



# **GIS Analysis of Banditry and Kidnapping Effects on the Development of Selected Tertiary Institutions in Nigeria: Focus on NICTM Uromi, Edo State.**

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## **ABSTRACT:**

In this study, the National Institute of Construction Technology and Management (NICTM) in Uromi, Nigeria, discusses how banditry and kidnapping affect the growth of a few Nigerian tertiary institutions, especially the National Institute of Construction Technology and Management (NICTM). A significant threat to educational stability in recent years, insecurity has an impact on academic activities, staff and student mobility, and infrastructure development. This study uses Geographic Information Systems (GIS) to examine spatial patterns, the relationship between insecurity and institutional growth, and proximity to conflict-prone areas. Hotspots were mapped using a combination of satellite imagery, field data, and spatial datasets to assess their proximity to NICTM and the local communities. Key informant interviews and security incident records were also utilized to bolster the spatial analysis. According to the findings, there is a direct correlation between insecurity and delays in academic and infrastructure development. The study recommends using GIS as a tool for strategic educational development in high-risk areas, proactive security planning, and campus safety management. The study concludes by highlighting the value of spatial intelligence in tackling security issues in Nigeria's educational system.

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**KEY WORDS** GIS *Analysis, investigation, Banditry, Kidnapping.*

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## **1 INTRODUCTION**

Nigeria's security environment has changed significantly over the past ten years, with a rise in kidnapping and banditry incidents endangering the nation's advancement, especially in the area of education. Violent criminal activity has been targeting tertiary institutions more and more, despite the fact that they are essential to the development of the country through research, innovation, and capacity building. The effects of these attacks are extensive and include psychological trauma in the impacted communities, delayed infrastructure development, and disruption of academic calendars and staff and student withdrawal.

Kidnapping and banditry disrupt the immediate environment and deter prospective students, staff, and investors, which has an impact on the long-term growth and development of postsecondary institutions. Since the frequency of these activities has increased in some places, understanding their trends, causes, and effects requires a spatial and data-driven approach. Geographic Information Systems (GIS), which can also offer insights that can guide strategic planning and decision-making, are a powerful tool for collecting, analyzing, and visualizing spatial data related to these security issues.

Using GIS technology, this study examines how insecurity affects institutional development at the National Institute of Construction Technology and Management (NICTM), located in Uromi, Edo State. In order to determine the proximity of banditry and kidnapping incidents to NICTM, find spatial patterns of insecurity, and analyze their effects on academic activities, infrastructure, and stakeholder perception, this study will integrate spatial data with qualitative field findings. The ultimate objective is to give Nigeria's educational system a spatial framework for institutional resilience and security planning.

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## **2. LOCATION AND GIS SETTING OF THE STUDY AREA**

The study area NICTM and its environs are situated in Edo State, Nigeria, at Uromi, the Esan North East Local Government Area headquarters. Around here is where Uromi is located:

Latitude: 6° 44' 0" N to 6° 47' 30" N

Longitude: 6° 20' 0" E to 6° 23' 30" E

The NICTM campus was surrounded by a buffer zone of about 10 km, which included nearby communities, major roads, built-up areas, and wooded areas. In order to evaluate how proximity affects institutional vulnerability and to take into consideration both direct and indirect security threats, this spatial extent was chosen.

### 3. METHODOLOGY

While structured questionnaires and interviews offer depth and context to institutional responses and human experiences, Geographic Information Systems (GIS) permit spatial mapping and analysis of incidents related to insecurity. With a focus on NICTM, the integration of both spatial and non-spatial data offers a comprehensive understanding of how banditry and kidnapping have affected the development of specific tertiary institutions.

The study focuses on the National Institute of Construction Technology and Management (NICTM), which is situated in Edo State, Nigeria's Uromi, Esan North East Local Government Area. Within Edo State, the region is a key academic hub and is located in southern Nigeria.

The development of the institution has been directly and indirectly hampered by the various security threats that the surrounding communities have recently experienced, including reported cases of banditry and kidnapping.

### 4. RESULT AND DISCUSSION

This chapter analyzes the information obtained through field surveys, interviews, questionnaires, and GIS spatial techniques. The results are interpreted in light of the objectives of the study and compared to earlier research. The demographic data of the respondents, institutional development indicators, perceived impacts, spatial analysis of insecurity incidents, and GIS-based interpretations are the thematic divisions of this chapter.

#### Demographic Profile of Respondents

A total of 120 questionnaires were distributed to NICTM employees, students, and local residents; 106 of these were filled out completely and sent back. The following is a summary of the demographic traits:

Gender: 59% male, 41% female

Category: 40% students, 35% staff, 25% residents

Age Range: 18–25 (30%), 26–40 (45%), 41 and above (25%)

Years of Experience in the Area: Majority (58%) had lived or worked in the area for more than 5 years

this demographic spread reflects a broad perspective across stakeholders directly impacted by insecurity around the institution.

#### Spatial Distribution of Banditry and Kidnapping Incidents

Using GIS tools, coordinates of reported insecurity incidents within a 10 km radius of NICTM were plotted. The spatial analysis revealed the following:

Incident Hotspots: High-density clusters of kidnapping and armed robbery were observed along the Uromi–Ubiaja and Uromi–Igueben roads.

Proximity Analysis: NICTM lies within 3–5 km of several insecurity hotspots, placing it within a zone of vulnerability.

Buffer Zone Analysis: A 5 km buffer around NICTM identified at least 8 security related incidents in the past 2 years.

Spatial Overlap: Areas near the institution showed overlapping zones of academic activity and insecurity risks.

These results demonstrate a spatial correlation between NICTM and nearby insecurity-prone routes, especially in regions with limited surveillance or community policing.

#### Impacts of Insecurity on Institutional Development

From both questionnaire responses and interviews, several key themes emerged regarding the effects of banditry and kidnapping on institutional development:

##### Academic Disruption

68% of respondents agreed that fear of insecurity has led to absenteeism among students and lecturers.

53% reported that certain academic programs were delayed or poorly attended due to safety concerns.

##### Infrastructure Development Delays

61% of administrative staff cited delay or suspension of physical projects due to contractors' fear of working in the area.

Projects such as hostels, perimeter fencing, and ICT centers have suffered significant delays.

#### Brain Drain and Staff Turnover

several qualified staff have transferred to other institutions in safer zones.

Recruitment of new professionals has become difficult due to the reputation of the area.

#### Psychological Effects

High levels of fear, anxiety, and uncertainty were expressed, especially among female students.

Some students have opted to stay off-campus to minimize travel risks.

#### GIS-Based Visualization

##### Hotspot Mapping

using kernel density estimation, high-risk areas were visualized, revealing intense activity zones near market centers, isolated roads, and forested areas. NICTM is located at the edge of a moderate-density risk zone.

##### Proximity Analysis Output

Maps showed that several kidnapping incidents occurred within 2–3 km of institutional infrastructure such as lecture halls, staff quarters, and access roads.

##### Risk Overlay Maps

a composite map overlaying institutional layout with insecurity hotspots showed critical overlaps near student hostels and administrative blocks.

These spatial outputs support the argument that GIS is an essential tool for proactive security planning and infrastructure protection.

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## 5. CONCLUSION

This study focused on the National Institute of Construction Technology and Management (NICTM), located in Uromi, Edo State, to investigate the spatial and developmental effects of kidnapping and banditry on Nigerian tertiary institutions using Geographic Information Systems (GIS).

Academic institutions' expansion and viability have been seriously threatened by the startling increase in national insecurity, especially in the form of violent crimes like kidnapping and banditry. GIS was used in this situation to visualize and evaluate the degree to which insecurity impedes institutional development, in addition to being an analytical tool.

The results of the study showed that NICTM is located in a zone of vulnerability and is encircled by known hotspots of insecurity within a 5-kilometer radius. According to spatial analysis, kidnapping and armed attack incidents were concentrated along major roads, bush paths, and low-surveillance areas close to the institution rather than being dispersed randomly. The effects of these threats on the academic, physical, and social development of the institution are evident and quantifiable.

Data collected via surveys, interviews, and field observations also showed that insecurity has resulted in staff transfers, significant disruptions to academic activities, postponed infrastructure projects, and deeply ingrained a sense of fear and uncertainty in both employees and students. The fundamental objectives of education and capacity building have been undermined as a result of numerous projects being halted or abandoned because of security concerns, and staff and students living in continual fear of kidnapping or violence.

This study has shown that GIS can be extremely helpful in identifying security-related issues that impact educational settings. GIS facilitates the identification of high-risk areas, supports surveillance planning, and aids in data-driven decision-making for institutional growth and infrastructure development by offering spatial intelligence. Additionally, institutional authorities and government organizations involved in security and education can see things more dynamically and intelligently when GIS is integrated with local security data.

The study's conclusion emphasizes how critical it is to manage the safety and expansion of Nigerian educational institutions through proactive security planning and the incorporation of spatial analysis tools. Insecurity is a spatial problem that requires spatial solutions, not merely a social or political one.

Tertiary institutions need focused interventions, such as surveillance infrastructure, community involvement, heightened security presence, and ongoing use of GIS for planning and monitoring, particularly those in semi-rural and vulnerable areas like NICTM.

The developmental goals of Nigeria's educational sector, especially in areas aiming for technological and infrastructural advancement, will ultimately remain unachievable unless the threat of banditry and kidnapping is adequately addressed.

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