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Understanding Geospatial Intelligence and the Challenge of Effective Counter-Terrorism Strategy: A Case Study of Nigeria's Boko Haram Challenge

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ABSTRACT. Nigeria is faced with a number of security challenges that have threatened the existence of peace and security in the country. These threats to public safety and national security have greatly undermined the government primary responsibility of guaranteeing public safety and national security. The intractable challenges posed by Boko Haram makes a good case for the above assertion. This work, therefore, reviews the applicability of Geospatial Intelligence and all its components and sub-field, with a view to understanding and or establishing their respective relevance in devising effective counter-terrorism strategies in Nigeria. This was done, taking Boko Haram activities between 2015 and 2018 for specific study, against the background of Geospatial Intelligence capabilities. The researchers utilised primary and secondary data sources in this work. The Primary data sources was from questionnaires administered physically and electronically via emails while, secondary data came from published books, journals, articles, lecture guides, videos etc. Acquired data was statistically analysed using simple percentage and Chi-Square statistics. Sequel to the statistical results, findings were made that Geospatial-Intelligence is relevant and remains the most potent frontier in developing effective counter-terrorism strategies against Boko Haram and indeed other similar insurgencies in Nigeria.

KEYWORDS. Geo Spatial Intelligence; Counter Terrorism; Boko Haram; North East; Nigeria; Strategy.

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Introduction

The massive population on earth compacted and distributed in different parts of the earth surface has created an overwhelming dynamism in the nature of events that take place in these different parts of the earth in relation to one another. Today, technology has shrank the world distances thus in terms of communication, transportation, culture, politics, religion etc. This interconnection of the various parts of the world has made the world today globalized. These rapid technological advances threaten the security and safety of the globe as much as it has aided and promoted it. Thus, the need for technological advances in checking and securing the totality of the earth populace is inevitable.

Sequel to the foregoing analogy is the advent of Geospatial Intelligence and its use as a tool for Counter-Terrorism purposes. This work shall lay focus on examining the relevance of Geospatial Intelligence as a tool for Counter-Terrorism, taking into cognizance the terrorist activities that have been challenging Nigeria in the past years and also in forecasting and possibly preventing likely future threats to the country or any part thereof.

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Geospatial Intelligence as used by developed countries such as the United States of America (USA) since World War 2 is invariably fundamental to formulating National Security strategies and executing tactical operations in Nigeria. In this work, the Researcher will explore various areas of Geospatial Intelligence and Counter-Terrorism as well as other areas relevant to achieving the objectives of this study. These areas will include Remote Sensing, Imagery Intelligence (IMINT), Geographic Information Systems (GIS), Geospatial Intelligence Analysis… to mention but a few.

Pertinent to the exploration of the above areas is having background knowledge of the two most important areas in this work, thus; Geospatial Intelligence and Counter-Terrorism. The world today is experiencing a Geospatial revolution with the rapid growth in Information and Communications Technology (ICT). This revolution in the History of the world tries to understand what is happening at any time at a particular location. The question of 'where' is very critical to Geospatial Intelligence. Furthermore, the type of threats that are faced by countries today requires rapid assimilation of information and most especially reliable Geospatial Intelligence even for those in the battlefield[2] Geospatial Intelligence is indeed fundamental in Contemporary Operational Environment (COE) in line with its fluid and dynamic Nature. Geospatial Intelligence on a particular battlefield will allow soldiers to adopt the Complex Adaptive System (CAS) in executing their missions. The case of Boko Haram and the Nigerian Military in Sambisa Forest makes a good proof to the above assertion. Should there have been timely, reliable, and actionable Geospatial Intelligence on Sambisa Forest, the faith of Nigerian Soldiers in Sambisa forest would have been different. Fighting wars in today's battlefield without Geospatial Intelligence is equivalent to fighting with hands and legs tied.

Put simply, Geospatial Intelligence is the exploitation and Analysis of imagery and Geographic information to describe, assess and visually depict physical features and geographically referenced activities on earth. Geospatial Intelligence can be seen also as 'a field of knowledge, a process and a profession. As knowledge, it is information integrated in a coherent Space-Time context that supports descriptions, explanations or forecast of human activities with which decision makers take action. As a process, it is the means by which data and information are collected, manipulated, geospatially reasoned and disseminated to decision makers. Bacastow defined Geospatial Intelligence Analysis as 'seeing what everybody has seen,

[2] Legere, M, *Introduction to Geospatial-Intelligence.* 2013, http://www.tubidy.com

thinking what nobody has thought'. Subsequent chapters shall elaborate more on Geospatial Intelligence.[3]

Terrorism on the other hand has taken a new dimension today in line with the speed of technology and globalization. Terrorism in this era takes National, International and Transnational scopes making it virtually impossible for National Security Agencies to single-handedly manage or curb Terrorism. Tracing modern-day Terrorism dates to the September 11, 2001 attack on America (911). It is an obvious fact that from the 911 attack, terrorism has taken a multidimensional phase threatening global security from different angles. Thus, the need for multi-dimensional Counter-Terrorism measures is paramount.

Conceptually, Terrorism is defined by US Department of State (1998) as 'premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents, usually intended to influence an audience'. Nonetheless, terrorism lacks a universally accepted definition in line with its relativity. For the purpose of this work, terrorism shall be viewed as in the above definition. Counter-Terrorism, according to Oxford Dictionaries is 'Political or military activities designed to prevent or thwart terrorism'.

As earlier noted, this work shall focus on establishing the importance of Geospatial Intelligence in developing effective Counter-Terrorism strategy as well as proffering solutions in form of recommendations -in line with the findings of the Research work- as to achieving the objectives of this work. The Research shall be conducted relying on both primary and secondary data, using statistical tool for analysis of the acquired data. In terms of scope, this work shall lay more emphasis on Boko Haram terrorist group in Nigeria, particularly the phase it has taken from 2015 to date. Boko Haram has clearly taken a new dimension since the Buratai-led military surging up Counter-Terrorism operations in the North-East. However, the group may be weakened but still exists and thus the need to explore more areas of Intelligence such as Geospatial Intelligence and their effective incorporation into Counter-Terrorism Operations.

Nigeria as a Nation, is currently experiencing a tremor in its National Security based on the recurrent indiscriminate bombings and killings which are attributed to religious, political and or ethnic forces. The threat posed by these forces have warranted the need for research in emerging fields of Intelligence with a view to proffering solutions to the menace that confronts the Nation. Nigeria lacks an Agency chiefly saddled with the responsibility of gathering, Analyzing and Disseminating Geospatial Intelligence to the

[3] Bacastow, Todd S., and Dennis Bellafiore. "Redefining Geospatial Intelligence." *American Intelligence Journal* 27, No. 1 (2009): 38-40. Accessed January 15, 2020..

relevant authorities for its effective utilization in formulation of National Security Policies. This gap is attributable to the various security challenges confronting the Nation. Advanced countries have Agencies chiefly saddled with the responsibility of gathering, Analyzing and Disseminating Geospatial Intelligence such as the National Geospatial Agency of the United States (NGA). The United States has used Geospatial intelligence to manage its National Security in the past years and it has yielded positive result by helping in the cracking down of several terrorist groups and terrorist group leaders in the world at large. This was achieved by its massive investment and commitment in its space programs. In a bid to emulate the United States in this regard; this study is aimed to promote Geospatial Intelligence and portray its relevance among Nigeria Security Agencies towards achieving a stable National Security.

The backbone of the problem facing Geospatial Intelligence in Nigeria is the low level of advancement in the Information and Communications Technology sector (ICT). In line with this, the Nation lacks a Geographic Information System (GIS). The Nation does not utilize satellite imagery for the purpose of National Security, thus, the primary source of Geospatial Intelligence is not properly utilized. More so, the launching of NigeriaSat-1, NigSat-2, NigeriaComSat-1, NigeriaComSat-1R satellites by Nigeria with the aid of other countries (such as UK and China) makes the number of Satellites owned by Nigeria a total of five(5). However, these satellites are majorly utilized for communications, demographic planning, disease and disaster monitoring among other functions instead of surveillance and gathering of Geospatial Intelligence relevant to National Security.

Despite the gap in satellite functions relative to the security needs of the country, the management and maintenance of the existing satellites has been a tough challenge for the National Space Development and Research Agency (NASDRA) and the Nigerian Ministry of Science and Technology. On 11th November 2008, NigComSat-1 Failed in orbit after running out of power due to an anomaly in its solar array. On 10th November 2008(0900GMT), the satellite was reportedly switched off for Analysis and to avoid a possible collision with other satellites.[4] This can be described as an outcome of improper management and must be addressed by the government especially when satellites are being launched solely for Intelligence Purposes.

Boko Haram which is the group specifically selected for of this work is about the greatest nightmare to Nigerian Security Agencies for close to a decade. Former US Ambassador to Nigeria, John Campbell described Boko

[4] Wikipedia (2017). Geospatial Intelligence Operating systems. http://www.wikipedia.com

Haram as "loosely organized grassroots insurrection against not only the Abuja government but the traditional Muslim establishment as well".[5] This view seems to have been punctured by the test of time as today Boko Haram is an octopus with different forms of approaches in carrying out their attack. The group through its activities over the years has graduated from being just a 'loosely organized group; to being an internationally recognized terrorist group. Thus, Boko Haram as a terrorist group is a problem to Nigeria, in the same vein, this work shall –upon establishing the relevance of Geospatial Intelligence in Counter-Terrorism- also examine the problems facing Geospatial Intelligence gathering in the Country. As briefly stated earlier, some of the many problems of Geospatial Intelligence in Nigeria which this work is aimed at proffering solutions to are listed below

- Inadequate imagery
- Lack of dedicated security satellite to support Counter-Terrorism
- The unavailability of integrated database within the Country
- Inadequate funding
- Lack of trained personnel

The above highlighted problems of Geospatial Intelligence in Nigeria shall be elaborated on in subsequent chapters of this work. Upon the Analysis of data obtained in respect to the above problems, suitable recommendations will be drafted by the researcher with a view to achieving the Objectives of the study.

Objectives of the Study

The general objective of this study is to examine and possibly establish the relevance of Geospatial Intelligence and its use as a tool in developing an effective Counter-Terrorism strategy, using Boko Haram terrorist activities between 2015 and 2016 as case study. To achieve the above general objective, this work is designed to meet the following specific objectives:

1. To examine the link between Geospatial Intelligence and developing effective Counter-Terrorism strategy.
2. To examine and explore various areas of Geospatial Intelligence
3. To measure and strategize possible ways of combatting Boko Haram terrorist group in Nigeria, particularly through the use of Geospatial Intelligence
4. To evaluate the implication of terrorism on National security
5. To identify the issues and prospects of Geospatial Intelligence in Nigeria

[5] John Campbell, U.S. Policy to Counter Nigeria's Boko Haram, Council on Foreign Relations Press, New York, 2014, ISBN 978-0876096109

Research Questions/ Hypotheses

1. Is Geospatial Intelligence an effective tool in developing Counter-Terrorism strategy?
2. Is Geospatial Intelligence relevant in the fight against Boko Haram in Nigeria?
3. Is there a need for Nigeria to establish a National Geospatial Intelligence Agency?
4. Does the Nigerian government need an integrated Database for gathered Intelligence?

Hypothesis

For the purpose of this study, one hypothesis was formulated as:
1 – H_i: There is a relationship between Geospatial Intelligence and Counter Terrorism in Nigeria
2 – H_0: There is no relationship between Geospatial Intelligence and Counter Terrorism in Nigeria.

Method

This section of the work tries to look at the methodology adopted by the researcher in carrying out the study. This Research generally is aimed at investigating the effectiveness of Geospatial Intelligence as a tool in developing effective counter-terrorism strategy, using Boko Haram terrorist group in Nigeria as a case study. Areas for consideration in this chapter are research design, the population, sampling method, Data collection method & instrument reliability and validity, pilot study and procedure for Data Analysis. All these provide a background for the achievement of accurate statistical analysis of data.

Research Design

This section deals with the plan of action the researcher adopted for the study. There are various types of research designs that suit different research work based on the nature of the study being carried out or topic of investigation and other variables surrounding the research in its entirety. Research design is the plan, structure and strategy of investigation conceived to obtain answer to research question and to control variance.[6]

[6] Daniel, Larry G. "Kerlinger's Research Myths: An Overview with Implications for Educational Researchers." *The Journal of Experimental Education* 65, No. 2 (1997): 101-12. Accessed January 5, 2020. http://www.jstor.org/stable/20152511; Kerlinger, Fred N. (1973*) Foundations of Behavioral*

The research design that is deemed most suitable and appropriate by the researcher for this study is the Survey design and this was adopted. Survey method involves the systematic use of questionnaire to generate the needed Data for Analysis.

Population of the Study

The population of this study comprises of Nigerians, with significant interest in North-Eastern part of Nigeria where the activities of Boko Haram are more alarming. The states in this part of Nigeria are Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe. Obviously, the population of this study is very large and thus may be almost impossible to be covered by the Researcher, hence sampling becomes imperative.

Sampling Technique

Due to the largeness of the population of the study, as earlier noted in 3.2, the researcher adopted a sampling method in order to obtain data about the general population from a subset of the population. The sampling method adopted by the researcher is the probability sampling method, otherwise known as random sampling. In probability sampling, various techniques are used to ensure that every individual person in the population or universe has an equal chance of being selected.[7] Here, the researcher adopted probability sampling due to its suitability and applicability in this study as it eliminates errors and possible bias to a very large extent.

Sample Size

As earlier stated in 3.2 and 3.3 above, it is not possible to study the whole population due to its vastness and against the background of resources available to the Researcher. Hence, sampling becomes imperative. Another critical factor is identifying the size of the sample to draw out from the population of study and doing so via objective means. In order to draw a sample size, the Taro-Yamane quantitative method for sample selection was applied for the study. Stated below is the formula:

$$n = \frac{N}{1+N(e)^2}$$

Where N= Population

n = Sample size

Research. 2nd edition. New York, Holt, Rinehart and Winston; Kerlinger, F. N. (1986). Foundations of Behavioral research (3rd ed.). Fort Worth, TX: Holt, Rinehart and Winston.

[7] Chukwu, C; Azuka C. (2014). *Simplifying Bs.c Project Writing for Undergraduates*. Lagos, Serenity Publishers ISBN 978-978-950-979-9; Chukwu, C. (2014). *The Fundamentals of Sociology; An Introduction.* Lagos: Serenity Publishers ISBN 978-978-077-305-2.

I = Constant

e = Tolerable error and can be assumed e.g 0.05, 0.10 or 0.25 etc.

This formula helped the researcher to determine what sample size to study. Using a tolerable error of 0.10, a sample size of 250 individuals was selected for the study. The persons selected for the study includes retired/serving security personnel, students and experts in Intelligence and Security, host community members and settlers.

Method of Data Collection

The method of data collection is largely contingent on the type of Research Design adopted by the researcher. As earlier noted in 3.1 above, the Survey design was adopted for this study. This will require the use of questionnaire for generating primary data for the study. Secondary data where required shall also be sourced from published and unpublished materials from the internet, books, journals etc relating to the topic of discourse.

Questionnaire Construction

In order to acquire valid and useful data from target respondents, questionnaire would be carefully constructed with the aim of achieving the stated objectives of this study. The questionnaire has shall consist of three (3) sections. Section one is the introductory part which contains instructions and directions to the respondents on how to complete the questionnaire. Section two shall consist of statements and or questions targeted at getting information about the respondents. Questions in this section shall be demographic in nature, some of which may be optional. Section three shall consist of core statements and or questions in relation to the subject matter of this study. The questions are close-ended and Norminal-Polytomous, giving the respondents three (3) unordered options. The diction of the questionnaire will as much as possible, be made simple so as not to confuse respondents. Albeit, the subject matter is a technical one which makes it necessary for some technical terminologies, the target respondents will have at least, little knowledge on the technical terms used. The questions shall be closed-ended questions for uniform and accurate analysis.

Questionnaire Administration

The finished copy of the questionnaire was made after the pilot test. The level of consistency obtained from the study was acceptable, and thus the questionnaire was deemed ready for distribution and thus sent out to responders. There were two major modes of questionnaire distribution in this work. The first is physically by the researcher while the rest were sent

through emails as web-questionnaires to the willing individuals in the areas of interest.

Procedure for Data Analysis

The method adopted for the analysis of data in this research is the frequency distribution table showing responses, frequency, and percentages. The raw data are collected, collated, and further converted to percentage. Each item is analyzed on that basis along the divide affirmation and negation of the proposition. From the total percentage of response, inference is drawn. The result obtained also forms the bases of discussion of findings. A test of hypothesis was also done in order to ascertain the rejection and acceptability of the suppositions. The hypothesis is tailored towards buttressing the data acquired through the questions. The hypothesis is tested using the Chi-square statistical method. The Chi-square is computed using the formula:

$$x^2 = \frac{(Fo-Fe)^2}{Fe}$$ with dif. (degree of freedom = (R-1) (C-1)

Where x^2= Chi-square statistics
Fo= Observed Frequency
Fe= Expected Frequency
R = Row
C = Column

Result and Discussion

Data Analysis and Presentation

Contained herein is the presentation, analysis and interpretation of data acquired during the research through the use of Questionnaires. For the purpose of this work, a total of one hundred and fifty (150) questionnaires were distributed. However, only 130 questionnaires were retrieved. It is important to recall that the researcher employed both research questions and hypothesis for the purpose of this work and thus, there shall be presentation of data in simple percentage and also statistical analysis of data all in this chapter.

Data Presentation and Analysis

Table 1: Questionnaire distribution

Mode of administration	No. of questionnaires administered.	Number of questionnaires retrieved.
Email	75	60
Physical administration	75	70
Total	150	130

Table 2: Age distribution

Age	Frequency	Percentage %
18 – 25	40	30.7
26 – 35	39	30
36 – 45	29	22.3
46 – 55	22	16.9
Total	130	100

Table 2 shows age distribution against the total number of questionnaires retrieved. From the table, it is shown that 22 (16.9%) out of the 130 people that answered the questionnaire are within the age of 18-25. A total of 39 (30%) persons are within the age of 26-35 while 29 (22.3%) persons are within the age of 36-45. Lastly, 40 (30.7%) persons are within the age of 46-55.

Table 3: Sex Distribution

Sex	Frequency	Percentage %
Male	90	69.2
Female	40	30.7
Total	130	100

Table 3 shows gender distribution. 90 (69.2%) out of 130 are male while only 40 (30.7) are female.

Table 4: Religion

Religion	Frequency	Percentage %
Christianity	75	57.7
Islam	55	42.3
Others	0	0
Total	130	100

Table 4 shows religious distribution with a total of 75 Christians out of 130 (57.7%) and a total of 55 Muslims (42.3%).

Table 5: Marital Status

Marital Status	Frequency	Percentage %
Single	70	53.8
Married	50	38.5
Widow	4	3.0
Divorced	6	4.6
Total	130	100

Table 5 shows the marital status of respondents with 70 (53.8%) being Single, 50 (38.5%) being married and 6 (4.6%) being divorced. Only 4 (3.0%) out of the 130 respondents are widowed.

Table 6: Educational Status

Educational Status	Frequency	Percentage
SSCE	20	15.3
NCE/HND	40	30.7
Degree	60	46.1
Higher Degree	10	7.6
Total	130	100

Table 6 shows the Educational status of the respondents. This is pertinent to the credibility and reliability of data acquired. 20 (15.3%) are SSCE holders, 40 (30.7%) are NCE/HND holders.

Table 7: Occupation

Occupation	Frequency	Percentage
Skilled Worker	70	53.8
Unskilled worker	20	15.3
Self-employed	40	30.7
Unemployed	0	0
Total	130	100

Table 7 above shows the occupation status of the various respondents. There were 70 (53.8%) skilled workers, 20 (15.3%) unskilled workers. 40 (30.7%) were self-employed whereas no respondent was unemployed. This is probably due to the fact that nobody amongst the respondent is or admits to be unemployed. A lot of persons prefer to describe themselves as self-employed rather than unemployed.

Question 1: *Is Geospatial Intelligence relevant in developing effective counter-terrorism strategy?*

Table 8: Response to question 1

Response	Frequency	Percentage (%)
Yes	85	65.4
No	18	13.8
Don’t know	27	20.8
Total	130	100

From the above table, 85 (65.4%) of the respondents voted “Yes” to the question while 18 (13.8%) said “No”. 27 (20.8%) are indecisive, probably because they are not familiar with the term. Thus, analysis on the basis of the

data above shows that it is obvious that Geospatial Intelligence is developing an effective counter-terrorism strategy.

Question 2: *Is geographic data useful in counter-terrorism?*

Table 9: Response to question 2

Response	Frequency	Percentage (%)
Yes	90	69.2
No	12	9.2
Don't know	28	21.5
Total	130	100

From the above table, 90 (69.2%) voted "yes" while only 12 (9.2%) voted "no", with 28 being indecisive. Thus, from the above figures, since majority of the sampled population voted "yes", Geographic data is thus useful in counter-terrorism.

Question 3: *Is knowledge of geography relevant in formulating counter-terrorism measures?*

Table 10: Response to question 3

Response	Frequency	Percentage (%)
Yes	71	54.6
No	31	23.8
Don't know	28	21.5
Total	130	100

The above table shows that 71 (54.6%) agree while 31 (23.8%) disagree and 28 (21.5%) are indecisive as to whether the knowledge of Geography is relevant in formulating counter-terrorism measure. However, a majority of the respondents voted 'yes' to the question.

Question 4: *Is Geospatial Intelligence relevant in the fight against Boko Haram in Nigeria?*

Table 11: Response to question 4

Response	Frequency	Percentage (%)
Yes	95	73.1
No	13	10
Don't know	22	16.9
Total	130	100

From the above table, 95 (73.1%) voted 'yes' while only a negligible figure of 13 (10%) are in disagreement. 22 (16.9) showed indecisiveness. Thus, drawing from the figures above, Geospatial Intelligence is relevant in the fight against Boko Haram in Nigeria.

Question 5: *Can knowledge of the terrain support the Nigerian military in fighting boko haram?*

Table 12: Response to question 5

Response	Frequency	Percentage (%)
Yes	87	66.9
No	22	16.9
Don't know	21	16.2
Total	130	100

Here, 87 (66.9%) said "yes" while 22 (16.9%) said "no" to the question. Only 22 (16.2%) are indecisive. Therefore, majority of the respondents are of the view that knowledge of the terrain is important to the Nigeria military in the fight against book haram.

Question 6: *Is it necessary for Nigerian military to acquire and utilize remote sensing technology in the fight against book haram?*

Table 13: Response to question 6

Response	Frequency	Percentage (%)
Yes	85	65.4
No	27	20.8
Don't know	18	13.8
Total	130	100

In the table above, 85 (65.4%) voted "yes" to the use of remote sensing in the fight against Boko Haram while 27 (20.8%) voted "no" and 18 (13.8%) remained indecisive. This shows that remote sensing is important in the fight against Boko Haram in Nigeria.

Question 7: *Can Geographic Information System (GIS) be used in planning counter-terrorism operations?*

Table 14: Response to question 7

Response	Frequency	Percentage (%)
Yes	66	50.8
No	22	16.9
Don't know	42	32.3
Total	130	100

Here, 66 (50.8%) of the respondents voted "yes" while 22 (16.9%) voted "no" to the use of Geographic Information System (GIS) in planning counter-terrorism operation. A considerable number of 42 (32.3%) are indecisive, probably because they don't have knowledge of GIS. However, majority of

the respondents still voted "yes" to the use of GIS in planning counter-terrorism operations.

Question 8: *Is persistent surveillance relevant to defeating Boko Haram?*

Table 15: Response to question 8

Response	Frequency	Percentage (%)
Yes	102	78.5
No	8	6.2
Don't know	10	7.7
Total	130	100

The above table shows that 102 (78%) said "yes" to persistent surveillance while only 8 (6.2%) said no and 10 (7.7%) are indecisive. Thus, analysis from the above figures results that persistent surveillance is relevant in defeating boko haram.

Question 9: *Is Global Positioning System (GPS) important in the fight against book haram in Nigeria?*

Table 16: Response to question 9

Response	Frequency	Percentage (%)
Yes	87	66.9
No	20	15.4
Don't know	23	17.7
Total	130	100

In the above table, 87 (66.9%) hold that Global Positioning System (GPS) is important in the fight against Boko Haram. Only 20 (15.4%) of the Respondents hold contrary view while 23 (17.7%) are indecisive. Thus, GPS is important in the fight against Boko Haram in Nigera.

Question 10: *Is there a need for Nigeria to establish a National Geospatial Intelligence Agency?*

Table 17: Response to question 10

Response	Frequency	Percentage (%)
Yes	96	73.8
No	24	18.5
Don't know	10	7.7
Total	130	100

From the above table, a majority of 96 (73.8%) of the respondents agree that there is need for Nigerian Government to establish a National Geospatial Intelligence Agency. Only 24 (18.5%) disagree and 10 (7.7%) took no stand. Going by majority of the respondents, there is need for the establishment of a National Geospatial Intelligence Agency.

Question 11: *Boko Haram could have been defeated if Nigeria had a Geospatial Intelligence Agency*

Table 18: Response to question 11

Response	Frequency	Percentage (%)
Yes	66	50.8
No	34	26.2
Don't know	30	23.1
Total	130	100

The table above shows that 66 (50.8%) of the respondents voted "yes" to the above question while 34 (26.2%) voted "no" and 30 (23.1%) stayed indecisive. Hence, majority of the respondents support the view that Boko Haram could have been defeated if Nigeria had a National Geospatial Intelligence Agency.

Question 12: *Can the Nigerian military fight Boko Haram on its own?*

Table 19: Response to question 12

Response	Frequency	Percentage (%)
Yes	9	6.9
No	104	80
Don't know	17	13.1
Total	130	100

In the table above, only 9 (6.9%) respondents said "yes" while 104 (80%) respondents voted "no" and 17 (13.1%) stayed indecisive. Thus, going by the majority of the respondents, the Nigerian Military cannot fight Boko Haram on its own.

Question 13: *Does the Nigerian government need an integrated Database for gathered Intelligence?*

Table 20: Response to question 13

Response	Frequency	Percentage (%)
Yes	116	89.2
No	5	3.8
Don't know	9	6.9
Total	130	100

In the table above, on response to the question whether the Nigerian government needs an integrated database for gathered Intelligence, 116 (89.2%) voted "yes", only 5 (3.8%) voted "no" and 9 (6.9%) indecisive. Thus, there is need for integrated database for gathered Intelligence.

Question 14: *Are fusion centers for Intelligence Agencies relevant to National Security?*

Table 21: Response to question 14

Response	Frequency	Percentage (%)
Yes	102	78.5
No	16	12.3
Don't know	12	9.2
Total	130	100

The table above shows that a bulk of the respondents, 102 (78.5%) in number voted "yes" while only a negligible total of 16 (12.3%) voted "no" and 12 (9.2%) were indecisive. This means, indeed, that fusion centers for Intelligence agencies are relevant to National Security.

Question 15: *Is it healthy for Intelligence agencies to keep information from one another?*

Table 22: Response to question 15

Response	Frequency	Percentage (%)
Yes	6	4.6
No	119	91.5
Don't know	5	3.8
Total	130	100

The above table shows that only 6 (4.6%) of the respondents voted "yes", 5 (3.8%) stayed indecisive while 119 (91.5%) of the respondents voted "no" to the opinion that it is healthy for Intelligence agencies to keep information from one another. Therefore, drawing from the figures above, it is unhealthy for Intelligence agencies to keep information from one another.

Test of Hypotheses

H_i = There is a relationship between Geospatial Intelligence and Counter Terrorism in Nigeria

H_0 = There is no relationship between Geospatial Intelligence and Counter Terrorism in Nigeria

Observed frequency

Variables	No. of Respondents		Total
	Physical Administration	Online Administration	
Agree	31	34	65
Strongly Agree	20	16	36

Disagree	11	13	24
Strongly Disagree	4	1	5
Total	65	65	130

Expected frequency

Variables	No. of Respondents		Total
	Physical Administration	Online Administration	
Agree	32.5	32.5	65
Strongly Agree	18	18	36
Disagree	12	12	24
Strongly Disagree	2.5	2.5	5
Total	65	65	130

Comment:
Foe a degree of freedom of 3 at 0.05 significant level, the Chi-square value of 2.54 is greater than the table value of 0.0153. Therefore, we reject the Null hypothesis and accept the alternate hypothesis which states that there is a relationship between Geospatial Intelligence and Counter Terrorism in Nigeria.

Summary

This research work was designed to investigate the effectiveness of Geospatial-Intelligence as a tool in counter-terrorism, using Boko Haram as a case study. The aim of this work is to explore Geospatial-Intelligence and identify its potential sub-fields relevant to counter-terrorism in Nigeria. Boko Haram is not just any other group pursuing its legitimate interest in the society. It is a fringe religious terrorist group that has virtually declared war on the Nigerian state. It has killed and maimed thousands of innocent Nigerians through bomb attacks in several states, including the Federal Capital Territory, Abuja. Thus, the researcher explored Geospatial-Intelligence with a view to finding effective solutions to the Boko Haram menace. This work has explored areas of Geospatial Intelligence such as Geospatial Intelligence Applications, tools, and their respective applicability in counter-terrorism efforts. Literature in those areas were reviewed and acknowledged. The acquired data was subject to quantitative/statistical Analysis on the basis of which inference was made. The findings of this work shall be demonstrated in the conclusion part of this chapter. On this basis, recommendations will be formulated.

Conclusion

Terrorism is one problem that requires both National and International approaches. Having looked into Boko Haram for the purpose of this research work, there is evident need for adoption of extra measures to counter-terrorism. Geospatial Intelligence, through all its applications and tools identified in this work are indeed pertinent to formulation and implementation of counter-terrorism measures. More so, the relevance of Geospatial Intelligence extends to other areas such as town planning, recreational activities… all geared towards supporting National Security. In conclusion, this work finds that Geospatial Intelligence is relevant in the fight against Boko Haram in Nigeria.

Recommendations

This research recommends some points, as follows:

1. The government should create an Agency chiefly saddled with the responsibility of gathering, processing and disseminating Geospatial Intelligence. In line with the findings of this work, which was subject to and based on statistical analysis, there is need for the Nigerian government to establish an Agency responsible for gathering, processing and disseminating Geospatial Intelligence. This is highly recommended, having identified the gap between Geospatial Intelligence and National Security in Nigeria
2. There should be, in all the Intelligence Agencies, especially the military and the police; at least a department or unit designed for the purpose of gathering, processing and utilizing GI for operational purposes. Virtually all member-agencies of the Intelligence community, in one way or the other require Geospatial Intelligence. This requirement covers from the use of a simple map for operational duties to the use of computerized Geospatial data for complex operations. This is achievable only by having at least, a unit or department in all the Intelligence agencies, well-equipped and manned by trained personnel. It is thus recommended that the following agencies create a department as "Geospatial Intelligence" department or as a unit under the Intelligence department:
   a. The Nigeria Police
   b. The Nigerian Navy
   c. The Nigerian Army
   d. The Nigerian Air-force

e. Nigeria Defense Intelligence Agency
f. National Intelligence Agency
g. Directorate of State Security
h. The Nigeria Immigration Service
i. The Nigeria Customs Service

Note: the above listed agencies are only a few among the Agencies in Nigeria that need a Geospatial Intelligence department or Unit. Other agencies and institutions such as Ministry of works and Housing, Ministry of Agriculture, Ministry of Interior etc… need Geospatial Intelligence departments.

3. There should be an integrated database for all forms of Intelligence gathered by different Agencies or departments, with respect to clearance level as a means of gaining access to the database. As discovered in the course of this research work, Intelligence collation is pertinent to attaining its maximum utility. As such, it is highly recommended that the federal government makes sharing of information a culture, within the Intelligence community. This can be best achieved through a central database in which Intelligence from different agencies will be stored and disseminated if the need arises. Nonetheless, the ethics of Intelligence should not be compromised in doing this. Confidentiality and Secrecy of Intelligence should be given maximum attention through limiting access to them, using clearance levels as a factor.
4. There should be massive allocation of resources towards the technology sector as it has been discovered herein earlier that technology is the propelling force of GI. Technology is one of the most expensive and difficult thing for a country to properly budget for. This is so because it has a wide range of complexities and is a very competitive field. However, taking into cognizance the Technology requirement of any country in the 21st century against the background of its positive usefulness, one cannot over-emphasize the need for there to be proper budgeting and allocation of resources towards it. Thus, since Technology is the backbone of Geospatial Intelligence and having established in this work; the relevance of Geospatial Intelligence to National Security, it is paramount that Nigeria government allocates as much resources as possible to the technology sector.

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