DEVELOPMENT OF A SYSTEM TO MITIGATE INSURGENCY IN NIGERIA USING MOBILE TECHNOLOGY

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ABSTRACT

The ongoing insurgency in Nigeria involves acts of violence carried out by various insurgent groups, most notably Boko Haram in the northeastern region. Despite government efforts, challenges persist, necessitating sustained endeavours for long-term peace and development. This work introduced an innovative mobile technology designed to mitigate insurgency crisis in Nigeria. Agile methodology was employed for system development due to its adaptability, collaborative nature, iterative approach, and focus on continuous improvement. The system was designed using Flutter (Dart) as the programming language, while Firebase was utilized for its Database Management System (DBMS). A mobile technology solution was developed to mitigate insurgency by leveraging advanced technologies and real-time information sharing, enabling users to report insurgent activities on a central platform. This system enhances incident reporting, intelligence gathering, feedback, and response coordination for effectively combating insurgency threats. By leveraging the capabilities of mobile technology, Nigeria can significantly strengthen its intelligence gathering, enhance security measures, and mitigate the threats posed by insurgency. Collaborative efforts between citizens, security agencies, and stakeholders, combined with the effective utilization of mobile technology, will contribute to a safer and more secure Nigeria.

Key Words
Insurgency, Anonymous Reporting System, Community Engagement, Counterinsurgency, Incident Tracking, Mobile App, Security Measures

INTRODUCTION

Insurgency entails an act of defiance, rebellion, or uprising directed against a governing body, established authorities, or even a community, particularly when those involved lack formal recognition as combatants. Insurgency is a rebellion against authority when those taking part in the rebellion are not recognized as belligerents. The concept of insurgencies is complex and not easily defined, as not all rebellions qualify as insurgencies. Some rebellions are non-violent, employing civil resistance methods. A rebellion typically becomes an insurgency when the group gains control over territories in opposition to a sovereign state (Duruji, Idowu, Dibia, & Duruji-Moses, 2018).

In Nigeria, insurgency has been prevalent, with various factions engaging in armed confrontations against the current government in response to specific actions or events. This phenomenon involves the systematic use of insurrection and violence with the aim of gaining control, nullifying authority, or challenging the political dominance of a specific region or religion. Consequently, it primarily takes the form of a political struggle, where both sides employ armed force to establish space for their respective political, economic, and social influences.

Insurgency in Nigeria manifests as organized rebellion against governmental authority, often characterized by violence and territorial control, challenging the state's political and social order. Various groups, including Boko Haram and ethnic militias like MEND and OPC, have perpetrated significant unrest, driven by grievances ranging from political marginalization to economic disparities. This insurgency phenomenon is not confined to isolated incidents but rather represents a complex socio-political struggle for influence and power.

Since Nigeria's return to democracy in 1999, the nation has grappled with escalating violence, including terrorism and criminal activities like kidnapping and drug trafficking. These challenges undermine national security and economic development, exacerbating ethnic and religious tensions across the country. The response from security forces has been hindered by logistical constraints, corruption, and inadequate training, affecting their ability to effectively combat insurgent groups.

Efforts to address insurgency require multifaceted strategies, including bolstering intelligence capabilities, enhancing military training and equipment, and fostering socio-economic development in vulnerable regions. The resilience of insurgent groups, such as Boko Haram's ability to recruit disillusioned youth, underscores the need for comprehensive approaches that address both security and socio-economic factors driving conflict. Moreover, ensuring justice for victims and accountability for perpetrators is crucial to restoring trust in government institutions and deterring future violence.

The impact of insurgency extends beyond immediate security concerns, affecting civilians' livelihoods, education, and overall well-being. Children, especially, suffer from disrupted education and exposure to violence, perpetuating cycles of poverty and instability. Addressing these challenges demands sustained international and domestic collaboration, prioritizing human security alongside traditional military responses to mitigate the lasting effects of insurgency on Nigerian society.

STATEMENT OF THE PROBLEM/JUSTIFICATION

    a) There is limited intelligence and information Sharing between security forces and citizens. Citizens do not have reliable channels to report security incidents promptly, and security

agencies struggle with limited information and resources to respond effectively to security threats.

b) There is ineffective coordination and response among the security agencies combating insurgency.

c) There is no community engagement and trust. The citizens living in these areas should have a common platform where they can anonymously report and air their views.

d) Government inability to identify and address Socio-economic factors

OBJECTIVES OF THE STUDY

The following are the objectives of the study

a) Develop a user-friendly platform that allows individuals to report incidents or concerns anonymously. This feature aims to encourage transparency and increase the likelihood of users sharing critical information without fear of repercussions.

b) Develop a comprehensive system that incorporates distinct levels of privileges, ensuring a refined and secure user experience with varying access levels based on roles and responsibilities.

c) Construct a robust feedback component within the system, facilitating a structured mechanism for users to provide valuable input, comments, and suggestions. This will contribute to continuous improvement and refinement of the technology.

d) Develop a sophisticated recommender system that not only enhances user experience but also contributes to the scalability and long-term sustainability of the technology in Nigeria. The recommender system will provide tailored suggestions, fostering increased usage and widespread adoption of the technology across various user demographics.

LITERATURE REVIEW

Boko Haram was founded by Mohammed Yusuf in 2002, in the city of Maiduguri, it aimed to establish a Sharia government in Borno State under former Governor Ali Modu Sheriff (Eme and Ibietan, 2012). Yusuf established a religious complex, which included a mosque and a school, attracting children from impoverished families across Nigeria and neighboring countries. According to Eme and Ibietan (2012), the center had hidden political motives and eventually became a recruitment hub for future Jihadists opposing the State. Some members of Boko Haram were non-Nigerians who spoke only Arabic. The group chose Kanamma, Yusuf's village near the Niger Republic border in Yobe State, as their operational base, referring to it as 'Afghanistan' (Awofadeji, 2001). The primary objective of the Boko Haram terror group was to create an Islamic Caliphate in the entire Northern region based on Sharia law (Sunday Vanguard, 2010).

Oviasogie (2013), contended that Boko Haram changed its mode of operation and carried out a military style operation by attacking police stations and civilian targets in the towns of Geiam and Kanamma in Yola State. The group set up command posts in the captured territories and hoisted their symbol of nationhood, the Afghanistan Taliban flag. The federal government launched a counter operation nick named "operation flush" and recaptured the besieged cities and arrested some of the enemy combatants.

Following aggressive offensives by the Nigerian military forces, the terror group was compelled to change its tactics away from occupying territories to guerrilla warfare and increasingly using of suicide bombers, especially female bombers against 'soft targets' (Quick & Demetriov, 2017). The UN Office for the Coordination of Humanitarian Affairs reported that in 2015, forty-four children were involved in suicide bombings, up from four in 2014. Seventeen of the bombings involving children bombers were in Nigeria, while the rest took place in Chad and Cameroon (Ali, Musa, & Fada, 2016).

Although Boko Haram operation is commonly depicted as religious (Shehu, 2014), several commentators, however, point to its political nature. Oviasogie (2013) argued that the factors and motivation driving Boko Haram attacks have political underlying which is suggestive that the reasons for the attacks are skewed toward inequality, uneven distribution of wealth and power in Nigeria and more so in the Northern region where the people are more impoverished in comparison to the rest of the country, rather than religion induced. This argument is buttressed by the fact that a good number of Boko Haram members are highly educated and were retired lecturers and the sophistication of their weaponry. According to Schulze (2009), the leader of the terror group received some assistance in procuring weapons through the borders of Nigeria and Chad during the early stages of their terror campaign.

Most humanitarian and development organizations utilize Information and Communication Technology (ICT) devices to collect and disseminate information. Researchers have discovered that mobile phones can provide valuable data for various programs. Peacebuilders, in particular, use mobile phones to gather near real-time monitoring data on the outcomes and results of program activities, especially in remote regions. These devices are also employed to verify the implementation of programs as planned and to facilitate learning based on the programs' effectiveness (Corlazzoli, 2014). Mobile phones can serve as a way for researchers to save data, can be used to ask questions of participants, and can be part of 'crowdsourcing systems' by which data is shared, and can be used to conduct interviews and surveys (Perera, 2017).

In Murphy (2019), Lucid designed mobile humanitarian apps with a specific focus on conflict aid and human rights. This mobile app was created for the non-governmental agency called Watchlist on Children in Armed Conflict, which dedicates its efforts to monitoring and protecting children in global war zones. Watchlist achieves this by collecting and disseminating information on worldwide violations against children, working directly with the United Nations Council to implement global child protection policies. With the increasing global use of mobile phones and the Internet, the Children and Armed Conflict app, designed to advance peace and security resolutions at the UN, also serves as a valuable tool for providing information directly to the children and communities being protected. Humanitarian apps and technologies not only represent the most efficient means of educating officials and the general public but are also rapidly emerging as the most direct way of empowering those who need it most. This technology underscores the significant impact of mobile apps in addressing complex global issues. While this mobile technology is currently in use and serves the purpose of reporting cases of violations against children in conflict zones, similar technology aimed at addressing and reporting insurgency could play a crucial role in mitigating insurgency in Nigeria.

Rotich (2017) states that Ushahidi designed a web-based platform that utilizes data from various sources, including Facebook, Twitter, and SMS, and collaborates with civil society actors to curb violence. While its initial purpose was to monitor and map instances of election-related violence, Ushahidi has since expanded its applications and has been employed in diverse contexts beyond elections. This highlights the adaptability and versatility of the platform, showcasing its utility in addressing a range of issues beyond its original scope. Ushahidi's evolution reflects its capacity to harness different data streams and collaborate with various stakeholders to provide a valuable tool for information gathering and mapping in dynamic situations. This mobile technology is good but has no feature to verify whether the information gathered are authentic or not. The Ushahidi model of leveraging diverse data sources, collaborating with civil society, and adapting to different contexts can serve as a guiding framework for the development of an app aimed at mitigating insurgency in Nigeria. This approach emphasizes the importance of technological solutions that are versatile, community-oriented, and capable of real-time data analysis and reporting.

Umati (2013) initiated a comprehensive system to monitor and document hate speech on the internet, particularly focusing on its implications in the online space. Primarily active in Kenya, the Umati project aimed to identify and mitigate the impact of dangerous speech, especially on social media platforms. By monitoring online conversations, the project sought to respond to instances of content that could contribute to real-world harm, conflict, or violence. Emphasizing engagement with online communities, Umati aimed to understand perspectives and foster constructive dialogue. Drawing parallels, an app designed for insurgency mitigation could integrate features encouraging community engagement, such as providing a platform for users to share information, report incidents, and participate in discussions aimed at preventing and addressing insurgency. However, the inherent risk of false positives in projects involving automated content analysis underscores the potential for misinterpretation of harmless content, leading to unintended consequences.

Social media produces large volumes of data on a population's views, which can be used to predict instability and conflict. The Carter Centre Syria Conflict Mapping Project aims to provide analysis of 'feelings and thoughts' of a population (Corlazzoli, 2014). Researchers in Mexico have analyzed millions of tweets to assess attitudes to the government, drug cartels and the media in Mexico. They have identified 'civic media curators responsible for a disproportionate number of violence-relate real-time tweets'. Another researcher has analysed new and old media to show the 'micromechanisms of drug-related violence' (Muggah & Diniz, 2013). The value of such analyses is that they can produce a lot of data in real time to give peacebuilders an image of the situation (Corlazzoli, 2014). However, such large aggregations of data can include biases and inaccuracies, not least because of unequal levels of access to technology (HD, 2019; Mac Ginty, 2017). A mobile technology designed to mitigate insurgency in Nigeria could leverage similar data analysis techniques to gain real-time situational awareness, helping security forces and peacebuilders understand the sentiments and concerns of the local population.

METHODOLOGY

The methodology adopted for this work is the Agile Development Methodology. It was chosen for its suitability in meeting project goals, handling system complexity, and optimizing available resources. Agile methodologies, including Scrum and Kanban, emphasize flexibility, collaboration, and responsiveness to change, prioritizing working software over extensive documentation. They involve iterative development and continuous stakeholder feedback, making them ideal for projects needing quick responses to changing conditions and frequent delivery of functional software.

a) Design

Dart was used with Flutter to design the mobile technology to mitigate insurgency in Nigeria due to its advantages in cross-platform development. This approach ensures that the app can run seamlessly on both iOS and Android devices from a single codebase, significantly reducing development time and costs. Flutter's rich set of pre-designed widgets and Dart's performance efficiency enable the creation of a responsive, intuitive user interface. Also, Firebase, a mobile and web application development platform provided by Google, offers real-time NoSQL databases, authentication, hosting, and cloud functions. Its Realtime Database and Cloud Firestore are commonly used in mobile app design for real-time data updates, secure reporting, and push notifications.

b) **Input Specification**

The users of the new system are expected to:

    i.   Create a user account comprising of username, password, email address etc
   ii.   Login with username and password
  iii.   Create a report in the general forum if need be

c) Output Specifications

The new system is expected to display the following as output specification:

    i.   Real-time notifications to users about reported incidents and security updates.
   ii.   Display incident status and progress to users.
  iii.   Provide relevant information, guidelines, and emergency contact numbers to users.
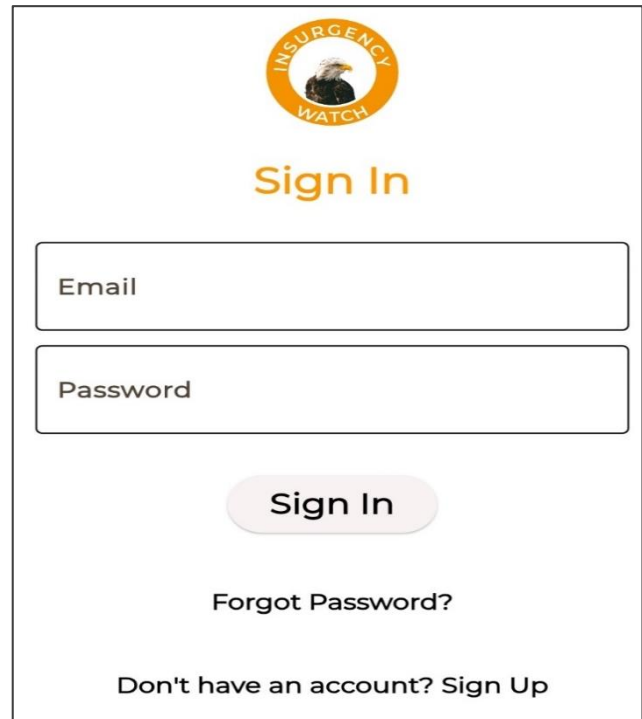 iv.   Enable communication between users and security agencies.

d) Use Case Diagram
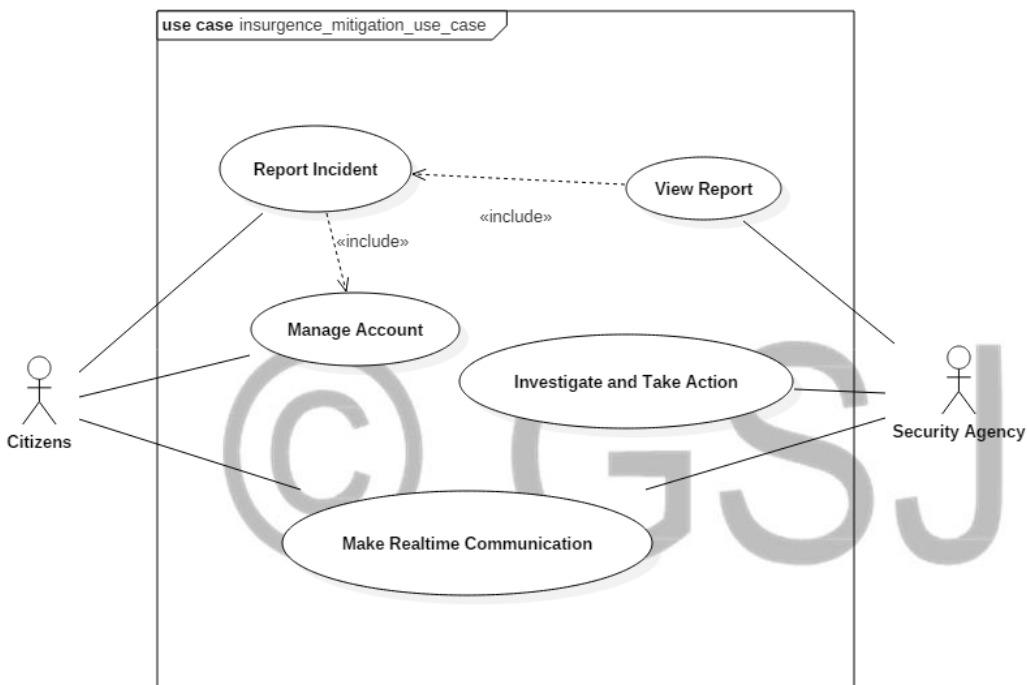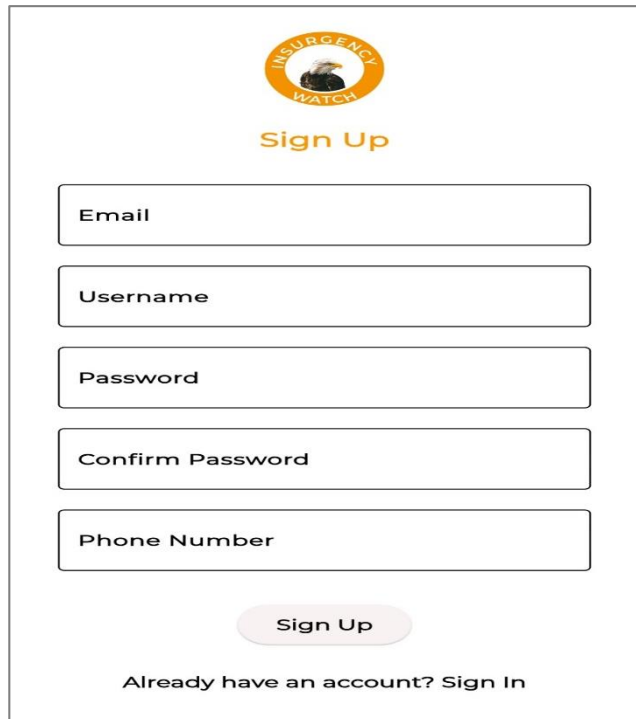
Figure 1: Insurgency Mitigation System Use Case Diagram

Implementation

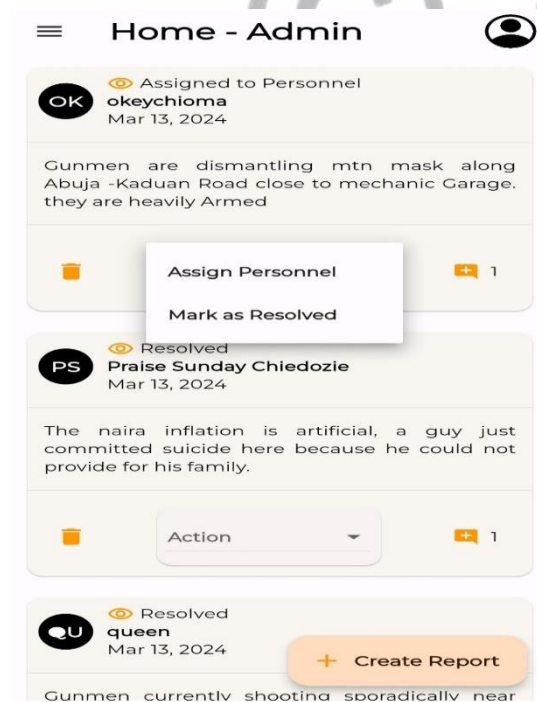Fig2: Signup form

Fig3: login form

Fig4: Admin main menu

Fig5: Feedback component

RESULTS

At the end of the project the following results were obtained as shown in the images provided

- A user can register, log in, and make reports based on happenings around their environment.
- A user can also view reports made by either the security agencies or other users concerning insurgency activities in an area.
- Security agencies view reports in real-time and assign them to personnel who also report back after an operation.
- A report can be marked as resolved, assigned, or under investigation.
- The admin, who is a security agency representative, can track any user who provides false information.
- The system accommodates feedback from users to further enhance operations and add more features to the system.

CONCLUSION

By leveraging the capabilities of mobile technology, Nigeria can strengthen intelligence gathering, enhance security measures, and mitigate the threats posed by insurgency. Collaborative efforts among citizens, security agencies, and stakeholders, along with the effective utilization of technology, will contribute to a safer and more secure Nigeria.

RECOMMENDATIONS

As the scourge of insurgency has ravaged Nigeria in recent past, the following are the recommendations for effective utilization of the mobile app:

- User Education and Awareness: There should be awareness campaigns and provide training to educate citizens about the importance of intelligence gathering and their role in countering insurgency. Promote the use of the technology and highlight its benefits in enhancing security measures.
- Continuous Technology Improvement: Regularly update and enhance the system based on user feedback, emerging technologies, and changing security needs. Incorporate new features, improve usability, and address any reported issues to ensure the system remains effective and user-friendly.
- Seamless Integration with Security Agencies: Collaborate closely with security agencies to ensure smooth integration of the technology into their existing systems and processes. Establish protocols for information sharing, real-time communication, and coordination to maximize the it's effectiveness in intelligence gathering and response.
- Encourage Whistleblowing and Protection: Implement mechanisms to protect the identity and safety of citizens who report suspicious activities. Establish whistleblower protection laws and ensure that the mobile technology provides secure, anonymous reporting channels, fostering a culture of trust and cooperation.

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