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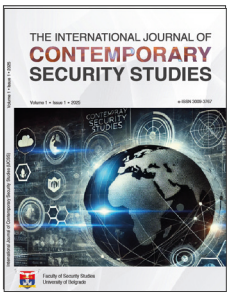

Modern Technological Deficiencies in Criminal Investigation Architecture and National Security Crisis in FCT, Abuja

Clement A.C. Chukwunka[1*]

[1] Department of Criminology and Security Studies, National Open University of Nigeria, University Village, Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi, Abuja, Nigeria.

* Correspondence: cchukwunka@noun.edu.ng

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ABSTRACT

The paper focuses on the deficiencies of scientific technologies in criminal investigation methods and on the lack of successful prosecutions of perpetrators. Its main objective is to critically examine the limitations of modern scientific technologies in criminal investigation methods and the dangers of arresting offenders of the nation's most heinous crimes in Abuja. Several external variables, such as scientific innovations, digital surveillance, and institutional strategies, influenced the paper. To achieve this objective, the Federal Capital Territory (FCT) in Abuja was identified as the location. The study used both primary and secondary sources to collect data. Primary data were collected through Likert-scale questionnaires, while secondary data were obtained from textbooks and online journals. Four hundred respondents were randomly selected from law enforcement agencies and youths in Abuja, of which 388 valid questionnaires were analyzed using Pearson's Product-Moment Correlation (PMCC). A few theories were identified and reviewed, and the Innovation Diffusion theory was adopted as the theoretical framework. It was adopted for its technological innovations in effective security. The data obtained were descriptively analyzed using Pearson's product-moment correlation coefficient (r) as the analytical tool. The findings revealed a significant positive relationship between technological innovation and national security crisis ($r = 0.44$, $df = 386$, $p < 0.05$), as well as a stronger significant relationship between digital surveillance and national security crisis ($r = 0.84$, $df = 386$, $p < 0.05$), leading to the rejection of the null hypotheses. The study recommends that policymakers note that effective investigation enhances prosecution, deters criminality, restores public confidence in law enforcement, reduces fear, and strengthens democratic governance. In this sense, technology-driven criminal investigation is not only a security imperative but also a developmental necessity.

KEYWORDS

Crime, technology, criminal investigation, national security, crisis.

1. Introduction

Security has remained one of the most pressing and complex challenges confronting the Nigerian state in the twenty-first century. Since the return to democratic governance in 1999, Nigeria has grappled with multifaceted security threats. These threats ranged from terrorism, insurgency, banditry, cybercrime, oil theft, kidnapping, transnational organized crime, to communal and ethno-religious conflicts.

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They have exposed the structural weaknesses of Nigeria's traditional security architecture. Historically, weaknesses relied on manpower-intensive, reactive, and analog methods of intelligence gathering and law enforcement (Alemika, 2021; Okoli & Lenshie, 2018).

Crime exists in every human society. According to a great criminologist, Emile Durkheim (1858-1917), 'crime is an inescapable truth of human existence'. Therefore, scientific investigation may serve as an effective modern apparatus for social and criminal control (Popović-Mančević, 2025; Chukwunka, 2025; Metić, 2025; Cvetković et al., 2018). Fighting a security crisis cannot be complete without considering the contributions of science and technology to criminal investigation (Gehl & Plecas, 2016; Tong, Bryant, & Horvath, 2009).

The intersection of technology and national security has emerged as a foundational axis for contemporary security studies. In Nigeria, a complex socio-political environment was marked by insurgency, cybercrime, Fulani Bandits, Fulani Herdsmen, Islamic militants (Ansaru and ISWAP -Islamic State's West African Province), Boko-Haram, and organized criminality (Eke & Adeyemi, 2025). This has heightened the imperative to interrogate the role of emerging technologies in enhancing or undermining national security. In fact, technological adoption offers tools for surveillance, intelligence, communication, and threat disruption. However, empirical evidence indicates that Nigeria's security apparatus faces significant technological obstacles that hinder effective responses to security challenges (Eke & Adeyemi, 2025).

The history of criminal investigation efforts started in England and Western Europe in the 1750s. It is a systematic, thorough process of gathering and analyzing evidence to identify and apprehend perpetrators, to uncover the truth, and maintain social control. The criminal investigation proceeds to determine the value of the criminal law, identify the culprit, combine admissible evidence, and work with the prosecutors to bring the case to bear. The police forces are adapted and well-trained for the purpose. Naturally, they are expected to depart from the old-fashioned methods of policing and adopt the scientific contributions to criminal investigation. The investigation of crime is an important aspect of policing (McRory, 2014).

The criminal investigators perform an array of investigative functions. The function includes preventing, detecting, and arresting those responsible for crime. With specialized training in science and technology, every uniformed officer and investigator is expected to have the skills and knowledge to handle investigations into crimes. The skills, according to Gehl & Plecas (2016), include:

- Critical Incident Response
- Interpretation of Criminal Law and offense recognition
- Crime Scene Management
- Evidence Identification and Preservation
- Engaging Forensic tools for evidence analysis
- Witness assessment and interviewing
- Suspect questioning and interrogation
- Case preparation and documentation
- Evidence presentation in court (Gehl & Plecas, 2016; McRory, 2014).

According to Nossen (1995), there are six basic investigative techniques that criminal investigators rely on to investigate violations of criminal law in organized and white-collar crimes. These are (1) development of informants, (2) Undercover agents, (3) Laboratory analysis of physical evidence, (4) Physical and electronic surveillance, (5) Interrogation, and (6) Wiretapping.

In advanced countries, modern and innovative technology in criminal investigation includes Forensic Science- a scientific method of analyzing physical evidence; Digital Forensics- smartphones that recover evidence and track digital activities; Surveillance technologies- body-worn cameras that give visual evidence; Biometric Technologies-Iris scanning that helps identify persons, and Predictive policing- that analyzes potential criminal hotspots and activities.

Others include Digital Data Analysis-data from online activities that uncover evidence; Artificial Intelligence and Machine Learning- tools used to identify patterns and predict potential criminals;

and Social Media Monitoring -tools used to track and identify suspects (Saxena & Kumar, 2021; Strom, 2017; Gehl & Plecas, 2016).

The development of technology in crime detection has led to the application of these methods to national security problems. The scientific process can detect substances and determine their presence. The technology enables the discovery, identification, collection, and testing of physical evidence that the human eye or hand cannot access. For example, the use of lasers and alternative light sources, scanning technologies, ballistics testing, gas chromatography, and even devices to measure voice quality and body responses (Morris, 2007; Casey & Schatz, 2011; Strom, 2017).

1.1. Literature Review in Line with the Objectives of the Study

In Nigeria, outdated traditional systems of criminal investigation are still in operation. This includes the eyewitness statement, Victim statement, Intelligence gathering, surveillance, Interrogation and interview, Border patrol, Oral evidence, photography, and crime scene investigation (Osterburg & Ward, 2010; Umeobika & Udegbunam, 2023).

According to Obioha (2019), 58,566 crime cases were reported from Abuja in 2016. Most of such cases were kidnappings. In 2022, the Abuja-Kaduna train was bombed, and 105 passengers were kidnapped and some gruesomely killed (Amnesty International,2025; Igiebor,2024).

The Islamic Insurgents are Fulani Bandits, Fulani Herdsmen, Ansaru, a jihadist militant group called ISWAP (Islamic State's West African Province), and the terrorist group (Boko-Haram). They are the group that poses threats to national security and causes substantial harm to citizens through their criminal activities (Orjinmo, 2021; Obiezu, 2023). They are characterized by a complex interplay of major internal threats to Nigeria's socio-economic development. This explains the rise in criminal activity in Abuja despite the presence of the government and its security architecture (Igiebor, 2024).

They inflict their mayhem through kidnapping and banditry. In 2014, 270 girls were Kidnapped in Chibok; 321 girls in Dapchi (2018);82 killed in Owo Catholic Church(2022); 287 Catholic students Kidnapped in Kuriga (2024); 102 Students abducted in Kajuru and Dogon Noma (2024); 44 People including the pastor were gruesomely killed in Yobe state (2024); 452 Women and Children of Internally displaced Persons (IDPs) hosting many Christians were abducted and killed in Borno state; and 160 people in Niger state were Kidnapped. These are just a few examples from this paper (USCIRF, 2024; Igiebor, 2024; Obioha, 2019).

The Constitution of the Federal Republic of Nigeria has promised the security and social welfare of its citizens as its primary purpose of governance; unfortunately, the national security crisis has had a critical impact on citizens' social grief and psychological pain. Overall, the reviewed literature establishes that technological innovation, digital surveillance, and institutional effectiveness are interconnected determinants of modern criminal investigation and national security management. This study, therefore, builds on existing empirical knowledge by examining how these variables interact within the Federal Capital Territory, Abuja.

Institutional strategies also influence the successful deployment of technological tools in criminal investigation. Studies emphasize that institutional capacity, training, legislative support, and organizational coordination determine the extent to which technological innovation contributes to national security (World Bank, 2022). Weak regulatory frameworks and inadequate maintenance culture have been identified as major impediments to the sustainable use of technology in Nigeria.

Digital surveillance constitutes another important objective of this study. Research indicates that surveillance technologies, including CCTV systems, geospatial intelligence, and electronic monitoring, enhance situational awareness and enable real-time response to criminal activities. Awotayo et al. (2023) note that ineffective data-sharing mechanisms and poor interoperability among Nigerian security institutions significantly undermine the effectiveness of surveillance.

In Nigeria, however, scholars argue that the adoption of technological innovation within law enforcement agencies remains limited. Olowonihi and Musa (2024) observe that inadequate integration of intelligence technologies and weak inter-agency collaboration undermine effective response

to emerging security threats. The reliance on traditional intelligence sources continues to restrict predictive and preventive security operations.

Empirical studies reveal that modern technological innovations such as digital forensics, biometric identification systems, artificial intelligence, and predictive policing tools have transformed crime detection and intelligence gathering globally (Strom, 2017; Saxena & Kumar, 2021). These technologies improve the reliability of evidence, reduce investigative delays, and enhance the successful prosecution of offenders.

This study examines the relationship between technological innovation, digital surveillance, institutional strategies, and national security crises in Abuja. Existing literature demonstrates that technological innovation plays a significant role in strengthening criminal investigation processes and enhancing national security outcomes.

1.2. Statement of the problem

Despite significant budgetary allocations to defense and security, Nigeria continues to experience escalating insecurity across its geopolitical zones. Conventional security strategies, characterized by roadblocks, patrols, checkpoints, and reactive military deployments, have proven largely ineffective in addressing complex, networked security threats. The persistence of terrorism, kidnapping, cyber fraud, and arms proliferation suggests a fundamental mismatch between Nigeria's security challenges and the tools deployed to combat them (Alemika, 2021).

One of the central problems confronting FCT, Abuja, is the limited integration of technological innovation into security planning and operations. While criminal and insurgent groups increasingly exploit digital communication platforms, encrypted messaging applications, satellite navigation, and cyber tools, many Nigerian security agencies still depend on manual intelligence processes, fragmented databases, and poorly coordinated information systems. This technological gap undermines intelligence gathering, evidence-based decision-making, and proactive threat prevention (Okoli & Ugwu, 2019).

Furthermore, Nigeria faces serious challenges in cybersecurity and digital infrastructure protection. The country is a major target and source of cybercrime in Africa, with cyber fraud, data breaches, and digital financial crimes posing significant threats to economic and national security. However, institutional capacity for cyber intelligence, digital forensics, and cyber defense remains weak and unevenly distributed across security agencies (UNODC, 2023).

The absence of a comprehensive and integrated national security technology framework has also resulted in duplication of efforts, inter-agency rivalry, and poor utilization of existing technological assets. Surveillance equipment, biometric systems, and communication technologies are often procured without adequate training, maintenance, or interoperability, rendering them ineffective (World Bank, 2022). These challenges raise critical questions about the role, relevance, and effectiveness of technological innovation in strengthening national security in Nigeria, thereby necessitating a systematic academic inquiry into its importance and practical utility.

1.3. Objectives of the Study

The general objective of this study is to critically examine the deficit of modern scientific and technological innovations in criminal investigation and security crisis in the Federal Capital Territory (FCT), Abuja.

1.3.1. Specific Objectives

The study specifically seeks to:

1. Examine the relationship between technological innovation and security in Abuja.

2. Assess the impact of digital surveillance technologies on security crisis management in the FCT.
3. Evaluate the role of institutional strategies in integrating modern investigative technologies for effective crime detection and prosecution.
4. Determine the effectiveness of modern scientific tools in criminal investigation compared to traditional, reactive policing methods.
5. Establish the relevance of Innovation Diffusion Theory in explaining the adoption of modern investigative technologies within Abuja's security system.

1.4. Theoretical Orientation

Within this theoretical orientation, two major theories are identified as the study's conceptual foundation. The first is Social Disorganization Theory, developed by Shaw and McKay, which explains how social instability, weakened community structures, and the breakdown of informal social control can contribute to crime, insecurity, and crisis-related vulnerabilities within communities. The second is Innovation Diffusion Theory, advanced by Rogers, which provides a framework for understanding how new ideas, technologies, and security-related practices are introduced, communicated, adopted, and spread among individuals and organizations. Together, these theories offer a useful basis for examining both the social conditions that shape security challenges and the factors that influence the adoption of technological or institutional responses to such challenges.

1.4.1. Social Disorganization Theory

Social disorganization theory arose from the classical Chicago School studies by Shaw and McKay (1942). Their basic aim was to explain why some groups, such as communities and societies, have higher crime rates than others, and therefore to question why some individuals are more likely to commit crimes than others. In urban areas, population density, along with racial and ethnic heterogeneity, produced anonymous relationships. These relations led to increased conflict, leading to a breakdown of shared cultural norms and understandings.

The main drawback of the social disorganization theory of Crime is that it dwelt more on crime causation than on methods to mitigate crime, which is the main thrust of this paper. Despite its limitations, it has contributed to the discourse by enlightening us about factors that lead people to commit crimes.

1.4.2. Innovation Diffusion Theory

The innovation diffusion theory was developed by Rogers in 1995 (Rogers, 1995). Innovation diffusion theory focuses on understanding how, why, and at what rate innovative ideas and technologies spread in a social system (Wani & Ali, 2015). The basic aim of Rogers was to explain change. He sees change as being primarily about the evolution or "reinvention" of products and behaviors so people become better fits for the needs of individuals and groups. Fichman (2000) defines diffusion as the process, usually the spread of ideas from one society to another or from a focus or institution within a society to other parts of that society. Scholars recognized that the Innovation spread rapidly based on five qualities that determine its success. 1. Relative advantage 2. Compatibility, 3. Complexity, 4. Trial ability, and 5. Observability.

The five factors examine how technology adoption influences its application in security crises. Relative advantage refers to whether the proposed security measure is clearly superior to existing practices. Compatibility assesses the extent to which the measure aligns with users' needs, workflows, and existing systems. Complexity focuses on whether the technology is difficult to understand or use. Trialability concerns the ability to test the technology without causing major disruption. Finally, observability addresses whether the technology's benefits are visible to the user or the organization (Rogers, 2003). These attributes shape how quickly and effectively new technologies or

practices are adopted by individuals and organizations. The Innovation Diffusion Theory (IDT) is essential in information security because it bridges the gap between technological innovation and human adoption behavior by understanding how innovations spread or fail in organizations (Rogers, 2003). Security is often as much about behavior as it is about technology.

The weakness of the theory lies in its emphasis on innovative measures to control crime without explaining what causes it: there must be crime before it can be controlled. However, it has helped fill the gap left by the social disorganization theory: that is, while social disorganization theory dwelt on the causes of crime without offering measures to control them, Innovation Diffusion theory has filled the gap by furnishing us with measures to mitigate existing crimes.

1.4.3. Theoretical Framework

Having examined the two theories, the Innovation Diffusion theory is adopted as the theoretical framework for the paper. The justification for adopting it as the theoretical framework is that its thesis is more relevant to the investigation of crime, which this discourse focuses on. Thus, from the inferences of Innovation Diffusion theory, one may conclude that the introduction of modern tools of criminal investigation may help deter people from criminal activity.

2. Materials and Methods

The study used both primary and secondary sources in collecting data. The Primary source was collected through Likert scale questionnaires, while the secondary source was from textbooks and online journals. A quantitative descriptive survey research design, employing a correlational approach, examined the relationship between technological innovation, digital surveillance, institutional strategies, and national security crises in Abuja. The purpose was to determine the strength and direction of relationships**.** A random sample of 400 respondents was drawn from law enforcement agencies and youth groups in Abuja. Out of these, 388 were correctly completed and returned, yielding a response rate of 97%, which is considered adequate for statistical analysis and generalization. These were analyzed using Pearson's Product-Moment Correlation (PPMC). The major limitation of the research is that most respondents cannot communicate effectively in English. There were ethical considerations for the research, which the Research Ethics Committee of Social Sciences approved. Participants were provided with informed consent forms outlining the study's purpose, voluntary participation, confidentiality, and right to withdraw at any stage. All the data were used solely for research purposes.

2.1. Limitations of the study

Despite the empirical contributions of this study, certain methodological limitations should be acknowledged. The study relied primarily on Likert-scale questionnaires administered to law enforcement officers and youths in the Federal Capital Territory (FCT), Abuja. As with most survey-based research, responses were subject to self-report bias. Participants may have provided socially desirable answers, particularly given the sensitivity of issues relating to national security, institutional performance, and technological capacity. Law enforcement officers, in particular, may have been inclined to portray institutional strategies or technological use in a more favorable light to protect the organization's image. Similarly, youths may have responded based on perceived expectations rather than actual experiences or knowledge. These tendencies may have introduced response distortion, thereby affecting the internal validity of the findings. Although simple random sampling was employed, the study was geographically limited to selected law enforcement agencies in the Jabi District of Abuja. This limits the generalizability of the findings to other regions of Nigeria where security dynamics, technological infrastructure, and institutional capacities may differ significantly. Furthermore, while 400 questionnaires were distributed, only 388 were retrieved and analyzed. Although the retrieval rate was high (97%), excluding 12 responses may still introduce

minimal non-response bias. Additionally, a focus on specific security agencies may not adequately capture the perspectives of other critical stakeholders, such as intelligence analysts, policymakers, cybersecurity experts, and community-based security actors.

Another limitation relates to measurement validity. Constructs such as "technological innovation," "digital surveillance," "institutional strategies," and "national security crisis" are multidimensional and complex. While these variables were measured using Likert-scale items, the study did not employ advanced psychometric validation techniques, such as factor analysis, to confirm construct validity.

2.2. Test of Hypotheses

1. There is no significant relationship between technological Innovation and National Security Crisis in Abuja (H_0).
2. There is no significant relationship between digital surveillance and the National Security Crisis in Abuja (H_0).
3. There is no significant relationship between Institutional strategies and the national security crisis in Abuja (H_0).

2.3. Data analysis

The Pearson product-moment correlation coefficient (PPMC) was used to analyze the elicited data, using descriptive statistics to test the formulated hypotheses and examine the underlying relationships between the variables. Its application was based on several key assumptions. First, it assumes that the parameter has a normal sampling distribution. Second, it requires that the different groups included in the analysis are randomly selected. Third, it assumes that the groups are independent of one another (Adeleke, 2010).

2.4. Analysis of Demographic Data

The researchers prepared and distributed 400 copies of questionnaires; however, 388 copies were retrieved, constituting 97% proportion of the sample size (Table 1).

Table 1. Percentage distribution of respondents by data-generating procedure. Source: Fieldwork (2025).

Respondents	Questionnaire Administered	Percentage	Questionnaire Retrieved	Cumulative Percentage
Police officers	200	50	200	51.55
Defense Officers	75	18.75	70	18.04
Paramilitary Officers	75	18.75	72	18.56
Youths	50	12.5	46	11.85
Total	400	100	388	100.00

The hypotheses were tested using Pearson's Product-Moment Correlation Coefficient (r). The level of significance was set at 0.05 with 386 degrees of freedom (df = N − 2 = 388 − 2 = 386). At α = 0.05 (two-tailed) and df = 386, the critical r-value is approximately 0.098.

2.4.1. Hypothesis One

H_0: There is no significant relationship between technological innovation and security crisis in Abuja
H_1: There is a significant relationship between technological innovation and security crisis in Abuja.

Statistical Output:

- Sample size (N) = 388
- Degrees of freedom (df) = 386
- r-calculated = 0.44
- r-critical (α = 0.05, two-tailed) = 0.098
- p-value < 0.001

Since the computed r-value (0.44) is greater than the critical value (0.098), the null hypothesis is rejected. The alternative hypothesis was accepted.

There is a statistically significant moderate positive relationship between technological innovation and security crisis in Abuja (r = 0.44, df = 386, p < 0.001). The result indicates that technological innovation significantly influences security outcomes in Abuja. The moderate positive correlation indicates that as technological tools like forensic science, artificial intelligence, biometric systems, and digital analytics improve, they tend to enhance how we manage national security. This finding supports the Innovation Diffusion Theory, which posits that the adoption of innovative technologies enhances organizational effectiveness. The implication is that technological modernization in criminal investigation strengthens intelligence gathering, crime detection, and the efficiency of prosecution.

2.4.2. Hypothesis Two

H_0: There is no significant relationship between technological innovation and security crisis in Abuja

H_1: There is a significant relationship between digital surveillance and the security crisis in Abuja.

Statistical Output:

- Sample size (N) = 388
- Degrees of freedom (df) = 386
- r-calculated = 0.84
- r-critical (α = 0.05, two-tailed) = 0.098
- p-value < 0.001

Since the computed r-value (0.84) is greater than the critical value (0.098), the null hypothesis is rejected. The alternative hypothesis was accepted.

There is a statistically significant, strong positive relationship between digital surveillance and security crisis in Abuja (r = .84, df = 386, p < .001). The strong positive correlation demonstrates that digital surveillance plays a crucial role in strengthening national security. Tools such as CCTV systems, body-worn cameras, geospatial intelligence (GEOINT), and electronic monitoring systems significantly enhance crime detection and prevention. The strength of the relationship (r = .84) suggests that digital surveillance is one of the most influential technological mechanisms in modern criminal investigation. This finding aligns with empirical literature emphasizing the centrality of surveillance technologies in counterterrorism and anti-banditry operations.

2.4.3. Hypothesis Three

H_0: There is no significant relationship between technological innovation and security crisis in Abuja

H_1: There is a significant relationship between institutional strategies and security crisis in Abuja.

Statistical Output
- Sample size (N) = 388
- Degrees of freedom (df) = 386
- r-calculated = 0.76
- r-critical (α = 0.05, two-tailed) = 0.098
- p-value < 0.001

Since the computed r-value (0.76) is greater than the critical value (0.098), the null hypothesis is rejected. The alternative hypothesis was accepted. There is a statistically significant, strong positive relationship between institutional strategies and security crisis in Abuja (r = .76, df = 386, p < .001). The result indicates that institutional strategies significantly relate to national security outcomes. This suggests that inter-agency cooperation, policy harmonization, training, intelligence coordination, and legislative frameworks are critical determinants of effective security administration. Institutional modernization complements technological innovation, reinforcing the argument that national security reform must combine both structural and technological advancements.

2.4.4. The Clarifications of Variable Measurement

The methodological clarification shows that the variables were measured, structured, coded, and tested for reliability using the study design: a Likert questionnaire (n = 388) and Pearson correlation analysis. First, the Independent Variable (Technological Innovation) was measured using a 10-item Likert-scale instrument. Examples of the Items include:

- "The use of forensic technology improves criminal investigations in Abuja."
- "Artificial intelligence enhances crime prediction and detection."
- "Biometric identification systems improve suspect identification."
- "Digital forensic tools increase prosecution success rates."
- "Modern investigative technologies reduce investigative errors."

The responses were summed to generate a composite score. Higher scores indicate greater perceived effectiveness of technological innovation in criminal investigation. Internal consistency reliability was assessed using Cronbach's Alpha (α) = 0.82. This indicates good internal consistency.

Second, the Independent Variable (Digital Surveillance) was measured using an 8-item Likert-scale instrument. Examples of the Items include:

- "CCTV cameras improve crime monitoring in Abuja."
- "Electronic surveillance enhances intelligence gathering."
- "Geospatial tracking improves law enforcement response time."
- "Social media monitoring assists in detecting criminal networks."
- "Digital communication interception strengthens security."

Responses were summed to produce a total digital surveillance score. Higher scores reflect a stronger perceived impact of digital surveillance on national security. Reliability was assessed using Cronbach's Alpha (α) = 0.86. This demonstrates high internal reliability.

Third, from the Independent Variable (Institutional Strategies), the institutional strategies were measured using a 7-item Likert-scale instrument. Examples of the Items include:

- "There is effective inter-agency collaboration in security operations."
- "Security agencies receive adequate technological training."
- "There is a clear national framework for technology integration."
- "Security agencies share intelligence databases effectively."
- "Institutional policies support digital security innovation."

Responses were summed into a composite institutional strategy score. Reliability was assessed using Cronbach's Alpha (α) = 0.79. This indicates acceptable reliability.

Four, from the Dependent Variable (Security Crisis), the Security Crisis scale was constructed using a 9-item Likert-scale instrument. Examples of the Items include:

- "Kidnapping incidents have increased in Abuja."
- "Terrorist activities pose serious threats to national stability."
- "Cybercrime threatens Nigeria's security."
- "Banditry contributes to public fear and instability."
- "Security agencies struggle to prevent organized crime."

The Coding Procedure is as follows:

- All items were positively worded toward crisis severity.
- Scores were summed to generate a composite crisis index.
- Higher scores indicate greater perceived security crisis.

Internal consistency reliability was assessed using Cronbach's Alpha (α) = 0.88. This indicates strong internal consistency.

3. Results and Discussions

The findings indicate statistically significant positive relationships between the independent variables and the Security Crisis in Abuja. The Pearson correlation coefficient between technological innovation and Security Crisis is 0.44, indicating a moderate positive relationship. In practical terms, r = 0.44 means that higher levels of technological innovation reported by respondents were associated with greater perceived effectiveness in addressing security challenges. The relationship is neither weak nor extremely strong; rather, it reflects a meaningful but moderate degree of association.

The correlation between digital surveillance and Security Crisis reflects a very strong positive relationship: higher reported levels of digital surveillance correspond to higher perceived national security effectiveness among respondents. The strength of this association suggests that, statistically, digital surveillance is strongly linked to national security indicators within the sampled population. Importantly, these findings demonstrate association, not causation. The results show that the variables move together in a consistent pattern. Other unmeasured variables, such as institutional capacity, political will, funding allocation, inter-agency coordination, or socio-economic conditions, may also contribute to the observed relationships.

The Pearson correlation analysis revealed that the adoption of modern investigative technologies meaningfully strengthens Abuja's security architecture. This result strongly supports Rogers' (2003) Innovation Diffusion Theory, which posits that the adoption of innovative tools within a social system depends on perceived relative advantage, compatibility, complexity, trialability, and observability.

In terms of relative advantage, respondents perceived technological innovations (e.g., forensic tools, AI, digital analytics) as superior to traditional manual investigative methods. This aligns with Rogers' argument that innovations diffuse more quickly when users perceive them as superior to existing practices. In terms of compatibility, the findings indicate that technological tools are increasingly compatible with modern security demands, particularly in urban centers like Abuja, where technology is increasingly facilitating crime. In observability, the visible successes of forensic science, digital tracking, and predictive policing in other jurisdictions likely influence acceptance within Nigerian security institutions, and in trialability, the security agencies can pilot surveillance tools in specific districts before scaling implementation.

There is a statistically significant relationship between modern technological tools and national security outcomes in Abuja. Traditional, reactive, and analog security methods were found to be structurally weak and insufficient in addressing contemporary security threats. Overreliance on out-

dated investigative methods has contributed to blind spots in intelligence gathering and delayed response to terrorism, banditry, kidnapping, and insurgency. Modern scientific technologies enhance evidence detection and preservation, crime pattern analysis, intelligence coordination, and the successful prosecution of offenders. There is heavy dependence on human intelligence (HUMINT), manual data systems, and reactive patrol strategies.

4. Conclusion

This study has demonstrated empirically that technological innovation and digital surveillance are significantly related to security outcomes in the Federal Capital Territory (FCT), Abuja. The findings confirm that the persistent security crisis in Nigeria is not merely a function of crime causation factors but is deeply connected to institutional and technological deficiencies within the country's criminal investigation architecture. The positive correlation established between technological innovation, digital surveillance, and security underscores the urgent need to reposition modern scientific methods in contemporary criminal investigations in Nigeria.

The importance of this study lies in its empirical validation of the Innovation Diffusion Theory within the Nigerian security context. By statistically establishing the relevance of modern investigative technologies, the study moves beyond theoretical assumptions. It provides measurable evidence that technological adoption is not optional but essential for effective security governance. It therefore contributes to criminological scholarship by bridging the gap between theories of crime causation and practical crime-control mechanisms in developing states.

Furthermore, this research expands the discourse on security in Nigeria by shifting attention from purely military and reactive strategies to intelligence-driven, technology-oriented investigative frameworks. In a security environment increasingly characterized by terrorism, cybercrime, kidnapping, insurgency, and transnational organized crime, reliance on analog and manpower-intensive methods is insufficient. The study reinforces the argument that modern security challenges require predictive analytics, digital forensics, biometric systems, artificial intelligence tools, integrated surveillance networks, and interoperable intelligence databases.

In conclusion, strengthening Nigeria's security architecture requires more than reactive deployment of security personnel; it demands a systemic transformation anchored in scientific innovation, institutional collaboration, ethical governance, and sustainable technological integration. By empirically establishing the nexus between modern investigative technology and security, this study contributes meaningfully to contemporary research on security governance. It offers a strategic pathway toward mitigating the security crisis in FCT, Abuja.

5. Recommendation

The paper therefore recommends as follows:

First, Nigeria's security agencies should provide a research foundation for future empirical investigations into the technology adoption of specific technological tools in criminal investigations. Second, there is an urgent need for security-sector reforms by Policymakers, legislators, and institutional heads. This could justify an increased budget allocation for technological infrastructure, cybersecurity frameworks, capacity building, and inter-agency digital harmonization. Moreover, third, policymakers should note that effective investigation enhances prosecution, deters crime, restores public confidence in law enforcement, reduces fear, and strengthens democratic governance. In this sense, technology-driven criminal investigation is not only a security imperative but also a developmental necessity.

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