

**VISUAL IMAGES ASSOCIATED WITH REPORTING ABOUT BIODEGRADABLES
IN NIGERIAN NEWSPAPERS**

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Abstract:

Concern for the environment has become a global movement among countries of the world with pollution at the center. One of the solutions advocated towards improving solid waste management is the use of biodegradables. Therefore, the aim of this paper was to analyze the images associated with reporting biodegradables in five daily Nigerian newspapers, The Cable, The Guardian, Leadership, Premium Times and The Punch from April 1, 2019 to August 30, 2019. The study drew its theoretical foundation on the theory of Multimodal Discourse Analysis using quantitative and qualitative content analysis. Findings revealed 12 articles with 10 containing images. Four themes were associated with the images; environmental pollution (5), plastic products (1), politicians/political (3), and logo theme (1). Embedded meanings were uncovered within the images. Recommendations include allocating more resources towards training of environmental reporters to increase the output and quality of reports about the environment and biodegradables in particular.

Keywords:

Biodegradable, Content Analysis, Environment, Newspapers, Pictures.



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INTRODUCTION

The use of images by journalists and copyeditors in news prints as part of reporting or standalones is now prominent in the media. This is because they are largely unambiguous and comprehensible to audiences regardless of the level of education, the readers know what to expect with every image. Based on one's understanding, images can also have categories of meanings based on different social variables; the semiotic resources embedded within an image used in reporting provides different meanings, the usage of certain pictures over others in a news article has an effect on the audience and can affect perception of the topic or individual under review. Jacobs (1996) asserts that visual representations are far more 'news worthy' than other forms of representations. This assertion corroborates the popular adage that "a picture is worth thousand words".

Studies from a variety of disciplines have uncovered strong evidence that visual images influence people's attitudes and ability to learn about individuals, events, and issues (Ndinojuo & Ihejirika, 2019; Omolabi & Durosimi, 2017; Barret & Barrington, 2005; Gilliam and Iyengar 2000; Graber 1987). Barret and Barrington (2005) affirm that visual messages can be more influential on assessment of individuals or events than verbal ones. They, continue that recipients of media communication are information processors with a 'limited capacity of processing'. However, when pictures become journalistic, they become historical and iconic with strategic pragmatic meaning directed towards achieving both informative and persuasive functions of the newspaper (Omolabi & Durosimi, 2017). Images can achieve the same purpose when applied to environmental news; using them to present the impacts of human and natural actions reminds the government, stakeholders and the public about the importance of maintaining policies and practices promoting sustainable development ideals.

Environmental issues are today priority areas in advocacy making headlines in global and national news, and as part of the United Nations (UN) Sustainable Development Goals (SDGs) that seeks to combat poverty, hunger, good health and well-being, clean water and sanitation, industry, innovation and infrastructure, sustainable cities and communities, life below water, life on land, and climate action that talks about the need to urgently combat climate change and its impact on earth (United Nations Environment Programme, 2013). In recent times, Greta Thunberg has been one of the stars of the environmental movement, and for her efforts in highlighting global climate change and environmental problems arising from man's harnessing of the earth's natural resources, she has been nominated for a Nobel Peace Prize and also named by *Time* magazine as its "Person of Year" (Moore, 2020). Dorroh (2015) chimes in that the environment "is so fundamental to our well-being and our futures that responsible media of any kind would want to give it a certain amount of attention," (p.1).

The media is the thread that holds all the pieces of activism towards environmental issues together, bringing focus to the issues raised, setting the agenda for discussion, and bringing environmental advocacy

and advocates to the fore, thereby giving attention to the issues raised by activists and locals bearing the brunt directly of the impacts of the issues raised. The media thus become essentially an important tool for disseminating information on developments and practices that can lead to a reversal of climatic disasters, and create an improved and better quality of life for mankind. It does this by proffering solutions to issues created by the depletion of the earth's natural resources and burning of fossil fuels which have threatened the equilibrium in our ecosystem. Focusing on sharing knowledge and the benefits of the SDGs is a very crucial step and the media has an important role in informing and educating the government, the people and the society at large. The media can do this by focusing on the effects of climate change and by providing information on how to combat the negative phenomenon that threatens humanity in the present and the future.

One of the solutions suggested to combat environmental pollution caused by solid waste is the use of biodegradables, these can be broken down by microorganisms instead of hydrocarbons which are non-biodegradable and many a times have been found to affect flora and fauna, with large fishes turning up dead on beaches with plastics in their belly (Song, et al., 2009). DeBruyn et al. (2015) define biodegradation as the action of microorganisms to decompose a substance into its constituent elements or new compounds. The process is carried out by microorganisms naturally found in the environment. This aim of this study was to explore the visual elements (pictures) associated with the reportage of biodegradable in Nigeria. The following served as the research objectives of this paper, they are;

1. To determine attributes of the images used in reportage about biodegradables in Nigeria newspapers.
2. To classify the pictures into themes and also to determine its appropriateness or non-appropriateness in the story it appears in.

This study is significant because it explores the media representations of 'biodegradables' in the body of research. Previous research on biodegradables has been limited to the sciences where the concern is mainly about its use and management in Nigeria and its suitability as a substitute for plastic non-biodegradable hydrocarbon products (Abioye et al. 2018; Olukanni, Aipoh & Kalabo, 2018; Ezeoha & Ezenwanne, 2013). The overall study is in the two parts, this is the first part of the study that explores media representations of images in reporting about biodegradables, the next part of the study will focus mainly on text of the reporting, to understand how they have been framed in discourse of biodegradables in the Nigerian mediaspace.

Messaris (1998) remarks that media pictures can be used as 'elusive means of audience manipulation'. This is why several researchers in the field of visual rhetoric strongly refute the assumption that pictures merely signify realities (Kenney & Scott, 2003; Huxford, 2001). They argue that images can also express all kinds of non-literal and symbolic meanings. Similarly, Kress and van Leeuwen (2006) in support of Jewitt and Oyama (2001) consider pictures as capable of realising many of the same complex meanings as verbal language. They state that the visual mode possesses a kind of 'grammar' which determines how visual elements combine into a meaningful whole. Omolabi and Durosimi (2017) inform that the position images occupy in the newspaper is an important code for the reader as it affects the attention given to the news story, it gives significance and prestige to the information being relayed as well as the person it portrays.

Findings from previous studies about the environment suggest that environmental reporting is not an active feature in Nigerian newspapers. They found the major shortcomings to include lack of trained personnel in the field of environmental due to poor allocation of the news media's resources, which tends to focus on more sensational areas like politics, sports and entertainment which they consider as headlines unlike environmental reporting unless they are disasters that involves significant damage and loss of lives. This has been validated in a number of studies (John and Jonjua; 2018; Ogadimma & Mohamad; 2017; Uzochukwu, Ekwugha & Emmanuel; 2014; Okoro & Nnaji, 2012; Adelekan, 2009)

Studies on how readers interpret visual images suggest that photo news is an essential part of news texts (Ndinojuo & Ihejirika, 2019; Omolabi & Durosimi, 2017; Barret & Barrington, 2005). Omolabi and Durosimi (2017) emphasize that through visual coding, journalists' control the way issues and individuals are perceived, received, liked, and the kind of people they appeal to. Images are trickier than words because their contents are in a large measure expressive and instinctive by succinctly capturing so many layers of meaning in a restricted space and to a large extent devoid of illusion in its true form.

Ndinojuo and Ihejirika (2019) found out that most pictures used in Nigerian newspapers did not include source credit and caption which can affect the credibility of the photo and also deny the copyright holder from future earnings from their work. Journalists are able to influence perception of the news by astutely expressing their personal or institutional biases and judgments on news readers through visual representations. Every news picture suggests a value which is present as an implied meaning to create a certain news effect. This ability to create an effect to push a particular narrative has been one of the pitfalls of photography.

Sjøvaag (2011) points out that traditionally, photographs have been seen as a candid representation of reality, and continue to be used as forthright evidence of events, however, visuals are never objective. Moeller (1989) informs that the instrument used to create photographs is a camera, a technical device, dependent on the right conditions to capture reality, and always leaving out what is not seen in the image, or in today's world, editing specifics not desirable which Hameleers et al. (2020) refer to as conditions for use to spread misinformation and disinformation. However, these are mainly seen in cases involving politics, entertainment, highly charged environmental cases that would show significant damage to the eco-system capable of setting off litigations or news that has to do with bizarreness and sensationalism. . The study of

biodegradables does not fit into these categories thus, the motive to manipulate images is expected to be low and negligible.

Theory of Multimodal Discourse Analysis

This paper draws its theoretical foundation on the theory of Multimodal Discourse Analysis by Kress and Leeuwen (2006). Their method of multimodal discourse analysis is an adaptation of Halliday’s (2004) systemic functional linguistics in the analysis of semiotic language and its importance in decoding meaning. Kress and van Leeuwen (2006) are of the view that semiotic language performs three functions which are organizational, interpersonal and representational. This paper identifies with the representational function which depicts an experience or a version of reality. Kress and van Leeuwen continue that representation is a scale running from maximum abstraction to maximum representation of pictorial detail, and that an image may show every detail of the represented participant(s), or may abstract from detail to a greater or lesser degree depending on what the author wants the audience to decode. Every image has a representative meaning which can be “amplified, exaggerated, and more than real” (p.167).

In support, Igwebuike, Abioye and Chimuanya (2016) highlighted that images are most often “edited” and modified to suit users’ need or editorial policies before publication. Thus, analysis of images does not end at identifying the meaning in the images but also uncovering elements of bias and distortion from either presence (or foregrounding) or absence (or backgrounding) of certain features. Such modifications could be in the sharpness, colour, shape, size, or positioning of items in the pictures. Kress and van Leeuwen, (2006) further suggest that analysis of images in representational terms requires the identification of the represented participants, the process or the activity described and the qualities of the participants and the circumstances in which the action is being developed. Barthes (1977) sees photographs as absolute realism, and hence a “perfect analogon” of reality. In retrospect, previous studies were focused on the environment as a whole and their portrayal in the Nigerian media. This study sets itself apart by emphasizing on an aspect of the environment, biodegradables, and understanding their portrayal in Nigerian newspapers.

METHOD

This study used quantitative and qualitative content analysis and visual discourse analyses to examine the images used in reporting about biodegradables by selected Nigerian newspapers. Prasad (2008) defines content analysis as “the scientific study of content of communication” (p.174). Five online national daily newspapers were selected and analyzed based on their circulation which cuts across the six geo-political regions in Nigeria; they include; *The Guardian*, *The Punch*, *Leadership*, *Premium Times* and *The Cable* newspapers. The period of study was a five month period from April to August 2019. This was done with the understanding that June 5 each year is celebrated as World Environment Day; therefore, news stories from two months before and after the event would be relevant to the environment. The data gathering began with typing of the keyword ‘biodegradable’ in the search query of the websites of the selected newspapers, entries that fall within the research stipulations were selected and analyzed.

RESULTS AND DISCUSSION

The search produced a total of 12 news stories that had the keyword ‘biodegradable’ contained in the story in the five newspapers sampled. This is 12 (1.6%) from a possible sampling frame of 765. This indicates that biodegradable was not adequately covered in Nigerian newspapers, it conforms with the views of the previous scholars seen in the literature (John & Jonjua, 2018; Uzochukwu, Ekwughu & Emmanuel, 2014; Adelekan, 2009) who also found out that environmental stories were not adequately covered in news stories by the Nigerian media. This goes to show how stories about “biodegradables” are underreported in Nigeria. The research objectives are addressed below.

1. Determining attributes of images used in reportage about biodegradables in Nigeria newspapers.

A breakdown of the attributes of images on biodegradables is presented in table 1.

Table 1: Attributes of images in reporting about degradation

	Newspapers	Total Articles	Articles with images	Image Credits	Caption	Picture Position		
						T	M	B
1	<i>The Cable</i>	1(8%)	8(10%)	0	0	1	0	0
2	<i>The Guardian</i>	1(8%)	8(10%)	1	1	1	0	0
3	<i>Leadership</i>	3(25%)	3(30%)	0	0	3	0	0
4	<i>Premium Times</i>	2(17%)	2(20%)	0	2	2	0	0
5	<i>The Punch</i>	5(42%)	3(30%)	0	2	3	0	0
	Total	12	10	1	5	10	0	0

* T = Top, M = Middle, B = Bottom

Out of the 12 articles with biodegradable contained in the news, those with images were t10 in total; *The Punch* produced 3, *Leadership* and *Premium Times* produced 3 and 2 articles respectively while *The Guardian* and *The Cable* had 1 apiece. This indicates that pictures were adequately used in environmental reporting on biodegradables in Nigerian newspapers in about 83% of the total articles on biodegradables. This validates the views of Sjøvaag (2011) who pointed out how photographs have been seen as a candid representation of reality, and continue to be used as forthright evidence of events and also Barret and Barrington (2005) who affirmed the importance of visual messages and its influential on assessment of individuals or events. The use of images was used to show some environmental realities when it comes to

pollution in Nigeria using them to present impacts of waste management and the importance of adopting and maintaining policies that promote sustainable ideals in waste disposal.

The Punch was the newspaper with two of its stories having no picture accompanying the news item. Two of the pictures had source credits and six of them had captions. Ndinojuo and Ihejirika (2019) earlier hinted that most pictures used in Nigerian newspapers did not include source credit and caption which can affect the credibility of the photo and also deny the copyright holder from future earnings from their work. Thus, the photojournalists who took the pictures have been denied a source of additional income by not including their name on the image credit, not adding captions to pictures also leaves room for misinformation raised by Hameleers et al. (2020), Thus images from a different area, country or continent can be superimposed into reporting about another area. However, it is not wrong to use the image of another area in reporting about a different location if such is stated as a reference to what can become if there are no improvements to waste management practices. Such must be stated clearly, and the caption on the picture performs this function to remove ambiguity and misinformation.

Table 1 also looks at the pictures in relation to their position in the news story. All the images appeared at the top of the news article under the headline but before the text of the articles, and in some cases before the byline. This shows that the reporter and publishers intended for the audience to see the images before reading the text of the news. Omolabi and Durosimi (2017), and Igwebuike, Abioye and Chimuanya (2016) informed us earlier about the influence of picture position in the news and its importance in drawing the reader’s attention to the issue being raised, it gives significance and prestige to the information being relayed or the person it portrays before the audience reads the texts. It performs the function of preview to what to expect in the news or the direction of coverage.

2. Classification of the pictures into themes and also to determine its appropriateness or non-appropriateness in the story it appears.

The following themes emerged from the analysis of the images used in reporting biodegradables; they are summarized in table 2.

Table 2: Themes from images in reporting about degradation

S/No.	Themes	Frequency	Percentage
1	Environmental Pollution	5	50%
2	Plastic Products	1	10%
3	Politicians/Political	3	30%
4	Logo	1	10%
	Total	10	100

Four themes emerged from the images seen in news reporting about biodegradables in Nigeria; environmental pollution theme, plastic products theme, politicians/political theme, and logo theme, the pictures will be grouped together in their various themes and analyzed.

Environmental pollution theme



Figure 1: From *The Cable*, May 22, 2019.



Figure 2: From *Leadership*, August 1, 2019



File Photo shows a homeless man sleeps on a pile of plastic bags and newspapers under a porch on April 7, 2019 in Rome. (Photo by Vincenzo PINTO / AFP)

Figure 3: From *The Guardian*, April 8, 2019.



File copy: Plastic bags

Figure 4: From *The Punch*, May 21, 2019



Figure 5: From *Leadership*, August 6, 2019.

The pictures in Figures 1-5 embody environmental pollution; they are correctly used as the stories are about the use of biodegradable materials. Figures 1-2 show the impact of solid waste on land that is close to a marine environment without identifying the geographical location, while figures 3-4 show plastic polythene bags and other solid wastes on land. The image also portrays the problems associated with the use of plastics and non-biodegradable materials, and the challenges of their disposal. The beach close to the water can be a tourist attraction and holiday spot for families seeking relaxation, and also a possible foreign exchange earner for Nigeria. Some countries like Tunisia, Egypt, and Gambia etc. depend on foreign tourists to boost their economy. Nigeria has been talking about diversifying its economy with its budget tied to the price of global crude oil, the use of biodegradable materials will help in waste disposal and management as biodegradables can be broken down by microorganisms unlike the non-biodegradables as we saw in figures 1-4, beaches that should be stunningly beautiful and serene are instead turned into dumpsites for plastics that are non-biodegradable.

Figures 1 and 3 could fall under the purview of historical and iconic images with strategic pragmatic meaning of informing and persuading the government and other stakeholders in the words of Omolabi and Durosimi (2017). This is because of the extra layer of meaning afforded by the images in not only portraying problems associated with waste management and the need for improvement of recycling materials and adoption of biodegradable materials over non-biodegradables, but also shows the humanitarian disaster that some humans scavenge on solid waste for survival and shelter. Igwebuike, Abioye and Chimuanya (2016) stated the ability of journalists to modify images depending on what message they want to get across, both pictures calls the world's attention to do more to help the needy, less privileged and the homeless. In the views of Kress and van Leeuwen (2006), every image has a representative meaning which can be "amplified, exaggerated, and more than real" (p.167), the images have been used to amplify not only environmental problem, but also the world's humanitarian conundrum. It is a tragedy that in a world filled with billionaires; people still sleep at waste dumps or pick up food from dumpsites. The world can certainly do better than what is currently available. They represent Barthes (1977) assertion that regards photographs as absolute realism, and hence a "perfect analogon" of reality.

The image on Figure 5 shows an oil facility, the most likely interpretation is the issue of gas flaring; there is no evidence from the image about the contamination of the water body next to the oil facility. Gas flaring has been a challenge for the Nigeria government and its partner oil companies. The study will not delve into the intricacies of blame games between the Nigerian government and its partners about who is responsible for the air pollution, but one thing is clear, it is a harmful process to the environment and the people living in such areas. In making sense of figures 1-5, a cursory glance at the images indicates something amiss. The only reason such images can be used in news reports is to inform the readers of problems with the environment and the need to remedy them.

Plastic products theme



Plastic containers used to tell the story.

Figure 6: From *Premium Times*, August 14, 2019.

Refillable plastic water cans were used in figure 6 by *Premium Times* to talk about the challenges of disposing non-biodegradable plastic wastes. Citing from the literature (Ndinojuo & Ihejirika, 2019; Sjøvaag, 2011; Barret & Barrington, 2005), about the function of images in news, and how they can attract attention, and processed by the audience before reading the texts of the story, images have the ability to give the reader a preview of what to expect, and for figure 6, it depicts either two things, the first is showing refillable plastic water containers, and the second, the challenges with using plastic products that are non-biodegradable. From the article, however, which was on the proposal by environmentalists for tighter restrictions on plastics wastes at the Conference of the Parties to the Basel Convention (COP14) in Geneva, Switzerland proposed by Norway. They recommended South Africa's strategy in handling its plastic wastes where 45% (significantly higher than the global average) are recycled and some countries exported their wastes to lower-income countries in Southeast Asia and Africa where adequate infrastructure to handles such wastes are lacking.



Figure 7: *Leadership*, July 21, 2019



Figure 8: *Premium Times*, May 21, 2019.



Figure 9: *The Punch*, August 30, 2019.

The next theme deduced from the study was the political theme. Politics is essential in the environmental movement because political will is needed for good governance and passing eco-friendly policies and regulations. The politicians are those who will sponsor the bills, vote on them in the parliament and sign them into existence. The two most important branches of government in this regard are the Executive and the Legislature. The Executive and /or the Legislature sponsor bills, but only a legislative member may propose the bill for debate on the floor of the house including those that have to do with the environment and use of biodegradable materials. Once the bill passes through the legislative processes, it is presented to the Executive for assent.

Figure 7 from *Leadership* newspaper had no source credit or caption, to properly identify the figure, the image was uploaded to Google Image Reverse Search, and it revealed him to be Boss Mustapha, the current Secretary to the Federal Government of Nigeria.

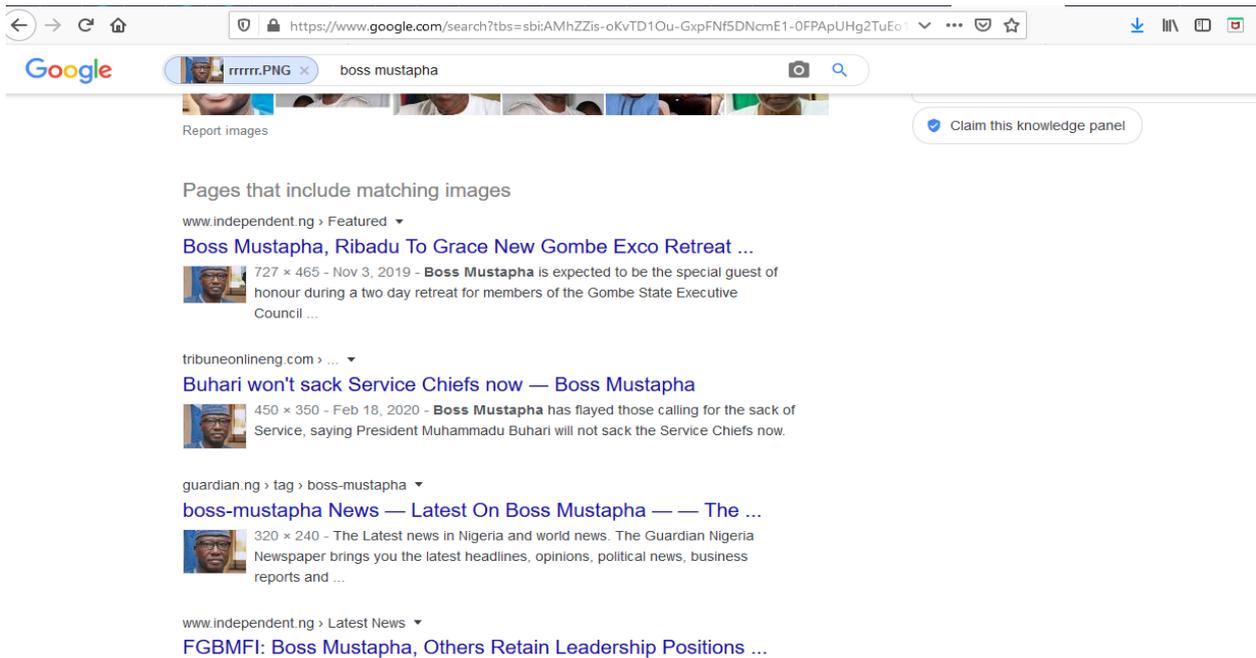


Figure 10: Reverse image search on Google results for Figure 7.

This is a very important political position in Nigeria as all official communication with the Federal Government of Nigeria passes through his office. Thus any policy initiative about the environment and biodegradable materials will also pass through his office, and if the Executive branch of government wants to sponsor a bill on the Environment or biodegradables, it is expected to emanate from his office. The story where this picture appears, however, does not mention the office of the Secretary of the Federation of Nigeria or Boss Mustapha by name, however, the story was about the pending passing of regulation by the parliament to ban non-biodegradable plastic bags in the country and its positive impact on agriculture, environment and well-being of humans, aquatic lives and livestock. We can assume that his picture was used in the story because of the strategic office he occupies in government and the importance of the office to any legislature that would be assented to by the President. The journalists or the editors should have mentioned the relevance of the person whose image appears alongside a story at least once in the text, it shows dissonance to talk about a group of specific people and use a different image that no reference is made to in the text.

This could also be under the ambit of misinformation as raised by Hameleers et al. (2020). Any image used to further a story needs to have a connoted connection to the text as proposed by Kress and Leeuwen (2006) in their multimodal discourse analysis for meaning to be extracted from the elements of the information. Additionally, they suggested that analysis of images in representational terms requires the identification of the represented participants, the process or the activity described and the qualities of the participants and the circumstances in which the action is being developed. The image of Boss Mustapha as presented in the text was not identified, his qualities such as his position and relevance to the text were not stated neither was the circumstance for his appearance within the text or in furtherance of the biodegradables movement.

Figure 8 of the *Premium Times* depicts parliamentarians on the floor of the house holding a seating. The story rightly titled “Reps move to criminalise use of plastic bags”. As stated in the tile and shown in Figure 8, “Reps” means members of the House of Representative (Lower House) in Nigeria, together with the senate are the National Assembly, the law making branch of government (Legislature). From the title, we can see that the government is making moves towards the ban of plastic non-biodegradable bags and approval for biodegradable materials to be used in commercial and household packaging. The deduction is that government understands the menace of plastic non-biodegradables and is putting measures in place to combat the pollution and defacing of the aesthetics of areas affected by solid waste associated with non-biodegradable plastics. The image is in agreement with the idea of Kress and van Leeuwen (2006) it is representational of the situation and the participants are identified as well as the qualities of their identification which was to make laws regarding the banning of non-biodegradables and towards the adoption of biodegradables for public and commercial use.

The caption on figure 9 makes identification easier, the political figure was identified as Governor Babajide Sanwo-Olu of Lagos state. He is also an important part of the Executive as the governor of Lagos state, with an abundance of marine resources; non-biodegradables will be of concern so as not to litter the waterways and the city itself. Lagos holds the distinction of being the former capital of Nigeria and is still regarded as the commercial capital as the main port city and a very busy international airport, Lagos is very strategic to Nigeria’s economy. The news report where Figure 9 appears has the Governor urging

manufacturers to turn to biodegradable materials in the packaging of their products in order to help the state combat waste management. He also stated that at the inception of his administration, he signed “an executive order with clear instructions to the management of Lagos State Waste Management Authority to implement strategies that will ensure proper and efficient evacuation and disposal of waste across the state”. Omolabi and Durosimi (2017) averred about journalists use of an image to have a strategic pragmatic meaning directed towards achieving both informative and persuasive functions of the newspaper. The governor is employing persuasive communication in his attempt to convince manufacturers in the state on the need to switch to biodegradable packaging materials towards managing solid wastes effectively.

Logo theme



Figure 11: *The Punch*, July 17, 2019.

Figure 11 showed the logo of the National Agency for Food and Drug Administration and Control (NAFDAC) in Nigeria. The article begins with the dangers of plastics and how dead whales have turned up on beaches with belly filled with plastic materials and the dangers of plastics to marine organisms and humans. Figure 11 is relevant to the study because NAFDAC is the agency in charge of food and drugs, the process of packing food and drugs involves the use of plastics materials which requires the approval of NAFDAC. In this case, the agency has the mandate to ensure that manufacturers use packaging that is not harmful to humans, animals and the environment. As highlighted by Igwebuikwe, Abioye and Chimuanya (2016), that images are most often “edited” and modified to suit users’ need or editorial policies before publication. The image displaying the logo of NAFDAC was edited for the same purpose, the readers understand that at the heart of the discussion would be the requirement for NAFDAC approval for the use and adoption of biodegradables by any food and drug company in Nigeria.

CONCLUSION

The study of biodegradables in media studies in Nigeria is recent and non-existent before this study. Most studies have focused on media coverage of the environment as a whole with pollution (solid waste, land pollution, water and air pollution), and government responses and policies towards protecting the environment being the focus. Like the general theme of environmental studies in Nigerian media, biodegradables have also been underreported in Nigeria newspapers, pictures were used in most of the reports to provide clarity towards the text, and to this end, the study recommends the following; the training of more media professionals towards reporting the environment in general and biodegradables in particular, allocating more resources to journalists to be able to attend national and global environmentally themed events, the media is studying biodegradables should use images that have a relation to the story and also include source credit and caption to improve the quality of the reporting and also for the benefit of the photojournalists towards adding to their catalogue and resume, finally, biodegradables should be considered a viable alternative towards the effective management of solid wastes, to this end, regulations needed towards the adoption by manufacturers and end users should be expedited and passed into law as we develop sustainably towards the next level of humanity.

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