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**Infographics, New Media and Media Consumption
Habits in Nigeria**

by

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Table of content

1. Acknowledgments
2. Introduction
3. Literature reviews
4. Research method
5. Result
6. Discussion
7. Conclusion
8. Glossary
9. References

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Infographics, New Media and Media Consumption Habits in Nigeria

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Abstract

Informational graphics or visual representation of information and its blend with other new media tools are now used by journalists and media houses all over the world to support their work. With changing lifestyles in a world of information overload, journalists and media houses are now inclined to process data and information that make news quickly and easier using infographics which come to consumers in a short, clear and virtually attractive manner. Additionally, with charts, graphs, pictograms and other visual tools, consumers could be more engaged and may be more likely to repeatedly get news from media sources that use them in news reports. Using infographics and new media tools such as YouTube, Twitter, and Facebook to report business, political and economic news in quick and clear forms is now an established practice in developed media systems such as in the West, but this has just begun to gain traction in the Nigerian media space.

Against this background, this study engages in a comparative analysis of the history, importance, and benefits of infographics, in general, and in the media, in particular in Nigeria. It looks at the history of the Nigerian press, as well as the scale of use of infographics and new media tools in communicating business stories in the country by its journalists. It also measures the level of approval of this new trend in the Nigerian journalism space.

1.1. Introduction

The aim of this paper is to discuss the use of infographics in business news reporting in Nigeria and the necessity of expanding and deepening the practice. The following research questions are addressed in this paper:

1. How often do newspapers in Nigeria use infographics in news reports?
2. Why are newspapers and online/digital media outlets in Nigeria relying more and more on infographics for news reporting, features, analyses and opinion articles?
3. How do infographics enhance media reports of news in Nigeria?
4. What factors determine the greater use of infographics in news reports in Nigerian newspapers?

1.2. Context

Humans have long used graphics to tell stories or point out information with great efficiency. Graphical information practice had been in existence amongst geographers and cartographers who plotted and made maps, but it remained that way until about the 18th century when scientists warmed up to arranging knowledge visually (Black and Jeremy 1955; Lankow, Ritchie and Crooks 2012; Errea 2017: 3).

Though the history of infographics is outside of the scope of this research, however, there are important milestones that should be mentioned, and they include that of British polymath, Joseph Priestley who produced a 'Chart of Biography,' and in which he plotted in 1765, the lives of about 2,000 historical figures on a timeline. With the chart, Priestley, reportedly conveyed information "with more exactness, and in much less time, than it would have taken by reading."ⁱ Thus creating what was perhaps the first modern timeline, Priestley, followed up in 1769, with the 'New Chart of History', and they became influential artifacts in historiography as well as in the history of infographic designⁱⁱ. With the chart of history, Priestley, posited that a

novice in history could learn from it in few hours by mere intent inspection what it would take months or weeks to learn by reading. Rosenberg 2007:63.

The practice of data visualization came into its own in the early 19th century when institutes began to collect and publish amounts of information about weather; economic activities; and population changes. William Playfair, an early innovator in Statistical Graphics published in 1786, 'The Commercial and Political Atlas,' showing bar charts, line graphs and histograms which represented the economy of England, and he subsequently followed up this work in 1801, with the first area chart and pie charts.

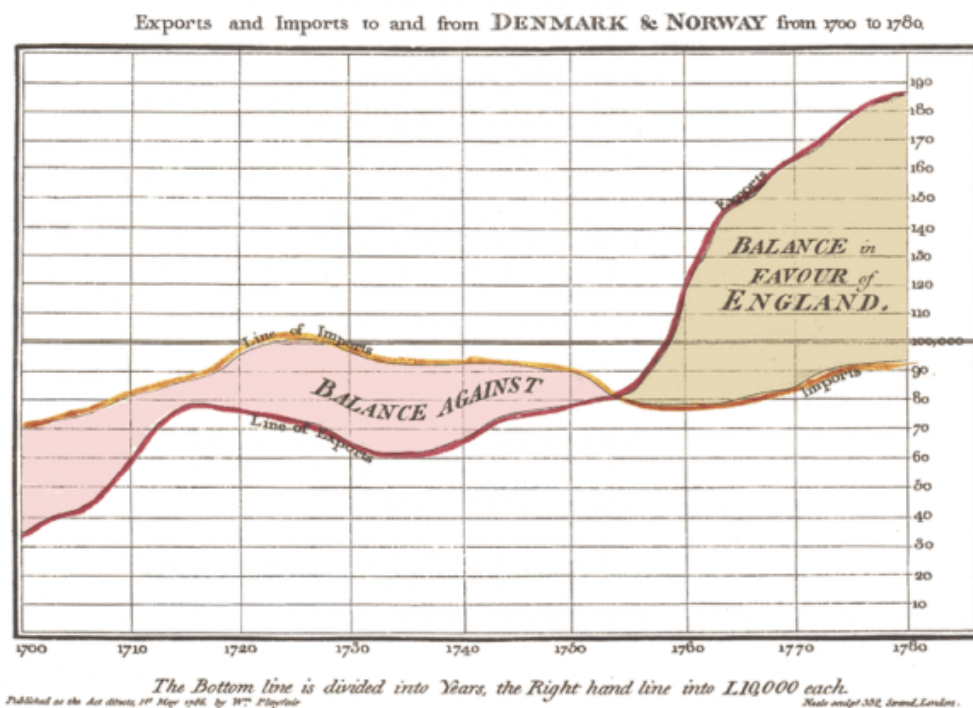


Figure 1. William Playfair's The Commercial and Political Atlas – sourced from Infogram

Further in 1857, an English nurse, Florence Nightingale, employed infographics, largely the coxcomb chart which is a combination of stacked bar and pie charts, to persuade Queen Victoria to improve conditions in military hospitals.

Nightingale's chart (fig.1) graphically showed the number and causes of deaths each month during the Crimean War. It depicted the preventable diseases in blue color; wounds in red, and other causes in black.

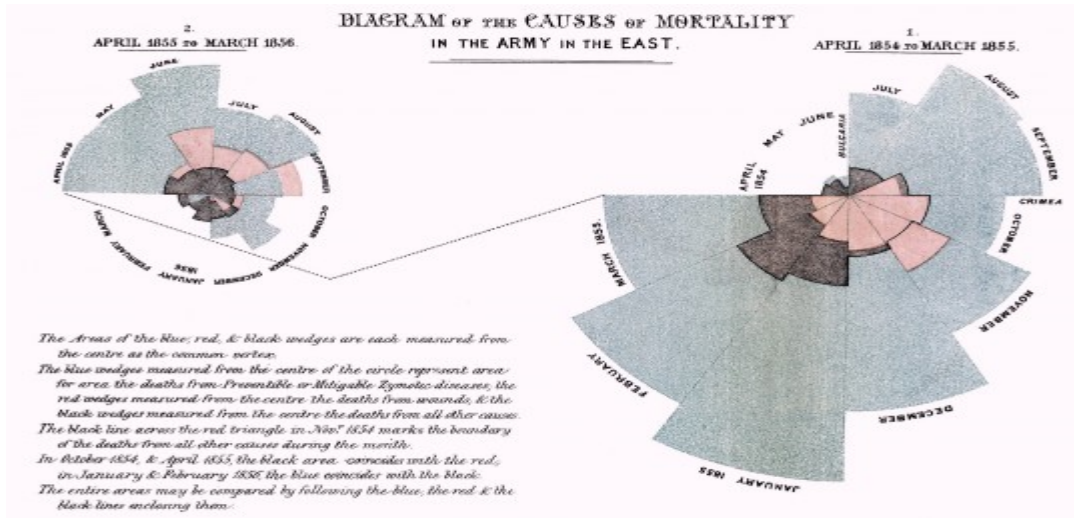


Figure 2. Florence Nightingale's coxcomb chart

Yet, another interesting milestone in the history of the use of graphics to communicate in-depth information was in the diagram of a Liverpool slave ship *Brookes*, as depicted in the work, "Stowage of the British Slave Ship 'Brookes' under the Regulated Slave Trade, Act of 1788". Conway 2012, noted that, "despite its undoubted power – the diagram moved people to tears as early as 1789."

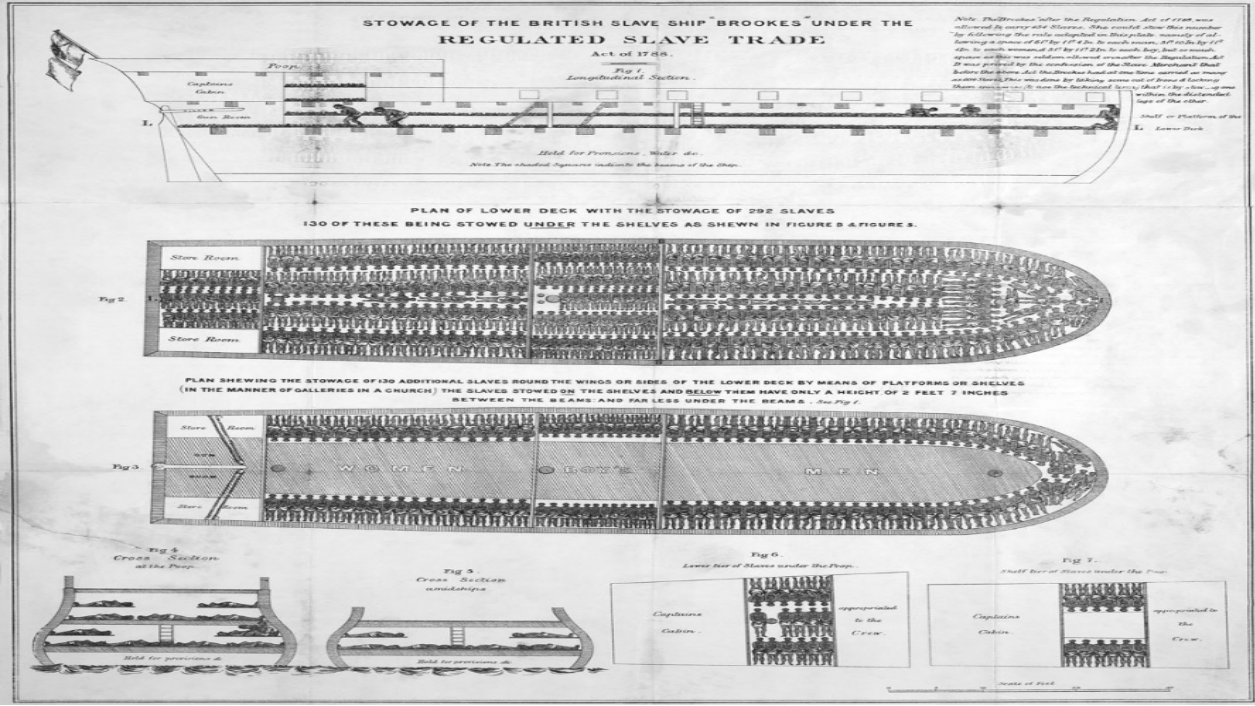


Figure 3: description of the slave ship Brookes 1788. Courtesy the Eye Magazine.

Again, in 1933, an English technical draughtsman, Harry Beck, pushed further the borders of infographics when he created the first map of the London Tube. In it, he showed only lines to describe public transit routes and stations, and this became an important milestone because it moved visual diagrams into everyday life.

Beck’s efforts at advancing the use of diagrams to illustrate human everyday life was taken a notch higher in 1972 by German graphic designer and typographer, Otl Aicher, who created a set of pictograms for the Munich Olympics that featured stylized human figures.

While simplifying things for travelers and tourists at the Olympics, Aicher’s infographics became really popular and influenced the design of many public signs such as the generic stick figure crossing the street on a walk sign.

Just about three years after Aicher’s pictogram, American statistician and professor emeritus of political science, statistics, and computer science at Yale University, Edward Tufte, in 1975,

pioneered data visualization alongside John Tukey while teaching at Princeton. Tufte, later self-published *Visual Display* in 1982, to establish himself as an infographics expert.

Recent history of infographics has evolved to include the use of charts in Microsoft Office-oriented software such as Excel and PowerPoint, and this resulted in the explosion of easy-to-use data visualization tools. It equally meant that infographics became increasingly usable in the academia, business intelligence and other sectors.

1.3. Key concepts

Infographics in news reporting

There is no certainty about when graphics were first used in the history of newspapers. However, J. Errea (2017), stated that historians believe that the world's first newspaper, *Daily Courant* of London, was published on March 11, 1702. In September of that year, the newspaper featured a graphic on its front page. Further, Errea (ibid) posited that the *Times* of London, which was founded in 1785, included graphics in its regular news diets, and on April 20, 1801, included a map – the site of the Battle of Copenhagen, on its cover page for the first time. The first weather map in a newspaper was also published in the *Times* on April 11, 1875.

On his part, Woo (2015) indicated that visualizing information and data in journalism started in the mid-1900s, when publications such as, "*Fortune magazine, Businessweek* and *Popular Mechanics* began to use 'infographics' regularly" to communicate complex information and data to their audiences. Woo explained that the development also overlapped with the popularization of computer-generated graphics using programming languages and software tools in research laboratories.

The usage of graphics thus increased the ease and clarity of information to media audiences, especially as magazines and newspapers articles presented various subjects like industrial,

economic, social, scientific, military issues along with data visualization and infographic applications as they relate with the content of the information.

Similarly, in their work, *Milestones in the History of Thematic Cartography, Statistical Graphs, and Data Visualization*, Friendly and Denis (2018) indicated that the use of infographics in the mass media gained some more traction when the *USA Today* in 1982 began to include color weather maps in its publications and this further popularized color information graphics in newspapers. The former illustrator and artist of *USA Today*, George Rorick, combined color, maps, tables, symbols and annotations to change weather information that were often dull and incomprehensible to become interesting and accessible.

Further in the 2000s, Woo stated that the ubiquity of the internet helped propel the popularization of infographics in the mass media, and a new type of media practice, data journalism, emerged. The *New York Times* created a platform – *The Upshot* – to be at the nexus of data and news, and other media houses also looked at new ways to present information.

Today, infographics are at the heart of newsrooms and newspapers like *The Guardian* (London) has adopted its use by creating “interactive teams, one of which is concerned uniquely with its US audience, as well as the *BBC* and *The Times*, which have visual journalism presence in their news reporting.” (Dick 2019).

In 1993, *The Miami Herald* got a Pulitzer award for its investigation on Hurricane Andrew. The investigation (Cairo 2014), was based on cataloguing and mapping as well as real on-the-ground reporting “through the use of its journalistic resources which may include editorials, cartoons, and photographs.” (Pulitzer 2019).

Infographics and digital news reporting

The surge in journalistic infographics have been helped mostly by the arrival of computers in newsrooms (Errea 2017), and this started in the 1990s when newspapers and magazines began to go digital, and then further on to mobile platforms. The Society for News Design (SND) in

the United States sustained this before it got to Europe, particularly Spain through the works of the Communications Department of the University of Navarra which also created the Malofiej World Summit and International Infographics Awards – the most important event in the field.

In its 2015 Future of News Project, the *BBC* observed that the internet would become a big influencer in news rooms, as well as visual mode of storytelling. It also explained that, “more stories will be found in government data, corporate data, data obtained under the Freedom of Information Act and the growing quantity of sensor data – whether on smartphones, wearable devices or drones,” adding that, “news organizations can add value to data by gathering it, analyzing it and presenting it in interesting and innovative ways.”

Infographics and news reporting

Infographics are used in any industry where information needs to be communicated to an audience and journalism is not different. Reports indicate that an infographic illustration is more likely to be read or noticed than a purely textual illustration or presentation of information.

Thus, in journalism, infographics have come in the form of data-centric infographics - illustrating stories from multiple datasets and important statistics to support a subject matter. They create simplified stories from dense datasets. There are also infographics which focus on timeline and often told of the history of events or subjects in chronological mode. These are easier to comprehend because they often display multiple events chronologically including changes therein.

Geographical infographics are also used in journalism to illustrate or support stories about locations of events. There is equally the flow chart infographics, which are used often to communicate the split off or growth of a subject matter to the audience in clear and captivating mode; just as there are the list, photo-based and interactive infographics amongst others used in news rooms to communicate.

In an article centered on the simple techniques that could be used to bridge gaps in graphics communication in newsrooms, Alan Smith who heads the infographics department at the *Financial Times* (FT), further identified nine different categories of infographics the FT has curated into its FT Visual Vocabulary which include deviation, correlation, ranking, distribution, change-over-time, part-to-whole, magnitude, spatial and flow.

Smith, 2016, further noted that the FT Visual Vocabulary was, “at the core of a newsroom-wide training session aimed at improving chart literacy,” and how to recognize the opportunities to use them effectively alongside words.

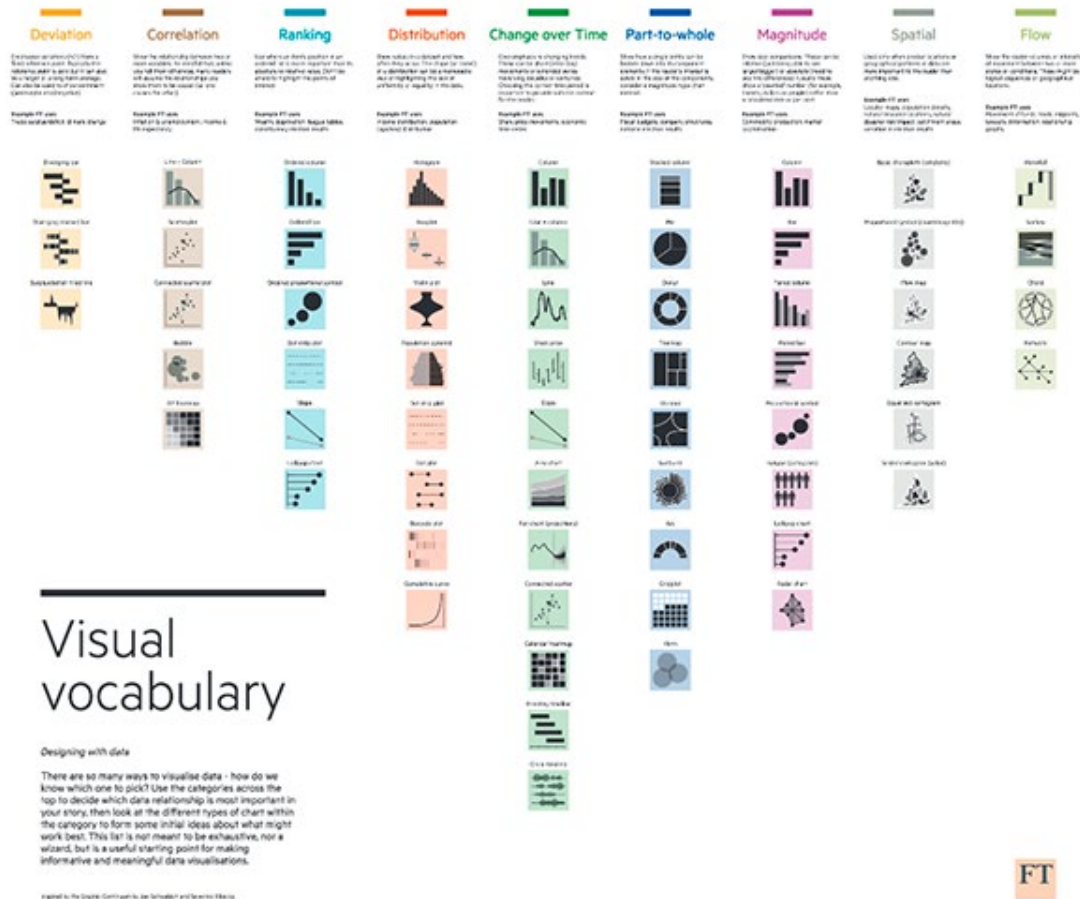


Figure 4: FT Graphics: ft.com/vocabulary

1.4. The Nigerian news media

Print and broadcast journalism did not start off equally in Nigeria. A missionary, Rev. Henry Townsend, started the first newspaper in Nigeria in 1859. *Iwe Irohin (fun Awon Egba ati Yoruba)*, a Yoruba newspaper, was published by Townsend to pass information to people and likewise encourage them to read. (It ceased publication in 1867).

After initial teething troubles of manpower shortage and poor technology which lasted until the 1950s, newspapers in Nigeria became highly dominated by private ownerships, and subsequently rose from their nationalist postures to becoming inclusive mediums for communication and information dissemination.

This development continued with the publication of *The Lagos Times*, a bi-monthly newspaper that aggregated the opinion of people on topical issues, on November 10, 1880 by Andrew Thomas, and then the Nigerian *Daily Times* in 1926 by the Nigerian Printing and Publishing Company. (Babalola 2002). *The West African Pilot* (depicted below for illustration) in 1936 and *Nigerian Tribune* in 1946, strengthened the newspaper business in Nigeria well into 1986, when about 30 daily newspapers, 25 weeklies and several monthlies were publishing in Nigeria, in addition to evening newspapers which gained tractions.



Figure 5: A January 31, 1961 copy of the West African Pilot: Source: George Ibenegbu

1.5. Purpose of research

The purpose of the research is to examine the effectiveness of informational graphics in Nigerian print and online newspapers and by journalists in Nigeria. The research also examines the level of adoption of infographics as a reporting tool by journalists in Nigeria. This study focuses on the use of infographics in reporting of business and economic news in print and digital media outfits.

1.6. Significance of research

Based on the status of the Nigerian media in Africa, this research will significantly provide a valuable report on the state of data visualization in journalism practice within the country. It

will serve as a reference point on journalistic and academic discussions about the usage of informational graphics in the Nigerian press.

1.7. Scope

The research covers infographics works and contents of news in media outfits in Nigeria – *The Cable* and *Premium Times* (Digital); *Business Day* and *Daily Trust* (Print). Business journalists and their application of infographics in news reports in Nigeria are also covered by this research. It also analyzed the infographics works of British media outfits – *Financial Times* and *The Guardian* (print), and the *BBC* (digital), not for comparison but for the potential lessons to be learned.

Beyond the media use of infographics, it also looked at the infographics contributions of a Nigerian civic organization, the BudgIT, with regards to media use of the informational graphics it often developed and put out on issues around the national economy.

The units of the research analysis will include a content analysis of 180 editions each of the two Nigerian print newspapers covering a period of January to March 2019, and a comprehensive content review of the two digital newspapers. It will also include a one-month content review of the two British print newspapers for the month of March 2019, as well as a comprehensive review of the content of the *BBC* digital.

Items that will qualify for the content analysis will include business related news, features, analysis and opinion on the pages of the newspapers.

Other units of the research analysis will be an online survey of 20 business journalists and editors in Nigeria, with nine questions set in a questionnaire for responses. The questions are drawn from the central research questions.

2.0. Literature review

Literatures on infographics in journalism are rare because it is a relatively new field of practice and study. However informational graphics or data visualization are important in the digital age, as text based communication can seem daunting for online readers.

Errea (2017) in the book, *Visual Journalism: Infographics from the World's Best Newsrooms and Designers*, inferred that the practice and art of infographics have largely been helped by journalism, which is the major industry that consumes infographics because it is still the primary gateway for information to the audience. It noted specifically that while technology may have greatly helped to advance infographics in journalism, the best infographics in journalism have never really come through technology alone, implying thus that newsworthy events are also important for great journalistic infographics to emerge.

With regards to the place of digital technologies in the progress of infographics and data visualization, Gray, et al (2012), in the book, *Data Journalism Handbook*, maintained that digital technologies and the web have significantly impacted on how information is passed to audience using data journalism or computer assisted reports (CAR) which may have benefitted from some level of visualization or infographics. The book thus implied that there is indeed a thin line between visual or infographics and data journalism. In fact, Gray, et al (ibid: 186), described (data) visualization as the “workhorse of data journalism” stating further that it, “illustrate a point in a story in a more compelling way. Remove unnecessarily technical information from prose,” and provides readers with transparency of a report particularly when they are interactive and exploratory. The authors (ibid: 189-206) further highlighted the simple but important processes of convergence between data and visualization. They however posited that while the human brain devotes about half of its attention to processing visual information, infographics that are well-designed provide viewers profoundly immediate impression of a subject, thus cutting through any complexities to deliver the right messages.

While aesthetically engaging viewers, these pages also explained that infographics are less emotionally charged and deeply rooted in measurable facts. Gray, et al (ibid) argued that infographics leaves information about facts, trends or processes in the minds of viewers even after they stopped looking at it, adding that information about time changes; values contrast; connections and flows; hierarchy; and envisioning substitute outcomes could be presented in infographics. The book further provided an advisory on when it is appropriate to tell stories

using infographics, as well as available Do-It-Yourself (DIY) options journalists could explore to make good infographic stories.

In their works, 'When Does An Infographic Say More Than A Thousand Words? Audience evaluations of news visualizations,' Haan, et al (2018: 1293-1312) affirmed the observations of Gray, et al (2012), when they discovered from a research on how audience accepts news visualization, that approachable and aesthetically pleasing visualizations attract audience attention. Haan, et al (2018: 1303), noted that the forms and functions of an infographic determine the level of appreciation a news consumer shows to it, adding that even the integration of text and visuals are important in getting news consumers to appreciate the use of infographics in a news material.

In *Visual Storytelling: Infographic Design in News* (2015), L. Yikun and D. Zhao, showed that data journalism enables traditional news to be told using digital information in the forms of data visualization; graphic-based news; and data map. They argued there is basically no clear boundary between data visualization and graphic-based news because graphic news is data visualization in the broadest sense (ibid: 8). They however pointed out that the difference between both was in the illustrative approach of news graphics in delivering traditional news stories, while data visualization relied on statistics and presentation of digital information.

In *Africa and the Digital Divide*, Fuchs and Horaks (2008) argue Africa remains the continent most struck by poverty and other global problems because it has not leveraged the efficiencies of digital communication, which in the global perspective of capitalism - the accumulation of economic, political, and cultural capital, is shaped by knowledge and computer-based information and communication technologies – a sphere that infographics has been found to be actively relevant in. Similarly, in their work, *Open Data Portals in Africa: An Analysis of Open Government Data Initiatives*, Bello et al, 2016, stated that seven of the national data portals reviewed in their research included visualization as a key feature in data presentation. This indicated that with such functionality, the public could understand the dataset as they are presented.

Swires-Hennessy, 2014, in the book, *Presenting Data: How to Communicate Your Message Effectively*, stated that handling and interpreting data are as important as communicating them clearly for a wide and diverse audience to understand. Similarly, the book explained that presenting data has been magnified by the advent of internet which now makes it possible for audiences whom they may not be originally intended for to have them. It added that the better data is presented, the better the chances that the message intended is understood.

Further, Swires-Hennessy (ibid: 107) indicated that with internet-based style of data presentation, stories previously buried in data now come alive, in addition to advancing accessibility.

3.0. Research Methods

3.1. Method

This research involved an investigation of the use of informational graphics as a journalistic tool to support news reporting in Nigerian media. As representative samples, the study focuses on how four Nigerian print news outlets – two print, and two online/digital newspapers use informational graphics to either report business or related stories on their platforms. The outlets are *Daily Trust* and *Business Day* (print), and *Premium Times* and *The Cable* (online).

However, since it is difficult to establish exactly when these news outfits began to fully incorporate informational graphics in their everyday news reports, the first step in the research is to establish what has changed in the design layout of the newspapers vis-à-vis the incorporation of infographics.

Three approaches were used to gather data for this research. The first was interviews with randomly selected but relevant respondents/participants such as newspaper business editors, journalists, statisticians and data visualization experts; the second was online survey of how 20 Nigerian journalists use infographics in their news reporting and presentations; and the third was content analysis of three months editions of the two Nigerian print newspapers, as well as

broad-based content analysis of the online newspapers to establish their use of informational graphics in their news deliveries.

The broad-based content analysis of the online newspapers was adopted because it was difficult to track the day-by-day presentation of their infographics outputs. It was discovered that apart from adding infographics in their news reports, both online outfits – *Premium Times* and *The Cable* – have also created separate webpages that host infographics created to accompany deep-dive investigative reports on developments in the Nigerian economy and other aspects of the country's national life.

Also reviewed were one-month edition each of two British newspapers – the *Financial Times* and *The Guardian* – as well as a holistic review of the online editions of the *BBC*. The review of the infographic contents of these British news outlets was not done for comparison, but more to buttress the excellent use of infographics to translate data which are potentially powerful democratic forces in journalism.

This thus sets the context for the research by clearly defining its objectives, and the methods used to achieve them.

3.2. Data Collection

3.2.1. Questionnaire

An internet/e-mail-based questionnaire titled: 'Use of Infographics in Nigeria's Newsrooms', was designed with nine (9) questions formed from the research questions. In addition, the questionnaire also tested: newsrooms' knowledge and skills of infographics; importance of infographics as complement to news reports; and newsrooms' management of infographics as a journalistic tool.

The prepared questionnaire was sent to 20 Nigerian journalists for response. 17 responses to the questionnaire were received within five (5) weeks, and follow ups were made with the three (3) non-respondents who eventually declined to participate in the survey.

3.2.2 Content Analysis

The content of 180 editions each of the two sampled Nigerian print newspapers covering the periods January to March 2019, were analyzed and volumes of infographics used in journalistic reports covering business (news, analysis, features) and other related reports were determined in this research.

The decision to focus on January to March editions of the newspapers was informed by their relevance to the duration of the research which was three months.

With regards to the two digital Nigerian newspapers, the content analysis for them was broad, and not restricted by months. This is due to the random production and use of infographics for news reports by the digital outfits. Such production style was not based on time but need basis.

Further on content analysis, the two sampled British newspapers were reviewed for only a month – March 2019, and more so because they were not the primary focus of the research, but rather served as support illustrations of the strength of infographics in news reporting. The BBC online was also reviewed extensively in this regard.

3.2.3. Interviews

Physical and online interviews were conducted for ten (10) participants, and questions formed from the outcome of the online survey were asked for which they provided valuable responses that formed parts of the research discussion and recommendations.

3.2.4. Outline of analysis methods

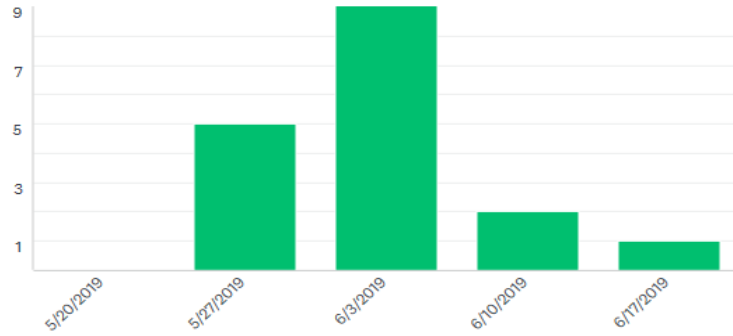
The insights and data trend analysis for questionnaire administered to the 20 Nigerian journalists showed the average response time for the survey was 1 minute 52 seconds, and the highest responses were recorded on the third week of its distribution.

Trends

Responses (by week)

First: 6/1/2019 Zoom: 5/20/2019 to 6/17/2019

Chart Type Trend by... Zoom



Weekly (Starting on the date)

Figure 6: 5-week track up of response to online questionnaire

Q1 (by day)

How often do you report business news in your media?

Answered: 17 Skipped: 0 First: 6/1/2019 Zoom: 5/19/2019 to 6/17/2019

Chart Type Display Options Trend by... Zoom

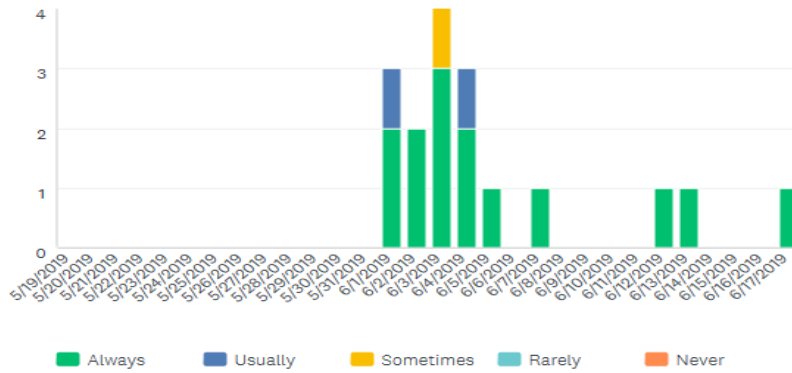


Figure 7: 5-week daily track up of response to online questionnaire

4.0 Results

4.1. Survey outcome

Relating to the central research questions, 82.25% of the 17 Nigerian business journalists and editors who participated in the online survey stated that their respective media platforms ALWAYS report business news, while 41.18% of them disclosed that their audience ALWAYS understand the content of the business news they deliver to them. 47.6% of the respondents said they believe their audience USUALLY understand their news reports.

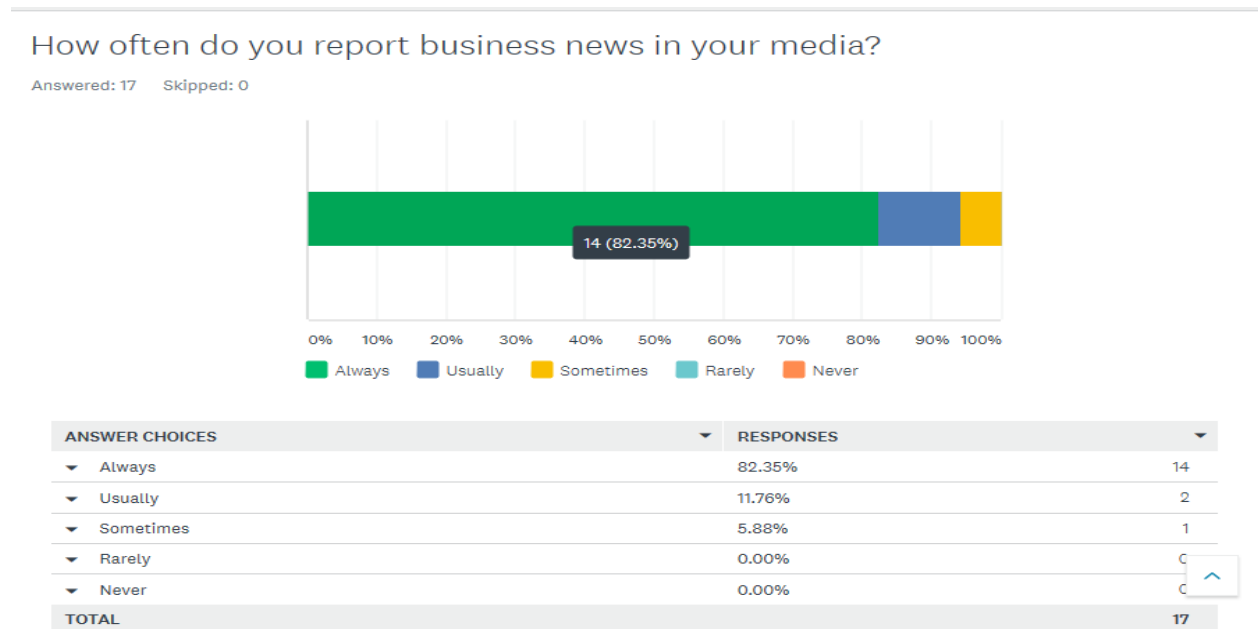
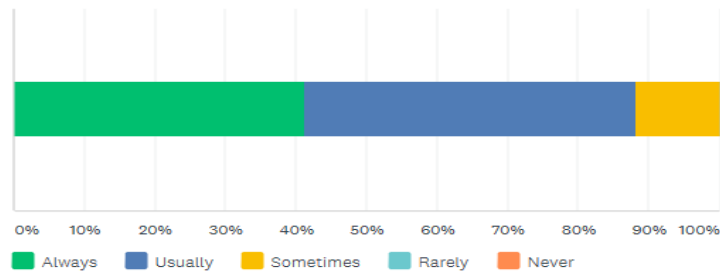


Figure 8.

Would you say your audience understand the content of your business news reports?

Answered: 17 Skipped: 0



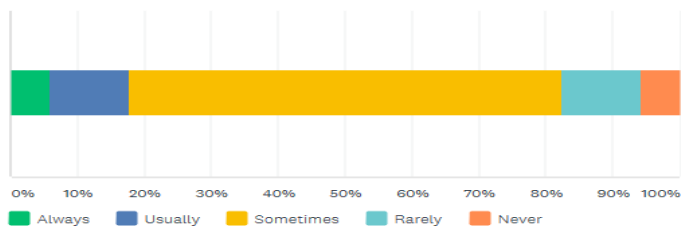
ANSWER CHOICES	RESPONSES	
Always	41.18%	7
Usually	47.06%	8
Sometimes	11.76%	2
Rarely	0.00%	0
Never	0.00%	0
TOTAL		17

Figure 9.

With regards to the research questions and by extension knowledge and skills of infographics, 64.71% of the journalists and editors disclosed they SOMETIMES use infographics in their business news reports, while 94.12% disclosed that they believe the use of infographics in their business reports will VERY LIKELY enrich the content and appeal of the business reports they serve to their audience.

In your business news reports, do you use infographics to tell your stories?

Answered: 17 Skipped: 0



ANSWER CHOICES	RESPONSES	
Always	5.88%	1
Usually	11.76%	2
Sometimes	64.71%	11
Rarely	11.76%	2
Never	5.88%	1
TOTAL		17

Figure 10.

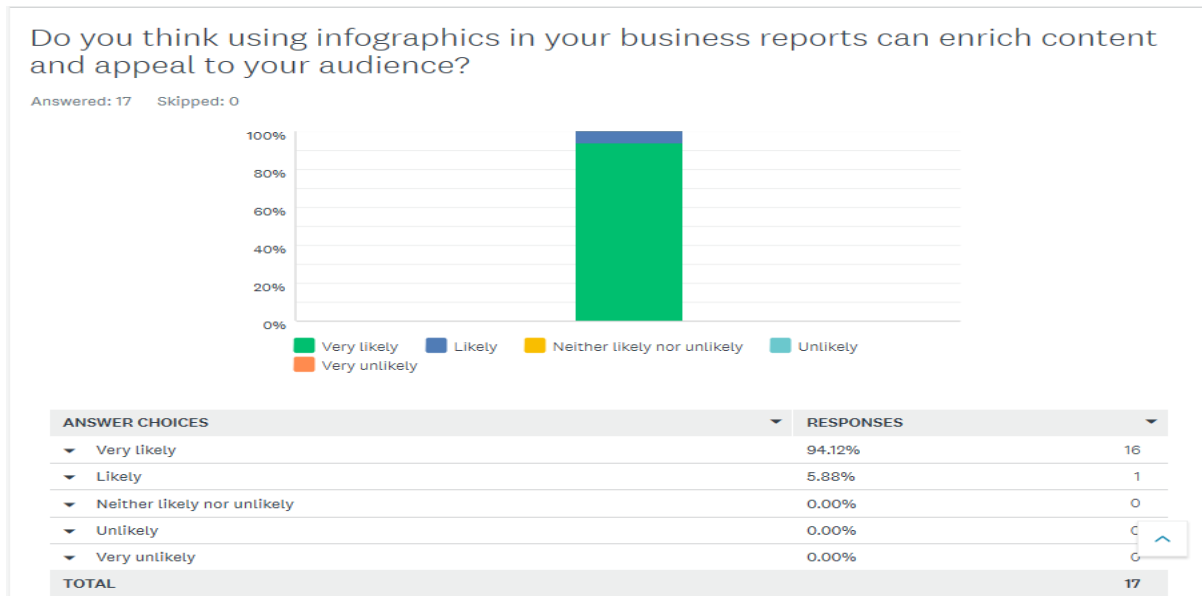


Figure 11.

Similarly, to buttress the importance of infographics as complements to news reports, 70.59% of the journalist respondents stated that they believe their audience will VERY LIKELY be happier to read business news reports with infographics accompanying them, and another 29.41% also said their audience will LIKELY be happier to read business news reports with infographics embedded in them.

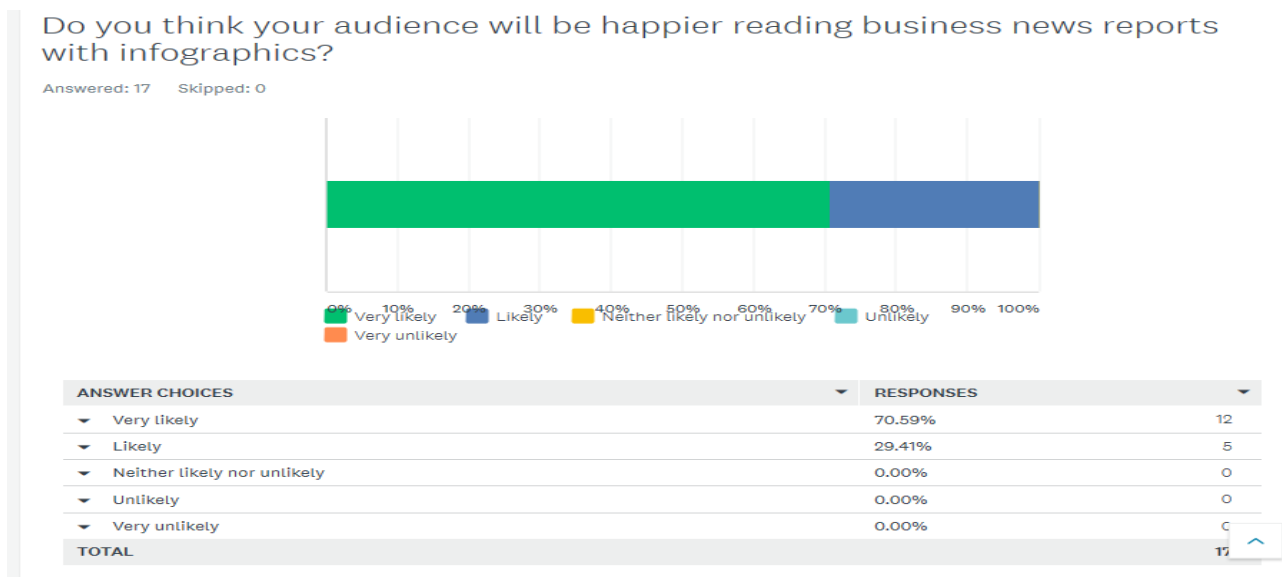


Figure 12.

Further, 52.94% of the respondents stated that they will VERY LIKELY include infographics in their reports of business news to their audience. 41.18% responded that they will LIKELY use infographics in their reports, and 5.88% stated in their response that it is UNLIKELY they will use infographics in their business news reports.

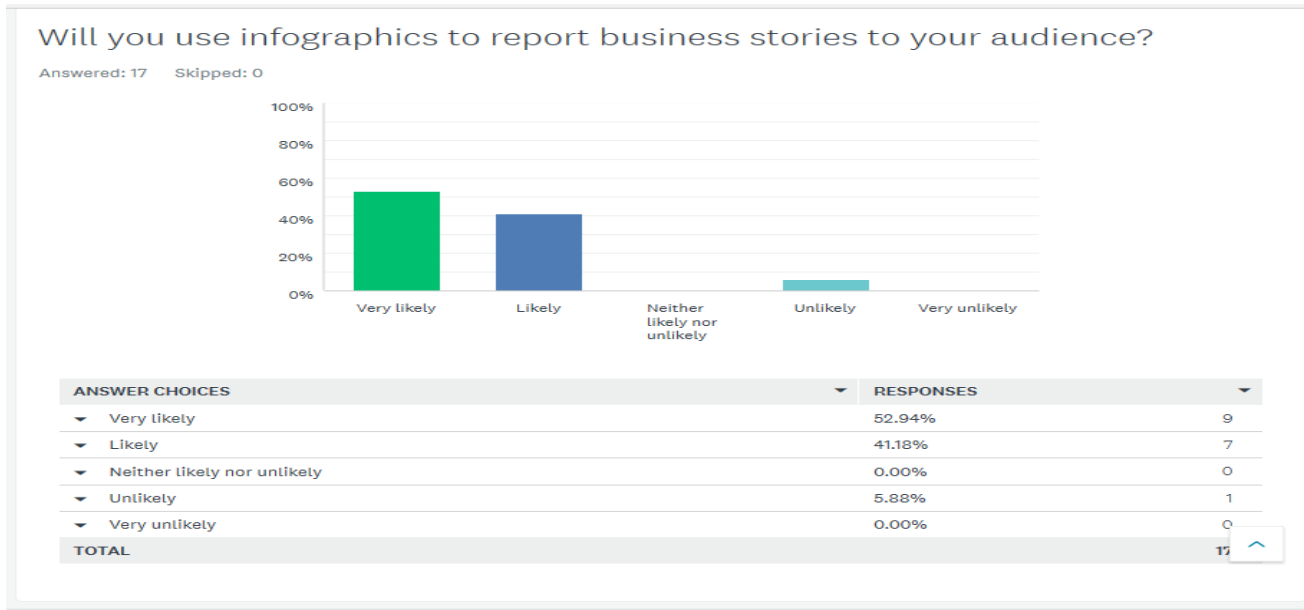


Figure 13.

Again, 64.71% of the respondents stated they will VERY LIKELY consider the benefits of using infographics when making a decision on the form of presentation they will adopt to report business news to their readers, while 35.29% said they will LIKELY consider this as well. There was no negative response to this question, all the respondents said they will consider infographics as a reporting tool.

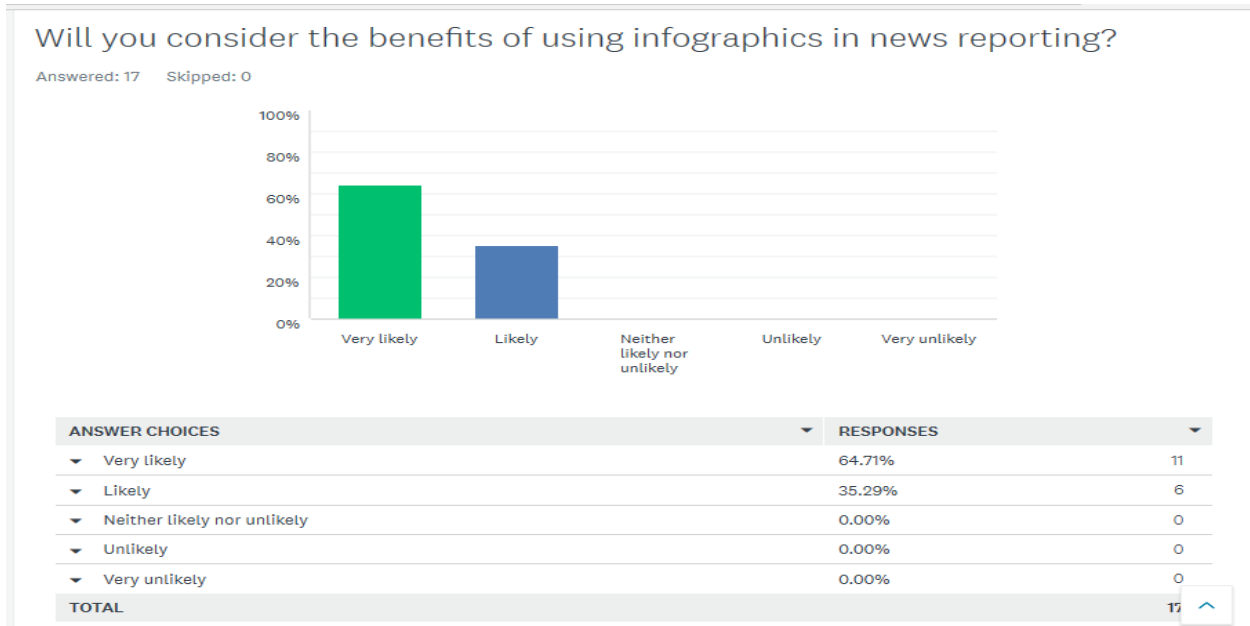


Figure 14.

With regards to the research questions and further into newsroom management of infographics as a journalistic tool, 35.29% of the respondents disclosed that they **SOMETIMES** hold the authority to decide on the mode of presentation for business news in their media outfits, while 29.41% said they **ALWAYS** hold such authority, and 23.53% said they **USUALLY** hold the authority on how business news reports are presented in their outlets.

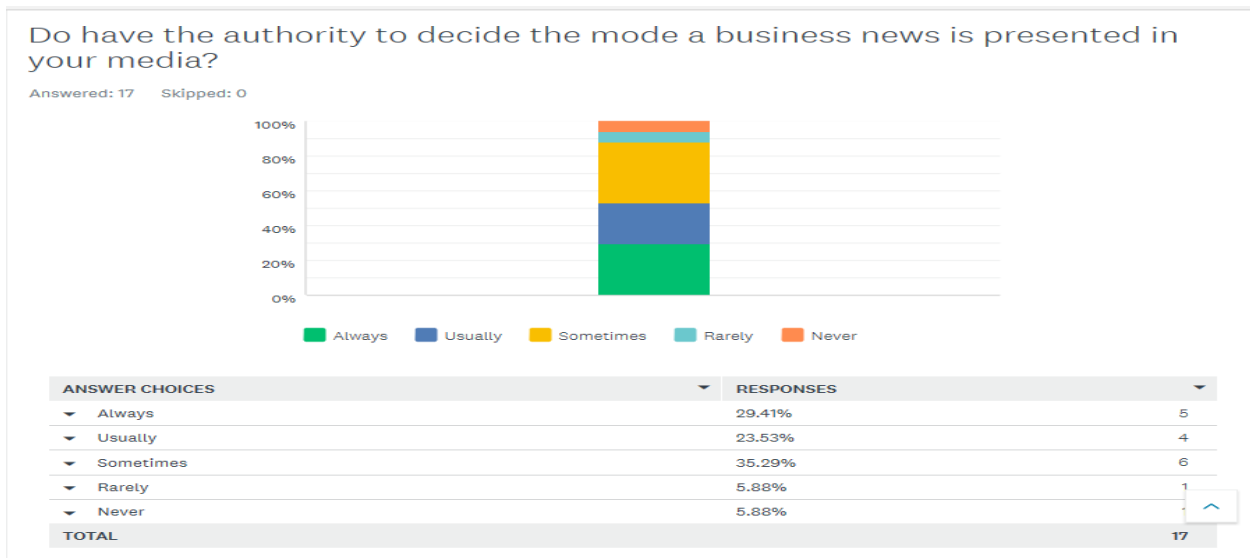


Figure 15.

Further, 70.59% of respondents stated that they see no reasons why infographics should not be embedded in business news reports in their respective newspapers and by extension Nigeria media, while 29.41% stated that there are reasons why infographics cannot be used to complement business news in their newsrooms.

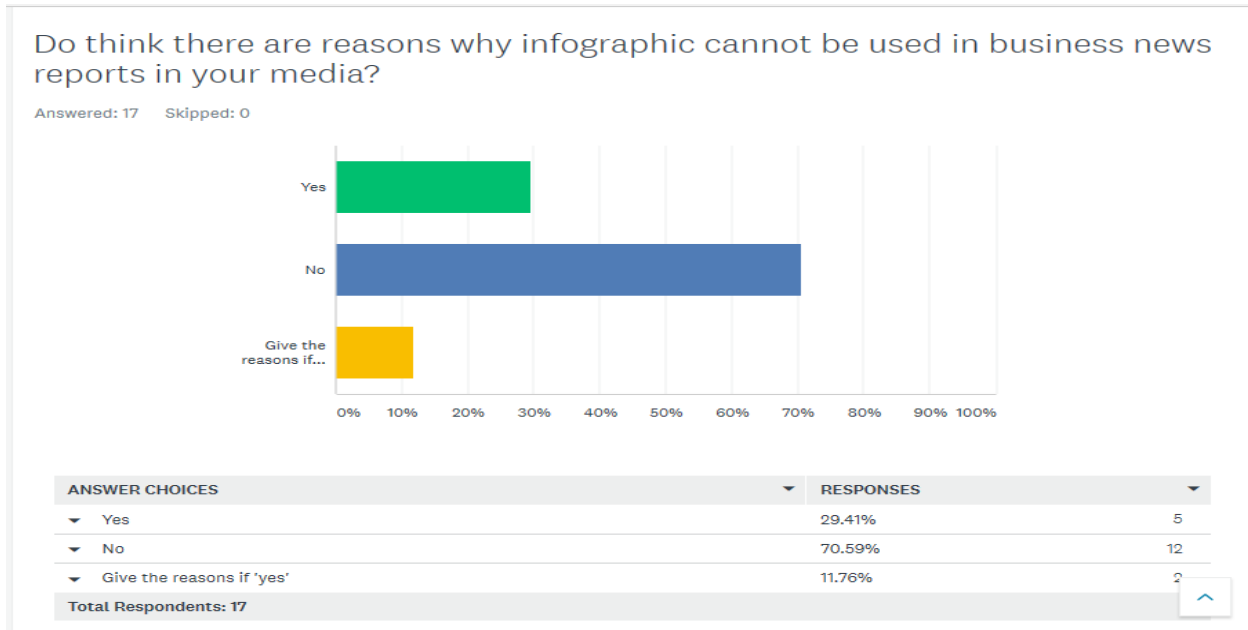


Figure 16.

4.2. Content analysis

Out of the two Nigerian print newspapers studied for content analysis, *Business Day* which is a predominantly business newspaper used 644 infographics in different forms to represent distribution, correlation, ranking, and changes over time, in stories they reported between January and March 2019. The volume of infographics used by *Business Day* in each of the months, in a way matched the volume of infographics the *Financial Times* used in a month too.

This thus suggested that a good volume of infographics is used by newspapers and journalists that reported business and developments in the national economy.

The Daily Trust, which is a general newspaper in Nigeria, also had 184 of its news stories with business and economy slants reported in the three months review, with infographics. And, this

also matched the volume of infographics *The Guardian* of UK used in a month for business and economy related news reports it published in a month.

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INDEPENDENT NATIONAL ELECTORAL COMMISSION (INEC) Closure of P/TC ends on Friday, February 8, 2019

States budgeted N12tr for salaries in 4 years

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States budgeted N12tr for salaries in 4 years

Gunmen kill senator's sister, 25 others in Zamfara

10 DAYS TO GO

Buhari: We should learn from those who failed to get 3rd term

Figure 17.

It must however be stated that the content analysis done for the two British newspapers – *Financial Times* and *Guardian*, were not for the purpose of comparison but for peer-review of the use of infographics as a journalistic tool.

BUSINESS DAY

EASE OF DOING BUSINESS SCORE 2019

52.89 score
Nigeria (146th rank)

66.03 score
South Africa (82nd rank)

70.31 score
Kenya (61st rank)

Total number of countries = 190
Source: World Bank

Indicators for measuring Nigeria's performance

Indicator	2018	2019
Starting a Business	80.75	82.97
Getting Electricity	34.68	42.63
Registering Property	29.07	28.89
Paying Taxes	53.03	53.53
Resolving Insolvency	30.60	30.42
Dealing with Construction Permits	57.81	57.84
Getting Credit	85.00	85.00
Protecting Minority Investors	66.67	66.67
Trading Across Borders	19.93	23.08
Enforcing Contracts	57.61	57.90

Ask Questions

Ei3

BUSINESS DAY

VOTERS APATHY

The Numbers

Nigeria's Presidential Election Voter Turnout Since 1999

The curious case of Nigeria's missing voters

INSIGHT

Do More

Markets Intelligence

AMCON

Significant stock rally awaits Oil Palm producers on attractive valuation

27 points

33%

27 points

33%

Figure 18.

Newspapers	Business and related news reports			Aggregate
	January	February	March	
Business Day	102	289	253	644
Daily Trust	55	67	62	184
Premium Times	<ol style="list-style-type: none"> 1. Premium Times Centre for Investigative Journalism (PTCIJ) – a dedicated standalone webpage for data and infographics presentations. 2. PTCIJ – founded in 2014, has according to its content produced 101 investigative stories, 45 of which are complemented with infographics. 3. PTCIJ is also using interactive web-based infographics programmes to report its stories which are focused on the national economy and other societal issues. 			
The Cable News	<ol style="list-style-type: none"> 1. Set up the ‘Petrobarometer’, which tracks activities in Nigeria’s extractive sectors, using data and infographics. 			
Financial Times	NA	NA	291	291
Guardian UK	NA	NA	125	125
The BBC Online	An interactive and graphics section which uses infographics to tell stories across board.			

Table 1.



Figure 19.

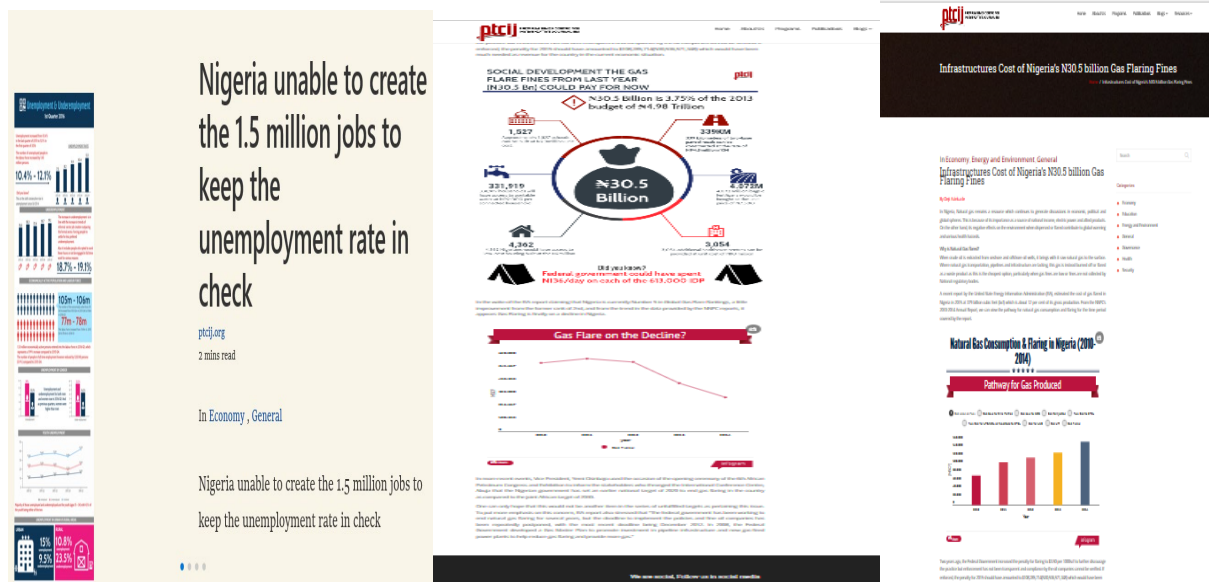


Figure 20.

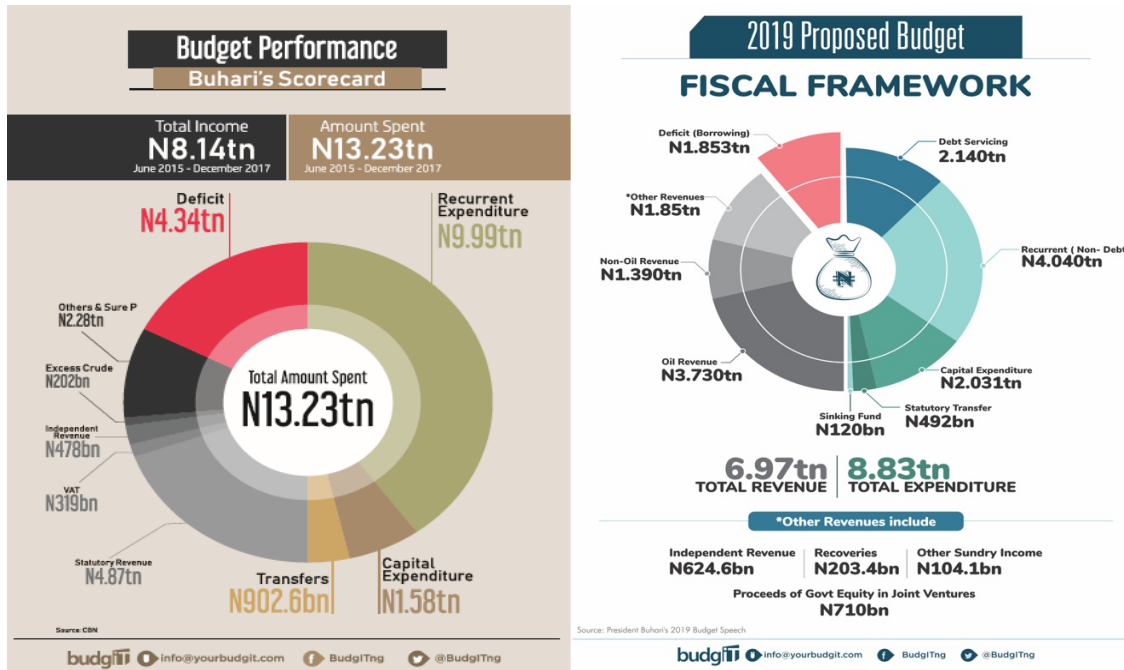


Figure 21.

4.3. Main findings of the study

- 64.71% of the business journalists and editors who participated in the research's online survey disclosed that they use infographics in business news reports they publish. This high percentage of infographics users in newsrooms indicate that as a journalistic tool, infographics is increasingly popular amongst business reporters in Nigeria.
- 94.12% of the respondents believe that infographics as complements to business news reports are important tools to gain audience attention. This thus suggests that business reporters and editors recognize that news reported with infographics are better understood by the audience. It further showed that infographics with their very informative, engaging and accessible features are helping to breakdown complex, text-heavy business-related news into exciting and easy-to-understand reports that newspaper consumers in Nigeria now leverage to understand the country's complex oil

sector reforms, government budgets and expenditures, and even other socio-economic issues like its national security challenges.

3. 70.59% of the respondents also believe that when they use infographics to report business news, their audience would be happier to read the reports. An anecdotal example of this was cited by the graphics editor of the Daily Trust, Mr. Ali Geidam that most Mondays when cover page news reports on the paper are illustrated with infographics, its circulation figures for the day usually go higher.
4. Interestingly, only 5.88% of the journalists' respondents indicated it is unlikely they would use infographics in their news reports. This also buttressed the progressive embrace of infographics by Nigerian business journalists.
5. With another 64.71% of the respondents stating in the survey that they will very likely consider infographics when making editorial decisions on the style of presentation for news reports, the research found that news rooms in Nigeria have a good number of advocates for infographics, although only 29.41% of the respondents said they have absolute control over the editorial content and style of the business reports in their newspapers, in contrast to 35.29% who have limited control.
6. With regards to potential holdbacks for infographics usage in business news reportage, 70.59% of respondents do not see any immediate reasons why infographics would not be used in their respective media. 29.41% indicated they consider several factors responsible for limiting infographics usage in their business news reports. Some of the factors they mentioned include limited manpower capacity; financial commitments or level of financial investments needed to produce good infographics. The makeup of editorial team and newsrooms managers had an impact – editors and newsroom managers who still hold on to their traditional views about news presentation and indeed not willing to accommodate or include dynamism/new changes in their reporting style. Interestingly, none of the respondents viewed audience perception or appreciation as a holdback to the use of infographics in news reporting.

Discussion

4.4. Result interpretation

The high percentage of respondents (64.7%) in sampled newsrooms in Nigeria who now use infographics in their business news reports indicates that infographics as a journalistic tool is now well-received by journalists and business editors.

Frank Uzuegbunam, Editor, *Business Day West Africa Energy Intelligence*, expressed this in context when he said in an interview conducted during this research that, “infographics is important in news reports because it drives the message home and makes news reports reader-friendly.”

Uzuegbunam, from his assertions reinforced the findings of this research that there is plausibly never a better time than now in the history of Nigeria’s journalism for journalists to communicate clearly and engagingly to their audience using infographics.

Further within its scope, this research found that with good literacy in data management and advances in digital journalism, infographics could further be leveraged as a powerful democratic force by journalists in Nigeria to help readers make decisions on national discuss from points of knowledge.

Again supported by a very high response or endorsement (94.12%) of it as an important story-telling tool for business journalism, as well as a healthy response (70.59%) that news consumers will be happier to read business news that are complemented by infographics, this research found that with its very informative, engaging and accessible features, infographics are helping to breakdown complex, text-heavy news into exciting and easy-to-understand reports to Nigerians.

Again, Uzuegbunam, in support of this findings, informed that newspaper editors are, “realizing that it (infographics) plays a role in driving audience and readership.”

This research observes that the influence of infographics in journalism in Nigeria has spread from business news reporting to other parts of the paper. Stories on developments in Nigeria’s

politics, security challenges, amongst others are frequently visualized to clearly tell the ‘why’ (explain) of the news in support of the ‘what’ (breaking the news), thus emphasizing the complementary role it plays in journalism.

Similarly, the survey shows that newspaper consumers in Nigeria increasingly welcome infographics, to help them understand the complex oil sector reforms in the country; governments’ annual budgets and expenditures, amongst other socio-economic issues such as terrorism and security.

Even though there is a healthy embrace of infographics as a journalistic tool by business journalists in Nigeria, the research however finds that their overall embrace in newsrooms’ editorial decisions are still challenged by what some respondents refers to as an ‘old mindset’ on style of news presentations. This, in context means that older and experienced editors who are largely in charge of managing newspapers in Nigeria would often need to be convinced about the relevance of infographics in news reporting.

To make this clearer, 35.29% of the business editors and journalists covered in the survey conducted, reported that they have limited control on how best to present news reports – either incorporating infographics or not – while 27.41% said they have very good control of this decision. This thus suggests that the level of control on editorial decisions on news presentations which invariably touches on infographics are still largely concentrated within the pool of decision makers who need some persuasion to accept infographics as relevant complementary news reporting tool.

However, from conversations with Ali Geidam, who leads the graphics team at the *Daily Trust* newspaper, this research finds that one of the effective ways to get the ‘old mindsets’ on board, is to give it time, and to pass on positive readers feedback.. Geidam, suggested this approach worked for the team in the Daily Trust, which has now largely incorporated infographics in its reporting.

Going beyond the newsrooms, Oluseun Onigbinde, Co-founder and chief executive at BudgIt – a civic organization which is focused on using infographics and data visualization to engage the

Nigerian public on public sector management and efficiency, noted that the place of infographics in public communication, including newspaper articles and news reports, has come to stay in Nigeria. Onigbinde, added that with it, the level of public conversation on national issues has been raised because unlike when it rarely existed or used, people are now able to relate with information from news reports with complementary infographics as against when they are text-filled and largely abstract in meaning to them.

4.5. Further discussion

4.5.1. A robust reporting tool for the media in Nigeria

To underscore the new-found importance of infographics in news reports in Nigerian newspapers, Uzuegbunam, noted that he would normally wish to reserve 20% of the energy and business pages he edits in his Business Day newspaper for news reports with infographics as complement, but often reserves 7% because of editorial certain challenges that include limited manpower to create infographics for news reports.

He explained, “use(s) ready-made data for our infographics at the moment,” to substitute for the lack of manpower, adding that, “more training will be appreciated in the newsroom both for the editorial and graphics staff.”

Uzuegbunam, also stated with regards to the value of infographics in the Nigerian media, that, “as editors and (the) media look for new ways of engaging their target audience, we will see an upsurge in the use of infographics in the coming years in news reports.”

Further on, and from a global perspective on the worth of infographics which in many ways mirrors the situation in Nigeria’s media, Min Chen, a professor of scientific visualization at the Department of Engineering Science in the University of Oxford, highlighted the centrality of infographics in communicating news to the public.

In a simple clarification, Chen said, “I think it is important. It essentially allows you to get the information quicker.”

“You think about having two companies you want to describe their performances and you describe in a text format – then you imagine how your text looks like – probably small, but then in the same newspaper, you have two charts crafted and you clearly see them, you can see how quick it is (to understand),” Chen, added.

He further explained that, “Picture in cognitive perception is paramount. When you read text, it is sequential. Also, picture occupy more space and for the same amount of information, you probably need three lines for text, but the space also has effect because it draws your attention straightaway. So, you use more space and it draws attention quickly.”

“Even though proximity of information is not entirely a drawback, human knowledge also plays a big role in visualization of data,” he further said.

With respect to its potential values to the Nigerian media, Chen, said, “Nigeria is one of the countries as far as I am aware, (that) people are hugely into mobile phones, and digital bank transactions is much more than that of the West. The traditional Nigerian banking system isn’t like the West where there are so many bank branches and so mobile banking provided an opportunity. This suggests that mobile delivery of news could get to the rural areas (using this model).”

Martin Stabe, Head of Interactive News at the *Financial Times*, London, said infographics were a crucial complement to news reporting, especially for complex ideas and news containing heavy figures.

He also said that with infographics, journalists tend to spend more time explaining the news to readers in simple, clearer formats.

“We talk about graphics been most effective when they make clear meaning. Representing complex issues in graphics means that we are freeing up our writers to spend time explaining the ‘why’ rather than the ‘what’,” said Stabe.

Stabe added that, “a lot of the data-relationships that we can share in graphics are simply invisible in the real world – economic price relationships in market stories; or the correlation

between various social variables, are stuffs you cannot see and you can only see them by visuals.

“Visualization of socio-economic stories is a way of rendering invisible things visible, there is no other way of doing that, at least not easily, and so, whenever we can start with the chart, rather than wasting space, we are actually saving space and making it easier to communicate complex ideas through not the substitution of text by graphics but the complementary use of both. I can’t really imagine business news without graphics.”

4.6. Supplementary, but vital observations

As with any research which adopts both quantitative and qualitative methods to interrogate and get results from a situation, this research observed a couple of supplementary but key subject matters which inevitably interacts with the use and value of infographics in the Nigerian media, and was able to get explanations about them in the period of its investigation, albeit from sources in Britain.

4.6.1. Timing: coordinating infographics production in news reports

Timing emerged as a significant challenge to the production of infographics for news reports in Nigeria.

In their responses, Nigerian business journalists believe it takes longer to produce infographics than to produce written copy. They also indicated that this is further made difficult by the lack of vital support infrastructure such as off-the-rack infographics codes or programs amongst other support systems for the news room.

Chen said it was a challenge to traditional newspaper not just in Nigeria but other places. He added that in comparison with the speed of writing text for a story, “if the editor feels they cannot afford the time, then it is a problem.”

“I noticed from Western newspapers that the infographics tend to come in weekend magazines and newspapers. This means, people can spend more time on it, and the weekend magazines

use infographics more effectively. Traditional broadsheets, when they use infographics, they tend to use on bigger news articles like features (perhaps, allowing for more time to produce infographics). Infographics are not just simple pie or bar charts, but they are cleverly designed with little texts.”

Similarly, Alan Smith, the Data Visualisation Editor at *Financial Times* London, explained how the newspaper figured out how to produce infographics quickly for its news reports.

Smith, noted that, “there is always a time constraint in all of these, but one of the things that we have made a huge amount of progress (in) is how quickly we can execute fairly routine graphics production. We can produce things quite quicker than we had done in the past.”

“So, the mechanics of how to produce a graphic are not the thing you want to spend most time (on). Producing the geometry of the graphics should be relatively easy, (and) we want to try to release as much time as possible even on breaking news graphics - thinking about what we want to show.”

He further explained that the graphics team at the Financial Times have been able to create smart codes and algorithm which make it relatively easier for infographics production for news reports.

“Efficiency in production have been really important to us to allow us to do that without having to repeat it on different platforms.

“If you see our visual vocabulary, you think about the logic behind that, we have a bundle of codes that we have written ourselves to allow us push in some data and get out styled versions of graphics for all of our platforms. That is way faster than what we used to do and had five years ago. We’ve used a lot of the techniques of designing with codes as opposed to standard off-the-shelf software,” Smith added.

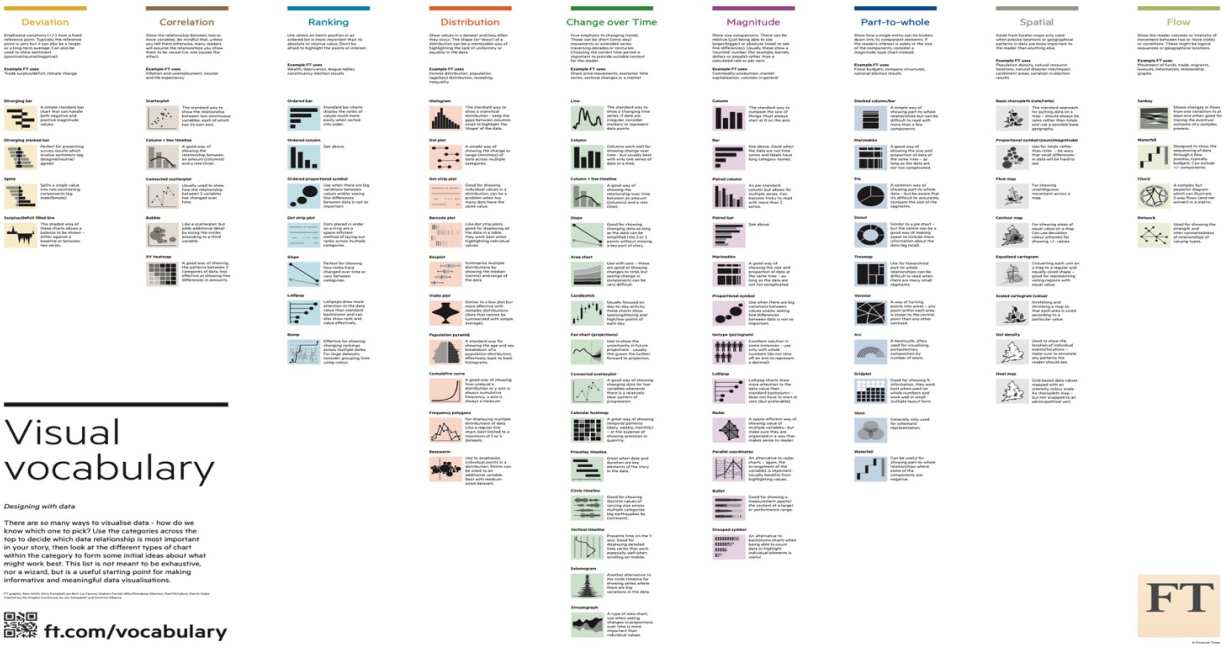


Figure 22

Further on the subject of timing, Martin Stabe, Head of Interactive News at the *Financial Times*, London, stated that with the Financial Times reporting mostly about business, it has built a templated workflow that allows for speed in production of infographics for news.

Stabe said, “we have a subject matter that’s highly numerical, and market stories are inherently about data. We’ve built workflows over the years that allowed us to produce the graphics at speed, and without building up that workflow, none of this is possible.

“If you don’t figure out how to do these things at speed by heavily templating or having pre-written software that will generate whatever chart type you need, pre-written systems for cleaning up data immediately, pre-configured software for maps, you can’t do these stuffs at deadline speed - if you haven’t built lots of infrastructure to do most of the work in advance.”

4.6.2. Integrating infographics on digital news platform

Another very important discovery this research documented is the challenge the media in Nigeria has with integrating static infographics with news reports on digital platforms to make them interactive and appealing. While news reports with infographics contents are presented finely on print versions of newspapers, they often do not come out efficiently and beautifully on digital platforms like the mobile phones if at all they are uploaded.

This is more challenging with regards to news distribution on multiple mobile platforms including small-screen mobile phones. The study finds nteractive infographics are seldom produced, and static infographics produced primarily for print editions of newspapers are subsequently uploaded to the digital platforms of the newspapers. This do not always appeal to readers because they come out dull on digital platforms.

The one big letdown with this again is that millions of Nigeria's Generation Z (Gen-Z) population are lost or left out in the quest to leverage the efficiencies of news complemented by infographics in making decisions or questioning public policies that affect their environment.

This is an important subsegment. Just over half - 51.08% of Nigeria's population in 2010 who were recorded to be literate in a literacy audit conducted by the United Nations Educational Scientific and Cultural Organization (UNESCO) were between 15 years and older, while 66.38% who are also literate were between 15 and 24 years old. This demographic is also most likely to be online, and would benefit hugely from a a seamless integration of static newspaper infographics to mobile platforms. It could also help newspapers expand their digital readership

base.

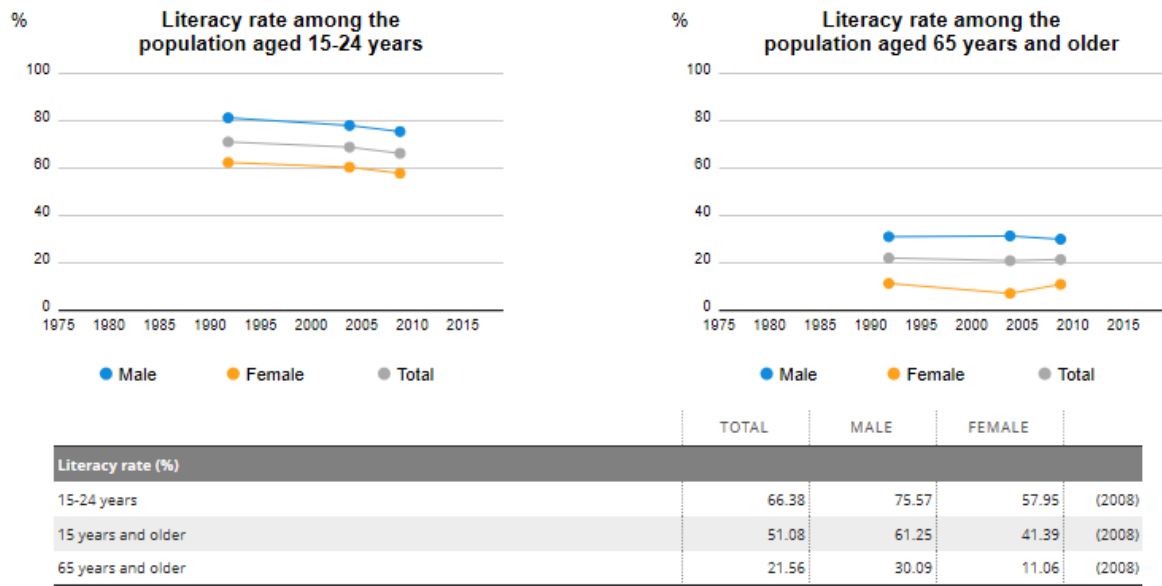


Figure 23.

Stabe said it took the Financial Times some time and a lot of resources to integrate infographics for its print and digital platforms.

“The workflow is relatively new to us. Until four years ago, we didn’t have a way of building all the different types of graphics that we needed in a web browser the way we did today.

“We built everything separately – one set of people made things for print, one set of people made things for graphics, and making any new format tripled the work and everything had to be made multiple times, and this was unsustainable,” Stabe said.

He also noted that, “it was a long, painful period of experimentation of how to go from that way of working to one where digital is primary option and all of the different formats could be produced more or less simultaneously and that was not an easy process. There were many years of experimentation.”

Stabe said one of the first experiments was to take print graphics and break them up into modular components.

“The idea of simply repurposing the print workflow and shifting everything to digital in some way was completely the wrong approach, you have to start with the most difficult design – working with tiny screens first and then work from there. Everything we do now is generated in multiple sizes simultaneously of large, medium and small size, which readers see depending on what size of screens,” he said.

“We have to make custom version for the small screens, but most of the time, it is just a matter of re-scaling it and repositioning labels. The process has evolved with trial and error from one where we did the print first, to the one where we realized that everything has to start with digital, and it took us years to figure this out,” he added.

Stabe, suggested an option the Nigerian media could adopt, saying, “you can’t stick to the print first, everything has to be designed for the digital platform first, and print is just another channel for uploading graphics.

“The most difficult design challenge is the smallest versions that needs to fit the smaller screens, things are much more difficult to do with that sort of constraints, but it is much easier to go from the most difficult projects to the simple ones.”

Similarly, Chen, in his thoughts on integration of infographics and the kind of workflow that could be adopted said, ‘the bar and pie charts can be shown reasonably OK on mobile platforms, but not the sophisticated infographics.’

According to him, a seamless integration of infographics on mobile platforms was essential for value addition, otherwise, “the tendency is that when you zoom in and out, and it does not work so well, people may get fed up after a while of zooming in and out or moving from end to end. They lose interest. So, it is difficult to tell the stories easily (especially when complex infographics are involved).

He noted that, “interaction is a cost to the human. When people learn a story, and are into it, you have to make decisions on what to do. Anything you design, you need to have this in mind especially in the news type of communication.

“You can’t raise people’s interests quickly, but you can cleverly design (infographics) to raise the interaction, and it should be within the ethics of the profession because you might mislead people.”

Chen also suggested that designing short infographics for mobile could be much more valuable in news reporting because they are easier to hold interactions.

4.6.3. Science of infographics

The question arose in the study of whether journalists and editors in Nigeria need some level of knowledge of applied science to be able to create and use infographics in their news reports.

Chen said creating infographics do not necessarily require that business journalists and editors in Nigeria or anywhere have some programming skills, “but if you acquire programming skills, you could be quite quick (with it).”

He explained that, while most complex interactive infographics such as those often used in simulating general elections are works that involve some programming skills, and which take longer period to produce, “a lot of the magazine-based infographics are part of the design of the artist.”

“The artist wants to be creative and different and the whole idea is to demonstrate the creativity of the artist. There are journalists who are much more hands-on (with infographics) but the tendency to connect them with the web will be the next stage,” he added.

4.6.4. Data literacy, statistics and infographics

Indeed, this research also finds that at the core of the progress being made with infographics in news reporting in Nigerian is the growing space for open data, hence, the discussion on data literacy for business journalists and editors.

Smith captured the conversation when he informed that, “data literacy has been really important,” to the works the graphics team and journalists at the Financial Times are doing with regards to infographics.

He further explained, “we have always had a statistics desk which kind of have a library function. But we also have people with data journalism background and who have come in to find stories themselves like sourcing some data scoops.

“We have got those two elements which we have brought closer together and the general thing we want to do is to get people to think much more upfront about the stories and numbers they are presenting.”

Again, in this regard, Stabe noted that at the *Financial Times*, the core statistical skillsets often owned by journalists are centered on data management. He also believes that such basic statistical skillsets are important for journalists to visualize news stories, especially when they relate to numbers.

“Most of what we do are descriptive statistics – basic descriptions of quantities, of distributions, relationships over time, and all of the basic categories of relationships. It is very rare but not unheard of to do complex modeling of inferential statistical models, it is not a huge part of what we do, when it does, it is quite an exceptional amount of work – quite a sophisticated work,” Stabe, said.

He then explained, “so, when we say statistics, what we are talking about is data handling, the ability to clean data, take it from its raw form as delivered from data providers and put it into a format needed to make graphics, and that isn’t really a statistical function, it is data literacy and it is important to keep these separate.

“We often make a mistake of putting out job adverts to say we need a statistician when actually what we need is somebody who can take a raw, dirty data set and put in a format that can actually be used. That is an essential skill, and for most journalists, it is an important skill than having a pure statistical skill. We need not to exaggerate those skillsets.”

Denise Lievesley (CBE) professor of social statistics and Principal of Green Templeton College in the University of Oxford, believed it was important for business journalists to have a good grasp of statistics, and its use in news reporting. She also suggested that journalists and statisticians could improve their interactions on data management and visualisation.

“I believe that journalists need much more training in statistics. Too many journalists go into journalism because they are interested in words rather than numbers, and sometimes they are very frightened with numbers.

“I am very well pleased that increasingly in journalism schools, they are teaching some basic statistics. I think that is very important, because in some societies the quality of statistics education in schools is very poor,” Lievesley said.

4.6.5. Trust for data used in infographics

Lievesley and Stabe, further emphasized that trust in the data sources used in creating infographics are just as relevant in creating infographics for news reports as data literacy. Establishing the credibility of data used in infographics are important to ensure that their messages in news reports do not mislead readers.

Lievesley, suggested that, “as a journalist, you receive information and you have to be skeptical about that information. You have to know something about your sources, you have to check your sources and anything that looks as though it is exciting, you probably have more responsibility to actually check the quality.”

Pointing out that numerical data are not inherently truthful as they appear, Lievesley said, “I don’t think it is any different from any other story that you might receive. I think the problem is that sometimes, maybe because journalists haven’t been trained in statistics, they are worried about statistics and tend to take numbers as if they have some inherent truth.

“There is a sense in which people think that when there is a number attached to something, somebody actually knows something, but numbers can be made up in just the same way that stories can be made up.”

“As a journalist, you are used to checking and making sure that you are not misleading people. Exactly the same apply when you are using statistics. You only start to produce infographics if you have a certain amount of confidence in the data that you are portraying.

“Infographics are really interesting because they are a way of conveying information to people who are otherwise frightened by numbers. They can be a very powerful way of communicating information,” she noted.

4.6.6. Funding infographics in newsroom

Stabe and Onigbinde accentuated the influence of healthy funding for infographics production for news reports. They noted that with good investment in manpower and infrastructure, newsrooms could efficiently visualize reports timely and with great value additions to news reports.

“There is no one getting away from that (investment in infographics). It is ultimately a question of priority for news organizations. Just as they have to decide areas of coverage, they want correspondents covering and not everything is possible, they have to decide how important this is - whether it is worth building that capability.

“I am not going to pretend this is cost-free, it is not. You need skills and there’s cost to them. And, it is true to all journalism, you can’t have pictures without buying a camera, you can’t have reporters without computers to write their copies on, you can’t layout the paper without building the infrastructure,” Stabe said.

5. Conclusion

This research finds that the use of infographics as complements in business news reporting is now a trend and practice in Nigeria. It also finds that beyond business news, newspapers in Nigeria now use static infographics to explain other general news reports to their readers in Nigeria.

The artistic skills needed for infographics are not in short supply in the Nigerian newsrooms, but the technology has not yet caught up.

There is a need to connect the art and technology of infographics in newsrooms in Nigeria quickly, to enable them to move from static to interactive infographics.

It also finds that there is an 'old mentality' about the place of infographics in news reports in Nigeria's newsrooms – older editors holding up reservations about infographics as complement in news, but there are signs that this is changing. Onigbinde stated that, "there is a changing paradigm with newspapers like *Daily Trust*, *The Cable*, *Premium Times*, and even *Guardian* and *Punch*, are trying as much as possible to mainstream the use of infographics in simplifying and explaining their reportage."

Two fundamental issues with regards to the use of infographics in business news reporting in Nigeria constantly featured as its major challenges while this research lasted, and they are timing (for delivering news with infographics as complement) and capacity (to produce valuable infographics for news).

Onigbinde said: "You need people who are able to understand data, interpret content and simplify it, as well as people who are able to design infographics. There is also the pace of news in this generation and how traditional or mainstream media have to catch up does not give them the latitude to design and run infographics."

He noted that these two, "are the real challenges, otherwise, the paradigm is changing. But there won't be a drastic change because of the pace of news and also the lack of capacity in the newsrooms."

Onigbinde, suggested that journalists need to learn a range of data mining, management and visualization skills to mainstreaming infographics in news reports.

Onigbinde, however added that, “with the need to build brick-by-brick, there are online tools – infogram and datawrapper, which have been used by journalists to build conversations. I guess that is going to change it in a much larger way, and after you are able to build on that, then you could be able to use bespoke tools like Adobe Illustrator and Corel Draw. “But the most important thing in this is the ability of the designer to visualize ideas – the imagination of the designer, ability to take data from a very sterile state and interpret it into graphics, this is the most important aspect because a tool is going to be a tool. And, there has to be an understanding that we are going to grow gradually into all of these.”

Recommendations

Based on its findings, this research would for the Nigerian news media and journalists, recommend that in mainstreaming infographics in news reports, and as a reporting tool, newsrooms should:

1. Consider it a priority to invest in and retool their graphics departments for efficiency in infographics production.
2. Consider developing sets of usable in-house infographics creation templates to improve timeliness.
3. Invest in infrastructure to enable presentation of news with infographics seamlessly on digital platforms.
4. Leverage free open infographics resources that exists and could work with consideration to their needs.
5. Create ethical protocols to guide on the use of infographics in news reporting. This is key in an era of ‘fake news’ and its threats on the credibility of journalism and trusts for its outputs. If infographics used in journalism are not adequately shielded from this,

they could become just as text, susceptible to undue manipulation which could mislead readers.

Interviews

Name	Designation	Mode of interview
Seun Onigbinde	Co-founder/Chief Executive, BudgIt Nigeria	Skype
Frank Uzuegbunem	Editor, Business Day West Africa Energy Intelligence	Email/Skype
Prof. Denis Lievesley	Statistician/Principal, Green Templeton College, University of Oxford	In person
Prof. Min Chen	Professor of Scientific Visualization, Department of Engineering Science, University of Oxford	In person
Alan Smith	Data Visualization Editor, Financial Times London	In person
Ed Swires-Hennessy	Statistician/author	Email
Simon Sunday	Business journalist, Daily Trust Nigeria	Email/WhatsApp
Dada Thomas	Editor, The Cable Nigeria	Email/WhatsApp
Martin Stabe	Head, Interactive News,	In person

	Financial Times London	
Ali Geidam	Data Visualization Editor, Daily Trust Nigeria	Email/WhatsApp

Table 2: list of interviewees

Glossary.

List of figures and tables

1. Figure 1. William Playfair's The Commercial and Political Atlas
2. Figure 2. Florence Nightingale's coxcomb chart
3. Figure 3: description of the slave ship Brookes 1788
4. Figure 4: FT Graphics: ft.com/vocabulary
5. Figure 5: A January 31, 1961 copy of the West African Pilot
6. Figure 6: 5-week track up of response to online questionnaire
7. Figure 7: 5-week daily track up of response to online questionnaire
8. Figures 8 – 16: graphical representation of sample responses to questionnaire
9. Figures 17 – 21: newspaper outlines of infographics outputs in news reports
10. Figure 22: FT Graphics: ft.com/vocabulary
11. Figure 23: UNESCO Nigeria literacy graph
12. Table 1: Result of newspapers' content analysis
13. Table 2: List of interviewees

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