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**The role of Digital, Mobile and Computer
Forensics as an Agent Of Change in the
contemporary Nigeria**

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^{2/}**INTRODUCTION**

- Population of about **188,246,094** as of October 10, 2016, according to the latest United Nations estimates (Worldometers, 2016)
- most populous black nation in the world
- multicultural and multilingual
- abundant natural and human resources
- Arable Soil and Vegetation
- Leadership problems

³ **Contemporary Nigeria State**

➤ Problems

- ❖ Corruption
- ❖ Corruption identified as the root other problems in Nigeria (Uzochukwu, 2015).
- ❖ Security challenges(Kidnapping), Economic Saboteur(Niger Delta Militants), Terrorism, (Boko Haram), Crime, Unemployment, Declining Education systems, Environment degradation and Infrastructure, food etc.
- ❖ Insider dealing
- ❖ Agricultural inputs diversion and mismanagement
- ❖ Cyber criminals
- ❖ Porous Border
- ❖ Bad election

⁴ **Nigeria State Potentials**

- Nigeria population of **188,246,094** consumers
- Human Resources: 77% of black doctor in USA are Nigeria (Bokohala1, 2016)
- unique opportunity to be the 13th major economies in the world by 20150(Peter, 2016)
- blessed with a lot of resources both natural and human
- Ethnic diversity and culture: Tourism window

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MOTIVATION

To find how Digital, Mobile and Computer Forensics could be used to support the actualization of Change agenda & sustenance of change “momentum” in the contemporary Nigeria socio-political and economic re-engineering

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Change Agenda

Major trust of government reform involving change agenda according to Editor(2016) are:

- i. to build an economy led by a strong and responsible private sector
- ii. government intervention by providing physical & economic infrastructure as well as social policies that would provide opportunities & succor for the 110 million extremely poor Nigerians

Accordingly, to do this government is committed to doing the following;

- i. consistently generate 5,000 MW of power daily by early 2016.
- ii. pursuing a long overdue reform in the hydrocarbon industry & reorganizing the NNPC & holding the

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- officials accountable for past revenue losses
 - iii. improving the capacity of the country's oil refineries to reduce the over 37 per cent of foreign exchange applied to the importation of refined petroleum products.
 - iv., government was making concerted efforts to boost the production of rice, wheat, and cotton in a bid to ensure self-sustenance.
 - v. the agricultural and agro-allied value chain remained a priority of government in job creation plans as it would support local agriculture.
 - vi. create a friendly and efficient environment for investments by removing bureaucracies and red tapes in approval processes adding that the incentive regime in the country would also be reviewed.

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- vii. to return all garment and textile factories to full production within the shortest time possible.
 - viii. address youth unemployment government would invest in infrastructure, technology, agriculture and mining while the one-meal-a-day programme for primary schools would also create many jobs and business opportunities
 - ix. implement social intervention schemes to make no fewer than 110 million extremely poor Nigerians to participate in the new Nigeria.
 - x. the experience and exposure of Nigerians abroad would be tapped to build a thriving economy as obtained in other nations, adding that India, Japan, China and Korea attained global status following the contributions of their nationals abroad

Change Begin with me

- ❖ Change begin with me must involve Systematic change
- ❖ forensics scientists can play a major role(s) in actualizing these corporate objectives of the of the government.
- ❖ materialization largely depends on the way things are done in the country & business in the country could no longer be as usual
- ❖ Taming of Corruption has to be tamed & Security challenges have to be addressed
- ❖ sufficiency in food production should be pursued with vigor etc.
- ❖ Corporate forensic policies & systematic approach

DIGITAL FORENSIC

- ❖ process of obtaining, analyzing and using digital evidence in investigations or criminal proceedings.

DIGITAL EVIDENCE

- ❖ evidence secure from crime scene for the purpose linking criminal to the crime

Digital, Mobile and Computer Forensic

- ❖ Traditional computer forensics vs. Mobile Forensic
- ❖ development of mobile/smart phones, Wi-Fi routers, GPS equipment, CCTV, building access recorders, smart TVs, games consoles and fitness watches
- ❖ information security branch of law enforcement /intelligence gathering for various military establishments
- ❖ forensic tools - investigative methods to find specific electronic data
- ❖ Mobile device forensics useful in military intelligence, corporate investigations, private investigations, government establishments, criminal and civil defense, and electronic discovery

Digital, Mobile and Computer Forensic continues

- ❖ cybercrime / examine computers and mobile devices
- ❖ expertise to protect computers from infiltration, determine how a computer was broken into or recover lost files
- ❖ evidence into a format that can be used for legal purposes (i.e. criminal trials)
- ❖ testify in court themselves
- ❖ investigating crime scene, hacking or denial of service attacks in network, or extract evidence from emails, internet history, documents or other incidental evidences in respect of crimes in case of murder, child sexual abuse, kidnap, fraud and drug trafficking
- ❖ information security breach
- ❖ insider manipulation of shares prices in stock exchange market
- ❖ Shareholders' and Partnership Disputes
- ❖ Insurance dispute Malpractices and wrongful dismissal result in calculating the resulting economic damages

Digital, Mobile and Computer Forensic continues

- ❖ Business/Employee Fraud Investigations: e.g. funds tracing, asset identification and recovery, forensic intelligence gathering and due diligence reviews
- ❖ Intellectual Property theft
- ❖ Matrimonial Disputes
- ❖ Employment disputes
- ❖ Business Economic Losses (BEL) e.g. contract disputes, product liability claims, trademark and patents, construction claims, expropriations, infringements and losses arise as a result of a breach of agreement
- ❖ Fraud investigations
- ❖ Professional Negligence: technical and loss of quantification
- ❖ Industrial espionage (economic or corporate espionage)

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Digital, Mobile and Computer Forensic continues

Case Study: International investment Incorporated (2016) reported dispute between Starwood Hotels & Resorts and Hilton in which the former accused the latter of industrial espionage in 2009. This was as a result of former staff downloading a vast amount of data and documentation before leaving the company. The service of Computer forensic would be handy in this dispensation. Hilton eventually paid compensation to Starwood Hotels and refrain from forming a competing luxury hotel brand until 2013. Since 2013 as an out of court settlement.

- ❖ **Mediation and Arbitration:** alternative dispute resolution (ADR) in corporate litigation

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Digital Forensics and Crime

- ❖ Ubiquity of smart phone and some other specialize digital devices offers new opportunities for investigations of criminal cases.
- ❖ signature to the majority of crime committed in the country
- ❖ Forensic investigation can nip terrorism attack in the bud
- ❖ exonerate suspects by corroborating an alibi e.g. Chibok girls scenario

Child Sexual Abuse Images

Case study:

POSTnote (2016) reported a case involving Dominic Stone in October 2011. Dominic Stone downloaded hundreds of images of child sexual abuse when he was working as a clergyman. He denied he was the one who downloaded the files, suggesting someone might have done so without his knowledge but digital forensics techniques reveal that that the computer had been

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used for purposes related to his church work at the same time the images were being downloaded.

Economic fraud

Insider dealing is perhaps one of the main problems of the Nigeria stock market.

Case Study

POSTnote (2016) reported an insider dealing cartel who specializes in buying and selling shares using leaked confidential information and makes a fortune out of it. They were able to have enough evidence to prosecute the cartel by gathering multiple sources of digital information such as telephone records, computer log files

Mark (2014) reported Insider trading involving a former Bristol-Myers finance executive admitting to buying stock options in a biotech company that Bristol-Myers was preparing to buy as a result of digital forensic investigation. The executive consent to forfeiting \$311,361 in illegal profits and he faces a maximum of 20 years in prison and \$5 million fine when he is sentenced.

Counter Terrorism with digital forensics

Case Study

POSTnote (2016): Dhiren Barot was nabbed before executing a terrorist on the UK and US. Iren Barot was convicted of conspiracy to murder for planning terrorist attacks on the UK and US. Investigators at the Metropolitan Police examined 274 computers and 1,785 external storage media devices in what was then the largest counter-terrorist investigation launched in the UK.

Agriculture

Fertilizer Diversion

Recently the minister of Agriculture and Rural Development, Chief Audu Ogbeh, condemned one of the two big urea plants in Nigeria of diverting fertilizer meant for Nigeria market for export and at the same time selling to Nigerian farmers at skyrocketed prices. This invariably makes the product out of reach for Nigeria market (Gabriel, 2016).

- introduction of corporate forensic guideline in the sector would drastically reduce the incidences of fertilizer diversion
- ❖ Distribution of inputs fund

Money laundering

- ❖ sophisticated and creative ways of hiding under legitimate business to launder the proceeds of crime
- ❖ The proceed of laundering can be put into use in negative ways such as promoting instability in the polity, terrorist financing as well as jeopardizing the economy of any state. To trace all these monies, forensic expert would be a useful instrument for government who desires for change

Economic Saboteur/Terrorism

- ❖ Economic Saboteur and Economic terrorism are closely related. The activities of Niger Delta militant as well as deliberate attempt to disobey government economic policies constitute economic saboteur.
- ❖ Forensic expert to the rescue

Police & Para-military Forces

- ❖ Digital forensic analyses would be of immense benefit to the police and paramilitary agencies in detecting the perpetrators of crime
- ❖ Preventive measure against criminality could be detected

Military intelligence and Counter intelligence

- ❖ Forensics experts can contribute immensely in training and man power development in Military Intelligence, Surveillance and Reconnaissance thereby acting as change agent
- ❖ The information provided by the forensics expert could be of invaluable benefit to the battle group commanders with actionable intelligence to facilitate effective decision making.

: Case Sample

- ❖ UK has 2 Military Intelligence (Exploitation) Battalion: The Unit is especially unique in the sense that it has a mixture of experiences in Army, Defense and wider Government. The Battalion is focused Material and Personnel Exploitation(MPE) and Counter Intelligence

Cyber warfare

- ❖ Cyber warfare form the bedrock of the current warfare with utmost intention to deter, disrupt, and defeat terrorist threats
- ❖ The adversary Armed forces, terrorists and criminals all use computers for communication, store information on personne and use e-mails and text messages
- ❖ They also encrypt files and implement codes.
- ❖ Highly sensitive information such as size of force, battle logs and plans for future action has all been discovered on seized electronic equipment, Files and disks, CDs, and DVDs,,

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Internet traffic logs, and data on the movement and the location of an adversary's assets

- ❖ Information can also be obtained from electronic devices, for example, digital picture frames, MP3 and MP4 players, and a variety of novelty storage media

Education Sector

- ❖ Prevent & Detection of Diversion of fund to different project not capture in the budget and non-compliance with government directives on different academics issue could exposed by the forensic corporate governance policies into our higher institution
- ❖ Prevention of Embezzlement
- ❖ Help in compliance with quota system in employment and admission related issues
- ❖ Prevention the Use of fund allocated and internal generated fund, ghost workers phenomenon etc.
- ❖ Prevention of Plagiarism & Intellectual Property theft

Compliance with government rule and regulation

- ❖ Non-compliance with rule by MDA and agencies e.g. TSA

Internal threat

- ❖ Disgruntle, fraudulent and sometime dismissed staff often remove sensitive data from organization system for financial or malicious used
- ❖ Incriminating data can only be recovered by use of forensic expert
- ❖ Damages claim can only be sustained with convincing evidence

Case Sample

Tricia (2016) gives an instance of internal threat in a case involving Frank Ringo a staff of Frank Ringo and his employer. Frank Ringo was accused of giving company sensitive data to

rival company, Frank Ringo has access to highly confidential information about customers, business practices, negotiating strategies, and sales reports. His company noticed unusual competition from rivals and Frank Ringo later resign his appoint. Forensic experts were able to determine that he had installed and used special software to copy the entire contents of the computer onto an external hard drive and the court, relied on this fact, found him guilty.

Digital Forensics Challenges: Technical & Non-Technical

- ❖ How do we duplicate or preserve evidence without changing the content of the data?
- ❖ What if the digital time stamp is absent or has been changed?

- ❖ the concept of reverse engineering is very difficult in forensic examination. Yet this is very essential to show a convincing prove in law courts. According to Wikipedia(2016) in order to remain competitive the producer/manufacturer frequently change parameters in mobile phone e.g. operating system, file structures, data storage, services, peripherals, pin connectors and cables. Therefore to catch up with these changes budgetary constraints could be a major factor.
- ❖ Astronomical increase in storage capacity and the way mobile devices are used constantly changes. It takes time to access data in large storage devices
- ❖ To really do a thorough analysis different tools are needed for difference devices depending on the manufacturer and their standard for forensics approach and how it meets legal requirements such as the Daubert standard or Frye standard.

- ❖ The data required for the investigation are often not readily available. e.g. hidden by specialized software or encrypted
- ❖ highly experience criminal may employ anti-forensics to hide their tracks. Encryption could lead to digital evidence becoming difficult for investigators to access
- ❖ Cloud
- ❖ Anti-forensic
- ❖ forensics experts scarcity

Non-Technical Challenges

- ❖ Lack of Adequate Government Forensic Policies
- ❖ Lack of Corporate Forensics Policies
- ❖ Legislative Challenges
 - law that permit search without advance notice
 - data can only be admissible if legally acquired, seizure by force can sometimes be inadmissible in law court
 - Police go through long process to obtain crime supporting evidence from Banks, communication companies and some

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bad egg in these organization sometimes connive with the criminal to hide evidences.

❖ Lack of Proper training for the Security agencies e.g. low echelons

Summary

This paper discusses the contemporary Nigeria problems and the potentials. It explores the core areas in which forensics professionals could be useful in supporting the change slogan and sustain the change “momentum” of the current administration by bridging the investigative gap we are currently facing where the criminal are becoming more sophisticated and in their criminal approaches. It further discusses the challenges forensic experts could face in playing these articulated roles as well given some recommendation for achieved the aim of tracking criminals.

Conclusion

Having x-rayed the contemporary Nigeria state vis-à-vis the challenges and potentials of Nigeria state; and having highlighted the role of DF as an agent of change in the contemporary Nigeria with additional notes on challenges and recommendation for government, I believe the field of DF offer a unique opportunity in assisting the government in rebuilding Nigeria state.

Recommendation

- ❖ government should encourage the few professionals in the areas of digital. Mobile and computer forensic at home to arrest brain drain
- ❖ regular training should be organized for our law enforcement agencies as well as other security agencies to keep an edge over the criminal
- ❖ Other experts and professionals abroad should be encouraged to come home and contribute their quota
- ❖ Forensic Science Regulator in the country
- ❖ Regulations should require all digital forensics practitioners undertaking criminal justice work to be accredited by the regulator

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- ❖ legislation to allow agencies the powers to access communications to prevent time lag
- ❖ Recruitment to allow intellectual in the law enforcement and paramilitary agencies.
- ❖ Partnership with academia and industry
- ❖ carve out a career path in the area of digital forensics in our security establishments to create a pool of digital specialists in the agencies
- ❖ fund the digital forensics science research, and develop a strategy for forensics

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THANK YOU

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