda setting role of educating the public about scientific developments.

Framing is often compared to second level agenda setting, since they both try to shape the perceptions of the audience. Nguyen and Tran (2019) argue that few other channels would be able to match the influence of science journalism in terms of its gate keeping abilities, agenda setting and awareness raising. Science journalisms use of awareness campaigns as well as advocacy campaigns obviously falls within the realms of framing when the goal is towards directed change. Using science journalism to frame controversial issues such as female genital

mutilation in ways that lead to a change in behaviour provides us with a good example of science journalism at its best. The most common use of frames is in terms of the frame the news or media place on the information they convey, which in turn influences audience perception of news, as they do not only tell the audience what to think about but also how to think about such an issue (Mass Communication Theory, 2022). It cannot be denied that 'news frames' influence our perceptions of reality, this study is therefore concerned with the direct implications of framing in the context of how it influences the reporting of science based news, since science journalists in this sense are expected to wield their power by framing science information in ways that lead to directed outcomes (positive behavioural change).

When science journalists use 'media frames' to their advantage, they are likely to influence the 'personal frames' of the audience which can in turn accelerate the pace of sustainable development. This can be achieved in areas such as good health and wellbeing as well as clean water and sanitation amongst others. For example, when the audience form wrong 'personal frames' about certain issues bothering on false and unverified information circulation, it is the duty of science journalism to correct such 'personal frames' using well verified scientific evidence and information to back their claims. A good example can be seen in the case of the 2003 polio vaccine boycott in northern Nigeria which can be ascribed to 'personal frames' created through the spread of rumours and unfounded information about the contents and side-effects of the vaccines. Such contradictory 'frames' about science and medical innovations have ensured that science journalism is often tasked with the role of correcting such misconceptions from time to time.

The direct relevance and application of framing theory to the field of science journalism is mostly tilted towards how the framing of scientific information by science journalists determines the way an audience perceives an issue in terms of its significance or insignificance, which in turn influences their opinions and actions. A good example of this is when framing is employed by a science journalist for the tailoring of scientific information in ways that are bound to influence stake holders and the general public in the area of policy making about global challenges such as environmental degradation and climate change. Additionally, the way a story is framed by a science journalist can be presented in terms of the consequences of an action or the morality of such an action amongst others, depending on the approach that is guaranteed to arouse and sustain the interest of the audience, towards achieving the ultimate goal of swaying their opinions. The suitability of framing to science journalism news aimed at the attainment of sustainable development can be drawn from Entman (1991) who argues that the five popular ways of framing news stories include; Conflict - between parties; Human Interest – presenting a story with human face; Consequences – presenting the direct consequences of human actions and inactions; Morality – moralizing issues in terms of good or bad; and Responsibility – attributing responsibility. Lastly, the use of selection, emphasis, exclusion and elaboration by science journalists can help in the framing of important scientific information.

The Nexus between Sustainable Development and Science Journalism

Sustainable development is a very wide area that has been traversed by various scholars, with most agreeing about the three inter related components that play a key role in the engineering of sustainable development. It is now widely accepted that sustainable development to a large extent depends on economic sustainability, environmental sustainability, and social sustainability. For instance, the United Nations World Summit Outcome document (2005), points out that “the three factors of economic sustainability, environmental sustainability and

social sustainability, are interdependent as well as mutually reinforcing pillars of sustainable development." Emas (2015) also explains that the overall goal of sustainable development is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process.

An economically sustainable system must be able to produce goods and services on a continuing (sic) basis and maintain manageable economy without jeopardizing sectoral balances of economic activities of the country. Environmentally, sustainable systems must maintain a stable resource base, avoiding over exploitation of renewable resource systems... and depleting non-renewable resources only to the extent that investment is made in adequate substitutes... The last factor (social) must achieve distributional equity, adequate provision of social services, including health and education, gender equity and political accountability, transparency and participation. This must be with dynamic understanding of human rights, (Onyeshola 2008, p. 162).

Though the sustainable development goals are seventeen in number, they all fall into any of the three symbiotically interconnected and interdependent categories that include economic sustainability, environmental sustainability and social sustainability. The sustainable development goals (SDG's) were designed to build on earlier efforts, which were kick started by the millennium development goals (MDG's). While the former have expanded on the latter, the latter were the driving force behind global campaigns towards the eradication of poverty in its various dimensions around the early 2000's. It can be argued that post modernism has brought about the emergence of science as an indispensable driver of development in many countries of the world. It is therefore unsurprising that science and technology are seen as important ingredients towards the present and future development of Nigeria just as much as it is the same with any other country (Anacto, Ani, Nnadi, Ugwoke, Asiabaka, Anacto and Ihekeronye, 2016). It can be added that science and journalism both carry the social responsibility as well as moral obligation of working synergistically towards producing an effect which is greater than the sum of their individual parts. The aim is to hit the milestones that encompass the Sustainable Development Goals (SDG's), which were mapped out by the United Nations (UN) in 2015. It is worth noting that when these two concepts (science and journalism) are combined, they become an effective means to an end, a term which is now widely referred to as science journalism.

The role of science journalism in accelerating and steering scientific advancement towards the attainment of the sustainable development goals (SDG's) cannot be overstated, since it cannot be denied that the 21st century has seen the emergence of new channels for the rapid and exponential growth of science and technology, just as much as science journalism itself. Scientific and Technological advancements have unleashed science journalism from the shackles of traditional media, while simultaneously enhancing its natural potentials in most developed western nations. It can be said that this may not be true in countries like Nigeria, where it can be argued that the term science journalism has been colloquially used with little or no attention directed towards understanding the foundational structures of its professional existence. For instance, Falade, Batta and Onifade (2019) have argued that science and technology institutions, practices, and policies abound in Nigeria but the phrase 'science communication' is not an entrenched one, since it can easily be described as fragmentary and incidental. The untapped potentials of science as well as science journalism in particular, can be viewed from a telescope that bellies an overriding issue of poor policy preferences, which have in turn stifled the growth of science as well as sustainable development in Nigeria. This has also ensured that science journalism is not practiced on the same level as in western societies.

journalism in Nigeria and around the globe include but are not totally restricted to the following:

1. **Communicate knowledge based scientific information to the public**

The role of science journalism towards the attainment of the sustainable development goals (SDG's) is inextricably connected to the fundamental responsibility of communicating knowledge based scientific information to the public. de Semir (2000) explains that the past few years have witnessed a dramatic rise in the amount of scientific news that fills the headlines, as science continually plays an increasingly visible role in society. It can be argued that an increase in science news coverage augurs well for sustainable development around the world and Nigeria in particular. Pitrelli (2017, p. 1) argues that "for a long time, science journalism was basically intended to reconfigure technical information through words and images to make it accessible to individuals lacking expertise and specialized terminology." Science journalism is now considered a vital tool for driving sustainable development, as science journalists in particular and science journalism in general are now saddled with the responsibility of communicating knowledge based scientific information to the public.

Coker and Ngula (2020) explain that when journalists accommodate the genre of science journalism, they seek to bridge the gap between the public's right to know and the public's ability to understand. Accommodating science involves translating, interpreting, telling and packaging stories from scientific reports for public consumption. There is no doubt that science journalism is indispensable role in accelerating sustainable development through public awareness in a way that conveys the possibilities of good and bad outcomes, helps the public understand problems with the aim of minimizing their risk potentials.

2. **Educate the public about new scientific developments**

The role of science journalism as a tool for educating the public about scientific developments is one the key functions of science journalism which is aimed at the attainment of the sustainable development goals (SDG's). It is quite evident that science journalists have acted as mediators between science and the general public, thus taking on the task of conveying the progress of research and contributing, with their educational role, to shaping the critical opinion on scientific and technological development (Treise and Weigold, 2002). The role of the science journalist in educating the public cannot be pushed aside, science journalists are not only expected to educate the public on new scientific developments, they are generally expected to break down scientific information and developments into an easily digestible and accessible form. de Semir (2000) explains that the reporter must be a translator, converting information from a specialized source into something that can be understood by a more general audience that sometimes has no previous knowledge of this information. It can be argued that harnessing science journalisms responsibility as an educational outlet helps in terms of proffering effective solutions to Nigeria's sustainable development challenges.

3. **Guide and sensitize the public about global challenges**

Science journalism should be able to guide and sensitize the lay man. Lewis (2022) explains that at the heart of science in particular and in essence science journalism in general is a focus on evidence, even as an absence of evidence does not always amount to evidence of absence that permits a careless outlook on things. In the absence of evidence, science journalism should guide and sensitize the public on how to react in the event of a pandemic or natural disaster. Science journalism should also provide a reliable platform for the sharing of information, evidence and results of scientific research that relate to certain aspects of the sustainable development goals (SDG's). This is especially applicable in the area of good health and wellbeing where socio-

cultural factors sometimes play a mitigating role on the adoption and application of new scientific discoveries and technological innovations.

Nguyen and Tran (2019) explain that technologies like genetic modification, artificial intelligence, automation, stem cell research, nanotechnologies, and the likes are transforming how people work, live and identify themselves in unprecedented directions that even citizens and policy-makers of advanced, scientifically savvy societies find it hard to grasp, monitor and control. How these technologies can be channeled towards development is a question that is often raised, it is however obvious that technological advancements have created a niche for science journalism. It must be added that science journalism in its ideal state should strive towards guiding and sensitizing the public about the global challenges mitigating sustainable development. Such challenges include, but are not totally limited to poverty, climate change, biodiversity loss, environmental degradation, infectious diseases, epidemics and pollution amongst others.

4. Act as a bridge between science and strategic policy making

There is no doubt that the two-way bridge between science and policy making plays an important function towards the attainment of the sustainable development goals (SDG's). One of the obvious roles played by science journalism in many parts of the world is that of influencing policies that bother on alleviating global challenges such as poverty, climate change and environmental degradation amongst others. This is sometimes achieved through advocacy campaigns and strategic communication. Nguyen and Tran (2019, p. 2) explain that "Science and Technology (S&T) has been a central part of international politics and policy since US President Harry Truman gave birth to the new post war era of development..." It is therefore unsurprising that the gap between the field of science and that of the politics of science-based policy making, is often seen as a space that fittingly suits the field of science journalism. In a nutshell, science journalism can promote informed decision making by supporting evidence-based policy making on critical issues, through dialogue and the exchange of scientifically grounded ideas between policy makers, scientists and the general public.

The Mobilization of Science Journalism for Sustainable Development in Nigeria

The relationship between science and journalism in its ideal state should be mutual and symbiotic. It can be argued that scientific evolution has undeniably led to the revolutionary growth of journalism in more ways than one. In order to possess scientific knowledge that can be considered useful, one must have a reliable means to find, evaluate, and make sense of new scientific and technical information that cannot be predicted or completely and comprehensively taught in school (Feinstein, 2011; Feinstein, Allen, & Jenkins, 2013, as cited in Polman et al, 2014). It can be argued that science journalism provides us with a reliable means of finding and making sense of new scientific and technical information. Asuquo, Samuel, Basse and Basse (2010) explain that science education can help us check some of the destructive tendencies of science and technology.

Though it can be argued that modernization and industrialization do not always literally amount to sustainable development, it must be added that just as much as science has been a burden in an ecological sense and beyond, it still holds the answers to the emerging challenges facing sustainable development in Nigeria and perhaps Africa at large. For instance, while Nigeria and most African countries have a large portion of their labour force involved in subsistent agriculture due to a lack of access to scientific and technological knowledge and innovation, the

production levels are nowhere close to those of western countries involved in mechanized agriculture. The growing consensus is that scientific development is required for technological expansion which affects the productive apparatus of a country explaining a high correlation between scientific research and technological advances (Teitel, 1994; Wang, 2007).

It can easily be said that the gap in development between Africa and the technologically advanced western societies is essentially a manifestation of the science and technology gap between the two sides of the divide. For instance, Asuquo et al (2010) explain that the widening economic gaps between nations can be attributed to corresponding gaps in science and technology. The mobilization of science journalism towards the attainment of the sustainable development goals (SDG's) in Nigeria can only be achieved when the media (mass media, print media, and new media) consciously prioritize reporting scientific information on the following sustainable development processes:

1. Economic sustainability

It has been shown that scientific productivity is a much better predictor of the economic wealth of a nation than all educational variables tracked by the United Nations Development Program and the World Bank (Jaffe, 2013). The United Kingdom and France benefited immensely from the 19th century industrial revolution. Similarly, the United States evolved from an agrarian economy in the 19th century into an industrial superpower in the 20th century (Anaeto et al, 2016). The importance of economic sustainability to development is hinged on the idea that economic growth has the propensity to negatively impact the environment if proactive measures are not taken, this in turn compromises the availability of other resources for future generations. For instance, economic growth and industrialization do not always amount to development when the outcome is environmental degradation and climate crisis, as in the case of rising levels of greenhouse and carbon emissions caused by economic growth and industrialization.

Emas (2015) explains that the appreciation of our natural resource constraints is also in our best interest. Truly rational and effective governance requires a nation to consider and protect the environment as well as the natural resources on which its current and future development depend. It is undeniable that our natural resources will be completely depleted, leaving us without substitutes, if the media in general and science journalism in particular turn a blind eye on economic sustainability. It can be argued that an economically sustainable system must be able to produce goods and services on a constant basis while maintaining a manageable economy, without jeopardizing sectorial balance of economic activities within the country (Onyeshola, 2008). Though scientific development has toppled factors such as land, capital and labour as the most important economic factor, it cannot be denied that science is not sufficient enough to ensure economic sustainability on its own.

Nguyen and Tran (2019) explain that today, policy-makers see the globalization of science and technology as a crucial means of altering human behaviours for the sake of economic prosperity, better living standards and personal freedom. It can be argued that employing science journalism with the goal altering human behaviours and ensuring sustainable economic prosperity provides a panacea to the challenges that come with pursuing economic sustainability. It is worthy of note to state that science journalism sometimes reaches these goals by using carefully designed strategies for policy engineering and advocacy.

2. Environmental sustainability

Environmental sustainability has been a thematic feature in various development

programmes through the years. For instance, even the previous United Nations (UN's) Millennium Development Goals (MDG's) which could easily be criticized for being too anthropomorphic while also lacking a clear synergy between goals, had the goal of ensuring environmental sustainability as one of the eight goals on the list, highlighting the importance of environmental sustainability. It can be said that the connection between environmental sustainability and economic sustainability cannot be pushed aside. Dernbach (1998) explains that the connections between the environment and development provide a powerful rationale for environmental protection and enlightened self-interest. Therefore, any form of environmental degradation can be viewed as an attack on future resources.

Pearce & Barbier (2000) state that the interplay between the environment and the economy remains at the heart of sustainable development. Lele (1991) explains that sustainable development is closely linked to ecological issues, since it is widely accepted that nature provides fundamental opportunities and constraints to development, the understanding of the concept of sustainable development in theory is mostly related to ecological sustainability. It is also obvious that environmental sustainability is cut from the same fabric as resource management. For instance, Onyeshola (2008) is of the view that environmentally, sustainable systems must maintain a stable resource base by avoiding over exploitation of renewable resource systems, and by depleting non-renewable resources only to the extent that investment is made in adequate substitutes.

It can easily be argued that science journalisms function in ensuring environmental sustainability cannot be overstated. By harnessing the social responsibility and moral obligation of pushing for environmentally friendly policies and raising awareness about the consequences of certain risky behaviours on the environment, science journalism can help mitigate the impact of environmental degradation which is more often than not caused by the extractive exploration of mineral resources like tin in Jos as well as crude oil exploration in parts of southern Nigeria. Adejumo and Adejumo (2014) explain that the environment should be seen as an asset, a stock of available wealth but if the present generation spends this wealth without investment for the future, then the world will subsequently run out of resources. There is no doubt that the mediation of such an ideology lies with science journalism.

3. Social sustainability

Social sustainability as a component of sustainable development, is another vital piece of the puzzle. Klarin (2018) explains that in order to achieve the necessary ecological conditions for sustainable development, certain social conditions also have to be achieved, considering their influence on ecological sustainability on the one hand, and unsustainability on the other hand. For instance, without good, affordable and reliable energy sources, climate action against climate change will be ineffective due to the use of fire wood which increases carbon emissions. Another good example is that without portable drinking water, the drive towards good health and wellbeing of the public will be jeopardized. Ulhoi and Madsen (1999) explain that from the aspect of social sustainability, sustainable development represents an opportunity for achieving certain needs derived from quantitative economic values. It can be argued that social sustainability strives to achieve distributional equity, adequate provision of social services including health and education, gender equity and political accountability, transparency and participation, as well as a dynamic understanding of human rights (Onyeshola, 2008).

Social sustainability is also an opportunity for achieving certain social needs, tradition, culture and other social values and characteristics (Klarin, 2018). In essence, this is the social justice perspective of social sustainability, it can therefore be argued that social sustainability is

wrapped around the socio-cultural, socio-political and ethical issues that concern sustainable development. In this sense, science journalism is supposed to stimulate the growth of scientific innovation and technological know-how, agriculture and food production, formal and informal science education, health journalism, as well as push for policies relating to the general wellbeing of the public. Science journalism is also expected to work with, and encourage science based NGO's such as the DRASA Health Trust in Nigeria, amongst others. According to Falade, Batta, and Onifade (2019) DRASA is a Nigerian NGO that uses health communication to drive behaviour change, and the approach is to get the public to understand the 'why', and to dispel the myths and rumours about infectious diseases by using several strategies to turn scientific evidence into digestible information. It must be noted that science journalism can help boost the funding for research as well as help improve the mass appeal of science in general and science journalism in particular.

The Draw-Backs and Challenges of Science Journalism in Nigeria

Scientists sometimes face challenges when it comes to breaking down technical terms into everyday language as a result of the complex nature of the vocabulary (Polman et al, 2014). Science journalists also face similar challenges, since science journalism strives to accurately communicate complex scientific concepts to a general audience. Coker and Ngula (2020) explain that in Fahnestockian terms, one could say that scientists are sometimes incapable of shifting from their accustomed genre. There is no doubt that scientific information can be difficult to understand for people without a background knowledge of the issue. Additionally, science journalists must also be careful to avoid sensationalizing or oversimplifying scientific information, which can lead to misinformation. It is also true that due to the fact that science journalism is sometimes viewed as a dry and dull genre of journalism which is less appealing to readers, there is a pressure on science journalism to produce compelling and attention-grabbing stories which may sometimes lead to an exaggeration of the available information.

The challenge of keeping abreast with the latest developments in the scientific arena is another issue. The fast paced nature of the news industry can make it difficult for science journalists to thoroughly research and verify stories before publication, which can lead to misinformation from the stand point of inaccuracy. Nguyen and Tran (2019) argue that government sometimes implicitly or explicitly restrain science reporting to certain topics and issues so as to ensure that political sources (government agencies and policy-makers) control science discourse and debate in the news. Godswill (2014) is of the view that, the African political system and poor governance have limited the growth of science and technology, especially in the Sub-Sahara region. Science journalism more often than not, faces the issue of inadequate support, which could be viewed in terms of finding adequate funds to support their work. Bauer, Howard, Ramos, Massarani, and Amorim, (2013) explain that journalists often lament about insufficient support and cooperation from the science community, which makes it hard to follow, monitor and report on new science developments. The inadequate support for science journalism from both government and private sector is another issue. Godswill (2014) explains that most polices of the government do not encourage investments in this sector. Scientific projects are hardly supported due to their perceived high cost of implementation.

While post-modernism can be viewed as a mustard seed which has propagated development through scientific advancements in the western world, it can also be argued that the dogmatism of scientific discoveries in countries' like Nigeria, especially in the health sector. For instance,

Godwill (2014) explains that another factor for poor scientific and technological development is generally due to the African man's mentality towards science, technical education and scientific research. Asuquo et al (2010) share a similar view, they argue that despite the popularization of science, Africans including professors of science, scientists, technologists and even science journalists still hold strongly to a traditional world view which is often reflected by their belief in black magic, mysticism and superstition.

There is also a lack of synergy between scientists and science journalists. Ekanem (2003) explains that in Nigeria, scientists' distrust the media because the latter treat them like mere advertisers and demand them to pay for the publication of science stories. The new media has also led to the democratization of information creation and distribution through the internet, it is no longer easy to separate real and fake news. In a nutshell, science journalism faces drawbacks such as the oversimplification or misrepresentation of scientific information amongst others, which more often than not lead to misinformation. This can be problematic when dealing with controversial issues such as abortion, contraceptives and genetically modified foods. It can be argued that ground breaking scientific discoveries and innovations have been made and are being made, with developing countries' like Nigeria neither contributing anything tangible towards such discoveries, or to the mediation of science based knowledge on such discoveries.

Conclusion

The study provides an important perspective regarding the sacrosanct position of science journalism in Nigeria's drive towards sustainable development. Based on the findings of this study, it can be concluded that scientific progress is an essential ingredient for development, though it cannot be viewed as a sufficient tool in the drive towards sustainable development without the indispensable input of science journalism. The study also shows that science journalism plays the pivotal role of accelerating the pace of sustainable development through the diffusion of knowledge and innovation, which subsequently creates a favorable environment for scientific knowledge, and in turn leads to more scientific advancements and development. As far as science journalism goes in Nigeria, it can be said that what has been achieved is just the tip of an iceberg when compared to what can be achieved. Nguyen (2019) shares the same view, he asserts that it is reasonable to conclude that despite the central role of science and technology in development, science journalism in the developing world has not done a good job of bringing science to the fore of the process. The significance of these findings is that science journalism in Nigeria is far from ideal, though it is fundamentally required for the attainment of Nigeria's sustainable development goals (SDG's), it is also clear that we are still at the early stage of trying to figure out how best to mobilize this powerful tool.

Recommendations

1. Considering the fact that the study adopted a qualitative library research method. Similar studies need to be replicated using a different methodology.
2. Science journalism will continue to struggle if science journalists do not properly promote the trade, it is therefore important for science journalists to immerse themselves in the activities of professional organizations such as the African Federation of Science Journalists (AFSJ) and the Nigerian Association of Science Journalists (NASJ) with the aim of gaining more visibility and public funding.

3. The government and private sector stake holders should provide grants that will sponsor short courses, workshops, and seminars with the aim of helping science journalists catch up, as well as keep abreast with the accepted global standards of their profession.

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