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Resolving Farmers-Herders Conflict Through Security-Necessitated Technologies in Nigeria

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Abstract

This paper exposes some security necessitated technologies that have been explored in recent times particularly in the advance world to combat the various security threats that have overwhelmed modern civilisation. The study becomes necessary following the recent blitzkrieg-like attacks carried-out by Fulani herdsmen on many farming communities in Nigeria. Taking a historical approach to understanding conflicts cum conflict resolution and employing various theories including crime opportunity and routine activity theories to adequately comprehend this sorry situation which has claimed many lives, so as to proffer a more lasting solution to the quagmire, the discourse observes that herders and herds invasion of farmlands in Nigeria is enabled by the absence of the role of a capable guardian in the face of a very high motivation to commit this crime and the environment which encourages it. The work concludes that while the dearth of security-based technologies in Nigeria have enabled these attacks to be perpetrated without containment or detection, the shortfall without mincing words portray grave danger to the country's national security. As a policy recommendation therefore, the Nigerian state is admonished to immediately strive to bridge this gap by appropriately employing necessary technologies such as those which aid biometric data identification, instant information communication and aerial surveillances.

Keywords: Herdsmen, Farmers, Conflict resolution, Security, Technological deficit

1. Introduction

1.1 Background

It was in 1804 that a group of Fulanis, led by Usman dan Fodio staged an invasion and subsequently established a now enduring reign over most of the area now known as the northern part of Nigeria. Before this time, the indigenous Hausa tribe partitioned into various states harmoniously organised themselves socio-politically in this part of the world. Following this Fodio's institutionalisation of the emirate system of governance and the further quest to annex neighbouring entities to replicate same system, a cloud of animosity has ever since built-up over the entire socio-political landscape of contemporary Nigeria threatening intermittently, the economy and national security.

Being a vital component of national security, food security which is the raison detre for the quarrel between the Fulani herdsmen and their host farming communities stands out as a precondition for the survival of any state. The very first damage often caused by herdsmen invasion and which is very detrimental to food security is the pollution of the ecosystem. This is evident in the pollution of drinkable and total consummation of irrigation water. It manifest also in the cattle's destruction of important herbs, shrubs and trees within the often invaded communities which locals use as foods and drugs. Also, overgrazing is known to lead to hardening of soils and rendering them infertile and even difficult to till.

While these are happening following the invasion by herdsmen and their cattle, the farmers who find it difficult to tolerate this degradation of their environment retaliate or carry out actions that provocatively affect the herders. For instance, host community youths are often accused of stealing and killing livestock

belonging to herdsmen. In fact the violent conflicts that have always erupted following aroused rift between herders and farmers have more often than not claimed productive lives and infrastructural facilities. This apparently has grossly affected national security in Nigeria.

This paper takes a historical look into the farmers-herders conflict in Nigeria and reviews the various measures the Nigerian state has adopted to solve this imbroglio. The work went further to unveil various security necessitated technologies and establish how they can be explored to contain the invasion of farmlands by herds as well as the consequent violent conflicts that usually erupts. Aside this introduction, other sections of the work are the problem statement, objectives literature review, methodology, results, discussion, conclusion and recommendation.

1.2 Problem Statement

One observed problem here is that conflict resolution which is conceptualized as the methods involved in facilitating the peaceful ending of conflict and retribution, has always been perceived as a process where committed group members attempt to resolve group conflicts by actively communicating information about their conflicting motives or ideologies to the rest of the group and by engaging in collective negotiation (Forsyth, 2009). Even though Mayer (2012) explains behavioural resolution as thinking about disputants' actions and their behaviours, provoking a wide range of methods and procedures such as negotiation, mediation, arbitration and diplomacy, not much is discussed on how negative acts or their attempts should be effectively deterred, detected and ended as a method of resolving conflicts. A conglomeration of some conflict and security theories such group and failing state have been selected to guide the course of this discourse. To this effect information for the work are both secondary and as well generated through observations. This introductory note is followed by conceptual clarifications/analytical framework, a chronicle of herdsmen/farmers conflict in Nigeria and an appraisal of state's response to the abnormally. The need for a technological based security strategy is thereafter advanced with exemplifications of security instruments and tactics. The conclusion and policy recommendation for the Nigerian state ends this discourse.

1.3 Objectives

This paper is thus not only looking at the invasion of herdsmen across the length and breadth of the country as an issue bedevilling the Nigerian nation, it attempts to establish a nexus between the contemporary security situation threatening the corporate existence of Nigeria and the inability of state security agencies to adequately contain the excesses of these loss agents.

2. Literature Review

2.1 Theoretical Framework

The Crime opportunity and Routine activity theories serve as compass to guide this discuss. As a theory, crime opportunity suggests that offenders make rational choices and thus choose targets that offer a high reward with little effort and risk. The occurrence of a crime depends on two things: the presence of at least one motivated offender who is ready and willing to engage in a crime, and the conditions of the environment in which that offender is situated. All crimes require opportunity but not every opportunity is followed by crime. Similarly, a motivated offender is necessary for the commission of a crime but not sufficient. A large part of this theory focuses on how variations in lifestyle or routine activities affect the opportunities for crime (Hindelang, 1978).

Also, the Routine activity theory from Cohen and Felon (1979), emphasises that crime occurs when three elements converge. These are a motivated offender, a suitable target, and the absence of a capable guardian. The theory is dwells on the routine activities of both the offender and victim. An offender like the herdsman may routinely walk through a community or farmland looking for food his herds. But because the farmers cannot be at farms throughout the day, some sort of "Neighborhood Watch", security operatives and alarm systems can prevent crime. A capable guardian can therefore be ordinary people, police or technologically propelled devices whose presence and/or knowledge of their presence can prevent the commission of crime. Opportunity as Hindelang (1978) clearly observes, becomes the limiting factor which determines the

outcome in environments prone to crime because the offender generally has little or no control over the conditions of the environment and the conditions that permit particular crimes are often rare, unlikely, or preventable.

As usual, hardly does any theory exist without any blemish or criticism. The theories espoused above have their observed shortcomings. One of the widely observed shortfalls of the Routine Activity theory for instance, is the assumption that criminals are rational in their decision-making. They may not use the same rationale as the person implementing the security measures. They may not even be aware of the situational crime prevention techniques put into effect or may simply not care about the security measures. This notwithstanding, the security necessitated technologies being recommended in this discourse are aimed at helping the farmer foresee and prevent loss agents before they invade the farmer's fortune.

2.2 Empirical Evidence

While it is common for the average Nigerian to refer to the activities of what is now known as Fulani herdsmen as threat to national security, it must again be stated clearly as would soon be established that the actual threat is rather the state's inability to adequately deter or detect crime using modern technologies at the disposal of contemporary states. Herdsmen invasions must as a first step towards a comprehension of this discuss be understood as both a criminal activity and an affront against the state. Hence, the dear need to fight this hydra headed beast headlong. But unfortunately, the Nigerian government has been unwilling to address the causes of the crisis (SBMintel, 2017). Due to the widely perceived inefficacy of the Nigerian government, armed vigilante groups have sprung up in many farmer communities to tackle this quagmire in their own ways. Of course, this situation would often lead to vicious cycles of bloody feuds among farmers and herders. Local politicians and religious leaders have also exacerbated conflicts by recruiting members and frequently exaggerating claims (Roger, 2010). Since 2012, there have been projects to create transhumance corridors through the Middle Belt to allow for free grazing of herds. But as reported in Punch (2012), this is mostly supported by Northern lawmakers and opposed by their Southern counterparts. Hence, this endeavour have remained unsuccessful (Punch, 2012).

As noted by Oluka, Ativie and Efeosa-Temple (2019), President Muhammadu Buhari in 2019 tried to create Rural Grazing Area (RUGA) settlements. This proposal was met with fierce criticism. At the sub regional level, some state governments were recorded to have made efforts. Jinadu (2021) for instance, noted how the Ondo state governor, set an ultimatum for Fulani herdsmen to vacate certain areas, and in Oyo and Ogun state, people with Fulani and/or Hausa origins were asked to leave by politically mobilised youths from the local communities. Equally, on 17 May 2021, the 17 Southern governors in Nigeria issued the Asaba Declaration, aimed at solving the crisis (Channels TV, 2021). This group among other things advocated ranching as a solution to resolving the crisis.

Although ranching, where cattle are kept in enclosed parcels of land, has frequently been proposed as a solution to the crisis, this has proven to be highly unfeasible in Nigeria due to poor infrastructure (with unstable supplies of electricity, water, and fuel) and difficulties with acquisition and legal ownership of land (Rachael, 2018). Also, as Roger (2018) rightly noted, Land grabbing and cattle rustling are also potential difficulties that ranchers would have to deal with. Ranchers would also be unable to compete with nomadic herders with zero land-related costs.

Observing trends in contemporary Nigeria – a state challenged security-wise but finding it difficult to even profile criminals and terrorist elements, coupled with the country's dependence on western countries to donate to her fairly-used machines to engage insurgents, one cannot but say that Nigeria is highly technologically deficient and this in fact undermines the country. A little insight into some empirically generated information on this subject will assist our comprehension of this issue. Out of 141 countries assessed on Year 2015 Global Innovative Index (GII) by INSEAD (a graduate business school with campuses in Europe, Asia, and the Middle East), Nigeria was ranked 128th with 0.09 score, coming far below some seemingly quiet African countries such as Senegal (0.41), Botswana (0.36), Rwanda (0.35), Mozambique (0.33) and Malawi (0.31). While Switzerland ranked 1st with 1.00 score and United kingdom

2nd with 0.99, Mauritius (0.66), South Africa (0.58), Tunisia (0.46) and Morocco (0.45) ranked 49th, 60th, 76th, and 78th respectively. Seven years after, Nigeria continue to lag behind same African countries including Ghana and Tanzania, particularly coming 114th out of the 132 countries that were assessed (see WIPO, 2022).

The Global Innovation Index for clarification sake is an annual ranking of countries by their capacity for, and success in, innovation. It is published by INSEAD and the World Intellectual Property Organization (WIPO), in partnership with other organisations and institutions, and is based on both subjective and objective data derived from several sources, including the International Telecommunication Union, the World Bank and the World Economic Forum. The situation depicted above creates the loophole from which hoodlums like the homicidal herdsmen take advantage.

As observed earlier, this tense relationship between herdsmen in Nigeria most of whom are fulanis and farming communities has existed for many years but there has been a dramatic escalation in recent times which has claimed many lives. To be specific, since the Fourth Nigerian Republic which came into being in 1999, farmers-herders clashes have killed more than 19,000 people and displaced hundreds of thousands more (International Committee on Nigeria, 2020). The major reason for this chain of violence and its intensity is traceable to the struggle and competition for the limited resources of arable land and water resources in the rural communities of most of the western Sahel. This struggle became inevitable due to an expansion of agriculturist population and cultivated land at the expense of pasturelands; deteriorating environmental conditions, desertification and soil degradation; breakdown in traditional conflict resolution mechanisms of land and water disputes; and proliferation of small arms and crime in rural areas (Baca, 2015).

Insecurity and violence have led many populations to create self-defence forces and ethnic militias, which have engaged in further violence. From northwest regarded as the stronghold of the Hausa/ Fulani in Nigeria to the southern part, largely dominated by Christians, the story is the same as both have bitter experiences of attack by armed gangs suspected to be Fulani herdsmen. According to *The Africa Paper* of January 5, 2016, while farmers in host communities always complain that nomadic cattle destroy their crops, the herdsmen, who are predominantly of the Fulani ethnicity, say they have nowhere to graze their cattle. Such disagreement from both groups often leads to conflict that claim lives properties and monies. The table below lists locations where herdsmen's attacks on farming communities have been rife since 2010.

Table 1: Locations of Herdsmen - Farmers' Attacks in Nigeria Since 2010

Year	Areas of Occurrences
2010	Chawai, Southern Kaduna, Kaduna State
2011	Anchuna, Ikulu in Zango Kataf; Gwong communities of Angwan Yaro and Yuli in Kussom District of Gwong Chiefdom, Jema'a LGA, Angwan Rana, Bitaro District, Jaba LGA; Kagarko LGA; Fadia Bakut, near Zonkwa, Kukum Dutse, Kagoro Chiefdom, Kaura LGA, Dutsen Bako District; Anchuna District, Ikulu Chiefdom; Fadan Daji, Kagoro Chiefdom,
2012	Barkin Ladi and Riyom LGAs in Plateau state. Isoko North LGA in Delta State.
2013	Mbasenge community in Guma LGA; Agatu; Nassarawa, Nassarawa State; Ekwo-Okpanchenyi, Agatu LGA; Nzorov, Guma LGA; Ikpele & Okpopolo communities
2014	Adeke village; Naka road, Makurdi; Ukpam village of Mbabaai in Guma LGA; Umenger; Logo LGA; Gbajimba, Guma LGA; Obagaji, Headquarters of Agatu LGA; Tee-Akanyi village; Galadima village; Villages in Ogbadibo LGA; Katsina State,
2015	Egba village in Agatu LGA; Galadima village, Zamfara State; Ukura, Gafa, Per & Tse-Gusa, Logo LGA; Motokun village, Patigi LGA, Kwara State: Oro-Ago community; Ifelodun LGA; Ninji and Ropp villages in Plateau State: Onitsha Ukwuani in Ndokwa West LGA, Delta State; Oghonogbo community, a boundary between Edo and Delta State; Odighi village in Ovia North East LGA; Ulaja and Ojeh communities in Dekina LGA, Abejukolo, headquarters of Omala LGA both in Kogi State; Akure at Olu Falae Farms
2016	Ko, Gereng and Ndikajam in Girei LGA; Tom-Anyiin, Tom-Ataan, Mbaya and Tombu in the Buruku LGA; Ijebu-Igbo,Ijebu North LGA Ogun State; Uzo-Uwani in Enugu State; Udi LGA; Okokolo village in Agatu; Tarkaa LGA; villages in Benue and Nasarawa states; Ado-Ekiti; Gashaka LGA, Taraba state; along Benin-Asaba Expressway; Lagun, Iyana Offa, Offa, Atagba, Lapata and other communities in Lagelu LGA, Ibadan, Oyo State; seven villages in Nimbo in Uzo- Uwani LGA, Enugu State. Ossissa , Ndokwa east LGA, Delta state; Communities in Southern Kaduna.
2018	Numan and Lamurde local councils of Adamawa State; Plateau State, Dowaya, Yandang community in Lau Local Government Area of Taraba State. Bassa in Kogi and Jema'a in Kaduna
2019	Adara settlement named Ungwar Bardi in Kajuru LGA of Kaduna State
2020	Villagers were murdered in two different attacks in Plateau State
2022	Mbadwem and Tiortyu communities in Benue state.

Source: Authors compiled contents from various news sources

While it is though reasonable to concur with public opinion that herdsmen in recent times have constituted a great lot of threat to national security, this discourse is hypothetical as we though hope to establish through historical and logically qualitative analysis, that it is the state's inability to invent and/or employ security-necessitated technology as well as adopt and institute modern ways of rearing herds such as ranching that is the main challenge facing Nigeria. Security-necessitated technology is conceptualised in this study t--o refer to innovations such as the biometric data capturing, Global Positioning System, Close Circuit Television cameras, and drones which are being explored and exploited to deter, detect and prosecute crimes like terrorism and kidnapping.

3. Methods

3.1 Study Setting

The study dwells on the security sector and the various technological apparatuses at the disposal of man that could be utilized to promote and maintain law and order as they affect the relationship between farmers and herders in Nigeria. Because most farmers in the country live in rural communities, where technological presence and its use is at dismal, effort is made here to unveil and explain the use of requisite technological systems.

3.2 Study Design

A survey of varying technological apparatuses and applications particularly as they have been used and are still being used in other climes is carried out here before reasoning on how they could be employed to secure order between the farmers and the herders. To be precise, because the study aims to espouse the various security necessitated technologies and unveil their usage in contemporary times to resolve the

security challenges face mostly by farmers, effort is made here to draw out how they are being used in countries like the United States before deciphering how important they can be in Nigeria.

3.3 Data Sources

Information for this study was garnered from secondary data sources. The idea of relying on secondary data is anchored on the availability of extensive collections on farmers-herders imbroglio in Nigeria as well as technologies that have been used to ensure security globally. Reports and editorial comments from both the broadcast and print media represent secondary sources from where valuable information were drawn. Within the secondary category too are governmental broadcasts and acts.

3.4 Sampling

Of all technological systems that have been developed by man for the benefit of humanity, security necessitated technologies such as the biometric data capturing devices and systems, the CCTV and GPS are chosen for their direct or close relevance to the aim of this work. This is purposive sampling as for this, is to focus on particular characteristics or abilities of a population or phenomenon that are of interest, which will best enable a study achieve its objectives.

3.5 Instruments

Tools used to collect data for this discourse include the library, internet-enabled devices, bot, radio and television. The radio and television mentioned here, were particularly important as broadcasted news on the spate of farmers-herders violent conflicts in Nigeria instigated the desire to embark on this study.

3.6 Data Analysis

Data garnered in the course of this exercise were collated and analysed qualitatively. Information extracted from this secondary sources such as expert contribution in books and journals as well as media bulletins were logically analysed and utilised to explain how the presence and usage of technological necessitated technologies could accrue benefit to the Nigerian state.

4. Results

Observations have revealed that the technological equipment used by different criminal elements such as the invading herdsmen and Boko haram are very advanced as compared to the equipment that security agencies use in many developing states. Therefore, there is the need for the governments of these nations to upgrade not only equipment in the hands of law enforcement agencies but those the populace utilise for self-help and protection of their belongings. The activities of armed herders such as the invasion of communities can be checked through modernised surveillance. Surveillance is the monitoring of the behaviour of people as well as checking unwanted or suspected objects. It is in this respect that Closed Circuit Television cameras (CCTVs) are used in many parts of the developed world to deter, trace and track the activities of criminal elements.

If not for the use of CCTV cameras, it would have been very difficult to unveil the brains behind the famous July 7, 2005 Islamic extremists coordinated bomb attacks in central London. Following the experienced investigative exploit made through these security cameras, the Scotland Yard advocated in 2015 that every home in the United Kingdom (UK) should be equipped with a CCTV camera (Greenwood, 2015). According to the estimates of the British Security Industry Authority (BSIA) as reported by Barrett (2013), there are up to 5.9 million closed-circuit television cameras scattered throughout the UK, including 750,000 in “sensitive locations” such as schools, hospitals and care homes. It is on record that the United Kingdom - a nation of 64 million has one CCTV camera for every 11 people. Also in the advanced world, Traffic cameras which were meant to help enforce traffic laws at intersections are sometimes utilised by law enforcement agencies for purposes not really related to traffic violations. Cameras for instance are used for identifying individuals inside a vehicle and license plate data to be collected and time stamped for cross reference with other data used by police. To this extent, the US Homeland Security department has been funding networks of surveillance cameras in cities and towns as part of its efforts to combat terrorism (Savage, 2007).

It is interesting to know too that cell phone is equally an important device for surveillance in the modern world. Known as cell-phone spying, this involves the tracking, bugging, monitoring, interception and recording of conversations and text messages on mobile phones. It also encompasses the monitoring of

people's movements, which can be tracked using mobile phone signals when phones are turned on. In the United States, law enforcement agencies can legally monitor the movements of people from their mobile phone signals upon obtaining a court order to do so (Richtel, Matt 2005). Cell-phone spying software is installed on the gadgets to enable these actions. These devices are used by law enforcement agencies to track people's movements, and intercept and record conversations, names, phone numbers and text messages from mobile phones. Their use entails the monitoring and collection of data from all mobile phones within targeted areas. Some security agencies in the U.S. such as the Oakland Police Department, San Francisco Police Department, Sacramento County Sheriff's Department, San Jose Police Department and the Fremont Police Department are known to have explored this opportunity (Bott & Jensen, 2014).

Bott & Jensen above, attests that in 2007, this technology assisted the Oakland Police Department in Oakland, California in making 21 arrests, and in 2008, 19 arrests were made. In early 2006, USA Today reported that several major telephone companies were providing the telephone call records of U.S. citizens to the National Security Agency (NSA), which is storing them in a large database known as the NSA call database. This report came on the heels of allegations that the U.S. government had been conducting electronic surveillance of domestic telephone calls without warrants (Cauley, 2006).

For any surveillance activity or operations to yield the result of identifying crime perpetrators, there has to be a data base of those migrating into and out of a country. This brings us to the idea of biometrics for security purposes. Biometrics which refers to metrics relating to human characteristics and used in computer science as a form of identification and access control is used to identify individuals in groups that are under surveillance. Biometric identifiers are the distinctive, measurable characteristics used to label and describe individuals (Jain, Hong, & Pankanti, 2000). Examples include, but are not limited to fingerprint, palm veins, face recognition, DNA, palm print, hand geometry, iris recognition, retina and odour/scent. Others are typing rhythm, gait, and voice.

For decades, biometric data has been collected by governments across the world. This started by recording basic physical attributes within paper records, including height, eye colour, weight hair colour and various other physical characteristics. Fingerprint biometrics is used by the police to help deal with crime scenes. As early as the start of World War I, some nations, including Britain, began using the biometric passport that kept track of rudimentary physical characteristics or identifiers. It must however be noted that a technological deficit observed in the use of biometrics in Nigeria is the inability of the government or the security agencies to develop a central data base that can be explored by the law enforcement agencies in their task of identifying and prosecuting suspected criminals. Taking clue from the U.S. for example, the FBI in partnership with other security agencies has not only over the years authenticated an individual’s identity but have assumed responsibility for managing the national fingerprint collection in that country since 1924.

The Global Positioning System (GPS) has also been employed to resolve some security challenges in other climes. It is a global navigation satellite system which provides geo-location and time information to a GPS receiver in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system operates independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information. The GPS system provides critical positioning capabilities to military, civil, and commercial users around the world. Although the United States government created the GPS and maintains it, it however makes it freely accessible to anyone with a GPS receiver even though she (US government) can selectively deny anyone access to the system (Srivastava, 2014). While the GPS was originally a military project, it has progressively metamorphosed into a dual-use technology, serving both military and civilian applications. As a tracking device used in determining the positions or locations of a vehicle or a person to which it is attached, Since the early 1990s the GPS has become very popular for identifying locations and many researchers have used GPS in collars for experiments to measure animal behaviour and location (Schlechte et al, 2004; Umstatter et al, 2008).

Some of the vast areas in which the GPS have been applied to resolve security issues are as follows: mobile phone tracking, fleet tracking, geo fencing, and disaster management and relief services. GPS is known to have played vital role in relief efforts for global disasters such as the tsunami that struck the Indian Ocean region in 2004, Hurricanes Katrina and Rita which wreaked havoc in the Gulf of Mexico in 2005, and the Pakistan-India earthquake in 2005. Search and rescue teams used GPS, geographic information system (GIS), and remote sensing technology to create maps of the disaster areas for rescue and aid operations, as well as to assess damage. This shows how emergency services depend upon GPS for location and timing capabilities. Like the Internet, GPS is an essential element of the global information infrastructure. The free, open, and dependable nature of GPS has led to the development of hundreds of applications affecting every aspect of modern life. With these uses, the GPS can be explored by the Nigerian security network to quickly respond to distress calls either by the farmers or herdsmen. This is said because in the USA for instance, GPS remains critical to national security, as its applications are integrated into virtually every facet of military operations.

Nearly all new military assets -- from vehicles to munitions -- come equipped with GPS. As of 2009, military GPS applications include: its use to find objectives, even in the dark or in unfamiliar territory, and to coordinate troop and supply movement. In the United States armed forces, commanders use the Commanders Digital Assistant and lower ranks use the Soldier Digital Assistant (Sinha, 2003); using GPS to track potential ground and air targets before flagging them as hostile; Military aircraft, particularly in air-to-ground roles, use GPS to find targets; Search and rescue as well as close management of Patrol movement.

Again, the Unmanned Aerial Vehicle (UAV) commonly known as a drone is another related technology that has aided security agencies in the advanced world to resolve some of their security issues such as surveillance. The drone is an aircraft with no human pilot aboard. The flight of UAVs may operate with various degrees of autonomy: such as under remote control by a human operator, or fully or intermittently autonomously, by on-board computers. Compared to manned aircraft, UAVs are often preferred for missions that are too dull, dirty or dangerous (Tice, 1991). As at 2013, at least 50 countries used UAVs. China, Iran, Israel and others designed and built their own varieties (Horgen, 2013). Other security necessitated equipment which are invoke in this modern times and which are greatly in use in many countries are various types of spy gears used to perform surveillance involving observation of the behaviour of a particular target, conducting counter-surveillance to monitor or for bugging devices.

These set of gadgets are now even used not only by security agencies, but private investigators, farmers, and bounty hunters have all keyed into its usage. They use it to gather information from a subject such as photographs or video of their activities. In other words, the equipment is becoming an important part of both personal and home security with the use of security cameras, hidden surveillance and wireless cams. Examples of spy equipment are audio amplifiers and recorders, electronic bug detectors, digital cameras, GPS tracking devices, listening devices, and night vision goggles.

While the night vision goggles or Night Vision Binoculars are today useful for night time surveillance and security, they were said to be initially used in World War II and only came into wide usage during the Vietnam War (Tyson, 2001). The image produced by an NVD is typically monochrome green, as green was considered to be the easiest colour to look at for prolonged periods in the dark. (Liszewski, 2021). The technology has evolved greatly since their introduction, leading to several generations of night vision equipment with performance increasing and price decreasing. Consequently, they are available for a wide range of applications as designed for gunners, drivers and aviators.

5. Discussion

As the Crime opportunity and Routine activity theories rightly posited, crime occurs when the three elements of a motivated offender, a suitable target, and the absence of a capable guardian converge. Empirical research have been revealing how sophisticated modern day herdsmen operate in Nigeria. They do not only go about with sophisticated weapons but they are equipped with gadgets such as android phones

which are capable of directing them on locations where they would find the best of pastures for their cattle. Unfortunately on the part of the average rural farmer in Nigeria, he is so neglected by the state to the extent that the government does not even have the bio-data of the occupational farmers in the country.

Following this observation, it is the opinion of this paper that the Nigerian state would guarantee the security of both the farmers and herdsmen if a serious and concerted effort is embarked upon to possess a database of all farmers and herders in the country. This would mean that the biometrics of both the farmers and the pastoralists are captured. This would ease and improve the job performances of the various security agencies including the community based vigilantes. Of course, for any surveillance activity or operations to yield the result of identifying criminal elements, there has to be a data base of those migrating into and out of that community, state, or country.

A major security deficit in Nigeria which must be mentioned particularly as it contrasts modern best security practice is the absence of CCTVs. CCTVs as noted earlier, have been used to observe, monitor and track the activities of criminal elements. Even though sky scrapers and other high rising buildings are absent in most rural communities where the herds and herders invade, the various communication masts of various communication companies can be used by the state and its security agencies to install the CCTV cameras.

-The Nigerian government can through her social welfare schemes make android cell phones available to the rural farmers and herders to enable them explore the various benefits cell phones can accrue to the desire to enhance or guarantee security. Of course, these cell-phones are capable of spying, tracking and bugging, monitoring, interception and recording of conversations. Of course this will help security agencies in their investigation and interrogation of cases.

It is no longer news that the rampaging herdsmen who cause havoc in Nigeria are more equipped with up to date weapon system and communication gadgets than the security operatives employed by the governments at various levels. The confession of the Niger state government in north-central Nigeria reminds us of this dilemma. The Premium times (2022) reported how the secretary to the state government attested that they found out that the conventional security architecture has inadequacy in the number of personnel and even in equipment. He said banditry in Nigeria has become well-structured with a high level of communication that enables bandits to call for reinforcement when under attack. The police and other law enforcement agencies are ill equipped to the extent that even when the villagers call for help in the face of attacks or invasion, it takes ample time of many hours before the police or other agencies respond, mostly after the attackers must have left. So, the Global Positioning System (GPS) can be of great utility in this regard. it can be used effectively as done in advanced countries of the world to monitor, control or track the animals and their shepherds. This will greatly reduce insecurity in Nigeria. Finally on this discussion segment, it is imperative to still refer to our theoretical guide where it was admitted that crime thrives based on the existence of three elements which are a motivated potential offender, a suitable environment and an absentee guardian. This situation which breeds insecurity can be reversed in Nigeria by all stakeholders who desire to salvage the country from the looming food insecurity and the possibility in the near future of an outbreak of war between the Fulanis who reside in various countries in West Africa and their unwilling host communities. Stakeholders who comprise the federal government, state and local governments, security agencies, community leaders, farmers' associations and media organisations can engender this reversal by individual and collective efforts to make use of the Unmanned Aerial Vehicle (UAV) commonly known as a drone to monitor the activities of various persons and groups at various times and levels.

6. Conclusion and Recommendation

Following this study, it is glaring that the Nigerian state if she really has the political will to resolve the herders-farmers conflict which has claimed many lives and continues to do so can adopt a security-necessitated technological strategy for this purpose. It is in the opinion of this paper that if every operational strategy from surveillance, through arrest to prosecution is computerised or technologically driven, it will definitely be difficult for criminals to perpetrate atrocities and escape being unravelled or discovered. Exemplified cases such as the successful unmasking through CCTV cameras, of the arrow heads of the

famous July 7, 2005 Islamic extremists coordinated bomb attacks in central London attest to this position. To this effect, the following recommendations are proffered as solutions for resolving the incessant herdsmen – farmer's violent attacks.

1. Mass surveillance which is the intricate surveillance of an entire or a substantial fraction of a population in order to monitor that group of citizens, has to begin by governmental security agencies and this again must be conducted by putting in place a data base of all Nigerian citizens as well as foreigners who do business in the country. Mass surveillance has often been cited as a necessity to fight terrorism and or enhance overall security of a community or state. CCTVs should be installed at all public places like parks, streets and markets. This of course can be very helpful in preventing crimes. CCTVs are capable of checking and deterring bomb blasts and other terrorist activities. The Nigerian governments (federal, state and local) at various levels can take advantage of the presence of communication masts in nooks and crannies of the country to place CCTV cameras on the masts in other to have the opportunity of tracking or reviewing the activities of criminal elements as the need arises.

2. The Nigerian state should develop the will to take advantage of most if not all the security apparatuses that have in recent times aided crime prevention, detection and prosecution in the modern world as no price is too small to pay for the safety and security of the people. After all, the citizens' welfare and security are the reasons governments exist. While with captured biometrics and a data base of every individual in place, it will not only be easy for the herdsmen and their animals to be identified at any crime scene, the GPS technology could equally be explored to monitor the locations and position of these nomads. In addition to the foregoing, equipment such as the listening Devices, voice recorders, spy gears and their likes should be made easily available for use to people particularly those living in rural communities or some of their community leaders so as to enable them foresee some form of imminent attacks before they happen. This of course will deter the potential criminal who may be aware of the capabilities of his supposed victims.

3. Finally, it is noteworthy to say that many ways to use technology in crime prevention and detection abounds, the only thing that is however required is that the state should assess their peculiar situation and adopt the measure that best suits its peculiarity. In this light and in tune with Parsons (ibid.) postulation on education as element of national advancement, continuous research to quickly discover new threats so as to seal up the loopholes through technological based tactics should be encouraged.

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