



# Transition to Tech-Driven Law Enforcement in Nigeria: A Systematic Literature Review

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## Abstract

This paper presents a systematic review of the literature concerning the adoption and application of technology in policing and law enforcement in Nigeria. The rapid growth of digital technology globally has not left the policing sector untouched. Nigeria, as a developing nation, offers a unique perspective, grappling with challenges in infrastructure, digital literacy, and governance. Drawing from an array of scholarly articles, journals, and reports, this review seeks to ascertain the extent of technology-based advancements in the Nigerian policing system, its effects on crime prevention and detection, and the associated challenges. Key findings highlight both the positive transformations, including improved crime mapping and real-time surveillance, and the pitfalls, such as privacy concerns and technology misuse. Furthermore, the review underscores the necessity for continuous training, infrastructural development, and legislative frameworks to harness the full potential of technology-driven policing in Nigeria. This comprehensive analysis serves as a foundation for policymakers, academics, and law enforcement agencies to gauge the present scenario and chart a roadmap for future technological integrations.

## Keywords

Technology-based policing, Law enforcement advancements, Nigerian policing system, Crime prevention technology, Digital surveillance in Nigeria, Technological challenges and infrastructure

## 1. Introduction

The importance of law enforcement in society is profound, as it guarantees the preservation of public order, enforces regulations, and protects the well-being of citizens (Bikarevic, 2021). It maintains the integrity of the legal system, cultivates societal harmony, and discourages unlawful behavior (Khan et al., 2021). Competent law enforcement is vital for a well-organized and peaceful society, fostering confidence in democratic principles, and governance and preserving individual rights and liberties (Khan et al., 2021). The benefits of effective law enforcement systems have influenced societies around the globe to initiate innovative and practical measures for enhancing law enforcement within society (Matlala et al., 2016).

Hess et al. (2015) indicated that policing serves as the practical execution of law enforcement, with police officers at the forefront of responsibilities like law enforcement, community order maintenance, and emergency response. The idea of modern policing could be attributed to the works of Sir Robert Peel whose efforts led to the establishment of metropolitan police service during the early part of the 19<sup>th</sup> century (Taylor, 1997). Policing is defined as the actions, methods, and institutional processes executed by law enforcement entities and their personnel. Its purpose is to apply legal statutes, preserve societal order, deter and scrutinize unlawful activities, and guarantee the well-being

and protection of residents within a specified area (Taylor, 1997). Policing comprises a diverse array of responsibilities, encompassing tasks such as neighborhood patrols, emergency responses, criminal inquiries, and fostering positive relations with the public to establish trust and collaboration (Waddington & Wright, 2010). Its foremost objectives are to maintain the integrity of the legal system, safeguard the rights of individuals, and cultivate a perception of security and prosperity in the community (Waddington & Wright, 2010).

In Nigeria for instance, policing serves as a means through security agencies to collect evidence, perform investigations, and execute arrests as required to implement law enforcement directives (Kpae & Adishi, 2017). Policing actively maintains law and order by patrolling neighborhoods, conducting traffic stops, engaging with the public, promoting rule adherence, deterring unlawful actions, and encouraging collaboration between law enforcement entities and the communities they protect (Ordu & Nnam, 2017).

It is noteworthy that various aspects the human society are continually changing especially with the continuous recent global developments such as technological advancement and globalization (Larson, 2002). For instance, technology is exerting a profound influence on global society, fundamentally altering how we engage in diverse facets of our lives, spanning communication, commerce, education, healthcare, and governance (Hayes, 1998; Alemu, 2017). Similarly, Global policing has witnessed a significant alteration with continuous technological advancement (Custers, 2012). Over the past few decades, significant progress has occurred in information technologies, analytical systems, video surveillance, license plate readers, DNA testing, and other technologies, all of which carry extensive implications for policing (Custers, 2012). Technology has been integrated into Nigerian policing to enhance communication and collaboration among law enforcement bodies, supporting data-driven policing via analytics and predictive tools, and introducing surveillance innovations such as body-worn cameras and drones (Ibikunle & Binpe, 2018). Furthermore, advancements in fields like forensics, artificial intelligence, and machine learning are enhancing investigative processes and resource management (Uduma et al., 2021). Additionally, technologies related to social media, cybersecurity, and community engagement have become essential components of modern policing in Nigeria (Frank & Binpe, 2014). Police agencies, at various government levels, invest substantial resources in technology acquisition and implementation, as they aim to enhance their operational efficiency and effectiveness (Frank & Binpe, 2014).

Nevertheless, Neyroud (2008) opined that the responsible use of technology in modern policing and the preservation of public trust require addressing privacy and ethical considerations. This implies that the adoption of technology in policing though carries a substantial capacity to improve policing, can also have some consequences for enforcement agencies and the public. For instance, the Criminal Law Justice Theory highlights the relevance of developing, forming, and implementing technologically-based policies for the criminal justice system (Lacey, 2001). However, the Innovation Diffusion theory also argues that specific factors may influence the acceptance, implementation, and diffusion of technology in Nigerian law enforcement (Wani & Ali, 2015). Thus, comprehending the impacts of technological advancements is a crucial concern in modern law enforcement. It remains uncertain whether these changes have increased the effectiveness of the police in enforcing the law in Nigeria. Moreover, the available empirical evidence regarding the influence of technology on police performance suggests that its effects may be constrained or counteracted by various factors, ranging from technical issues to resistance among officers (Uduma et al., 2021). Therefore, gaining a deeper insight into the impacts of technology and how it can be optimized can present a significant challenge for law enforcement agencies in Nigeria to augment their capabilities and address budget and personnel constraints. This study therefore seeks to conduct a systematic literature review to evaluate the implementation of technologies in policing and its impact on law enforcement in Nigeria.

## **2. Research Questions**

- 1) What is the impact of technology-centred policing on crime rates and the efficiency of law enforcement in Nigeria?
- 2) What is the acceptance level of technology-based policing as a means of law enforcement in Nigeria?
- 3) What are the key obstacles encountered when introducing technology-driven policing in Nigeria?

## **3. Research Objectives**

- 1) Examine how technology-driven policing has affected crime rates and the efficiency of law enforcement in Nigeria.
- 2) Investigate the acceptance level of technology-based policing as a means of law enforcement in Nigeria.

- 3) Investigate the key obstacles linked to the adoption of technology-centred policing in Nigeria.

## 4. Research Methods

### 4.1 Research approach

The systematic literature review (SLR) is used in this study. The SLR involves a structured process of systematically identifying, selecting, evaluating, and synthesizing relevant studies to provide a comprehensive overview of the available evidence (Rother, 2007). The systematic approach is selected for this study because it provides a comprehensive synthesis of existing research on the topic. It allows for a comprehensive understanding of technology-based policing and its impact on law enforcement in Nigeria (Wright et al., 2007). Also, the transparent and structured methodology used in systematic reviews enhances objectivity, reducing the potential for subjective interpretations (Butler et al., 2016).

### 4.2 Data Search

A data search in a systematic review refers to the process of systematically and comprehensively searching various sources to identify relevant studies that will be included in this review (Cooper et al., 2018). The study created a well-defined search strategy that outlines the search terms, keywords, and Boolean operators (AND, OR, NOT) to be used as it ensures that the search is systematic and covers all relevant aspects of the research question (Kastner et al., 2006). Consequently, this study searches for studies by using keywords such as “Policing in Nigeria”, “Modern policing”, “Modern policing in Nigeria”, “Technology-based policing in Nigeria”, “Law enforcement in Nigeria”, and “Technology-based policing and law enforcement”.

The study searched for s across relevant academic databases such as PubMed, Scopus, and Web of Science. This study searched for data from several databases because different databases cover different disciplines, so using multiple databases helped ensure comprehensive coverage. Moreover, this study searched through the reference lists of included studies and relevant reviews to identify additional studies that might have been missed in the initial database search.

### 4.3 Screening and selection of studies

Screening and selection of studies in a systematic review is a critical process that involves carefully reviewing and evaluating potentially relevant studies to determine which ones meet the predefined inclusion criteria and should be included in this review (Waffenschmidt et al., 2019). This step was necessary as it ensures that this review includes studies that are relevant to the research question and maintains the integrity and quality of this review (Waffenschmidt et al., 2019). The screening process was guided by specific inclusion and exclusion. The establishment of the inclusion and exclusion criteria in this study was guided by the PICO (Population, Intervention, Control, or Comparison and Outcome) framework (Sanfilippo et al., 2019).

### 4.4 Inclusion criteria

Studies that investigate technological-based policing and enforcement in Nigeria were included in the study. Also, studies that provide empirical evidence and data technology-based policing and law enforcement were included in the study. Furthermore, Studies published in peer-reviewed journals between 2010 and 2023 were included in the study. Studies within these dates were selected to ensure that the findings of this study are not obsolete.

Also, the study established an exclusion criterion to ensure that the review maintains its focus, relevance, and quality (Engel et al., 2016). The exclusion criteria for this study include; Studies that investigate technology-based policing and law enforcement but conducted outside Nigeria were included from the review. Studies that investigate technology-based policing and law enforcement in Nigeria but were published before 2010 were excluded from the review. studies that are not published in reputable sources or peer-reviewed journals. This is because the quality of these studies cannot be guaranteed. Studies that lack clear definitions or methodologies for assessing technology-based policing and law enforcement in Nigeria.

With the PICO framework and the established inclusion and exclusion criteria, this study conducted the screening in two stages. In the first stage, the study reviewed the titles and abstracts of studies identified through the data search to assess their relevance to the research question. Studies that do not meet the inclusion criteria are excluded at this

stage. At the full-text review, the researcher conducted a detailed review of the full text of studies that passed the initial screening. This review aimed to determine whether the studies meet all the inclusion criteria and provide sufficient data for analysis. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram below illustrates the study selection process, from initial identification to final inclusion.

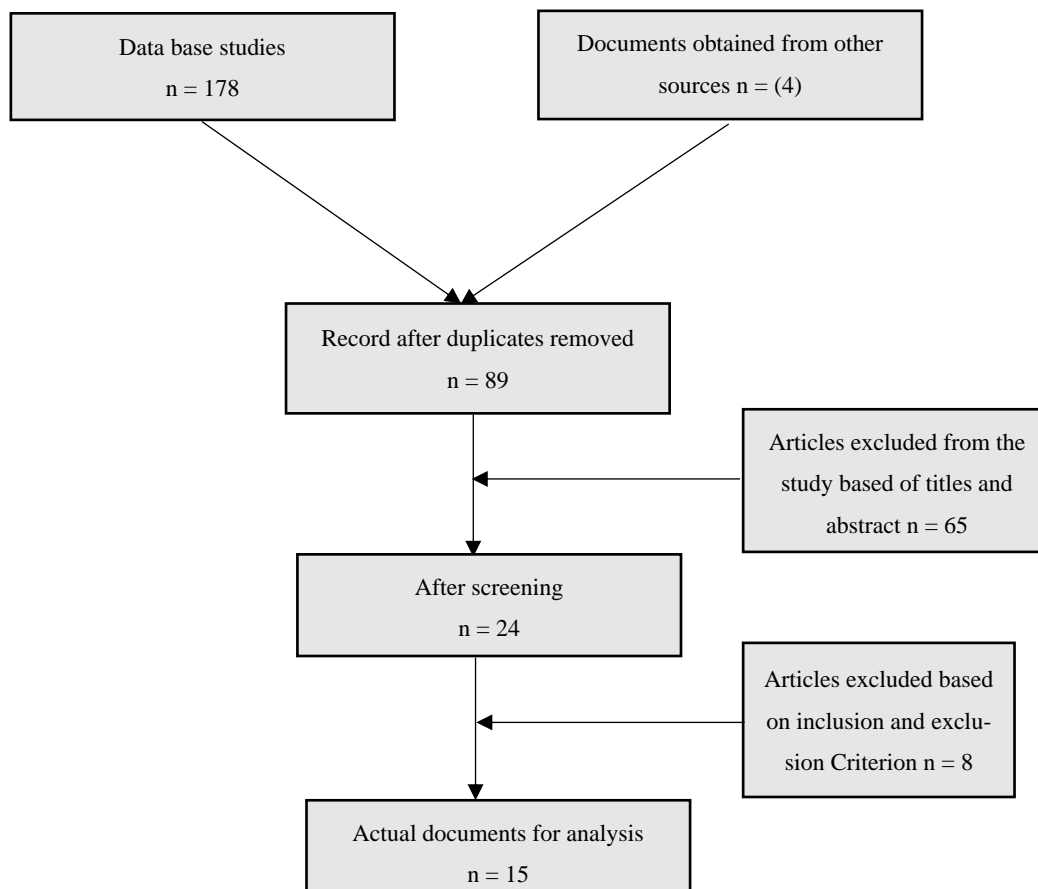


Figure 1. PRISMA reporting framework.

#### 4.5 Data quality assessment

Data quality assessment in a systematic review involves evaluating the methodological rigour, validity, and reliability of the studies that have been included in the review (Carrol & Booth, 2015). This assessment aims to ensure that the included studies meet certain quality standards and that the findings are trustworthy and credible (Verhagen et al., 2001). This study used the paper structure to assess the quality of all included studies. By following the paper structure, this study assessed the quality of studies based on the introduction, research framework, results, and conclusion of studies.

- **Introduction:** Concentrates on queries such as whether the introductory section of the study presents an outline of emotional intelligence and the management of project performance.
- **Research framework:** Is there a clear delineation in the research paper about the chosen research methodology?
- **Results:** Does the research investigation distinctly present the findings and do these outcomes effectively tackle the research inquiries?
- **Conclusion:** Is there a proper depiction of both favorable and adverse findings of the study in a well-defined manner?

Thus, based on the paper structure, the researcher developed a 0-4 quality score to determine the quality of the studies. All studies that have a quality assessment score of 50% and below were dropped from the review while studies that score a quality assessment of 75% and above were included in the review. It revealed that 9 out of the 16

papers included in this study had a quality assessment score of 100%, 5 had 75% and 2 had a 50% quality assessment score.

### 4.6 Data extraction

Data extraction in a systematic review refers to the process of systematically and comprehensively gathering relevant information and data from selected studies to answer a specific research question or address a particular topic (Elamin et al., 2009). The JBI Qualitative Assessment and Review Instrument (JBI-QARI), was specifically designed for extracting qualitative data (Munn, 2016). With the JBI, the study extracted the relevant aspects of all the included studies with the aid of an Excel sheet. The sample of extracted data is shown in Table 1.

**Table 1. Systematic data extraction**

Author(s)	Purpose of study	Location	Research approach	Sampling size and technique	Data collection method	Data analysis	Findings
Nwosu, U. K. & Mathias, B. A.	2022 explore the character of organizational technology culture and its association with adherence to e-policing protocols in the realm of property crime detection and investigation	Abia State and Anambra State, Nigeria.	Qualitative	Multi-stage sampling, 605	questionnaire	Descriptive statistics and linear regression	1. Significance deficiency in organizational technology culture within the two selected Police Commands. 2. Organizational technological culture significantly influenced compliance with e-policing protocols within these Police Commands
Onyeuem et al.	2022 Assess the impact of Information and Communication Technology (ICT) on crime-fighting efforts by security forces	Nigeria	Mixed method	multi-stage sampling technique, 300	questionnaire	Pearson Product Moment Correlation Coefficient (PPMCC) statistical tool.	1. Significant relationship between the utilization of ICT and the effectiveness of the police force in combating crime in Nigeria. challenges faced in using ICT for crime-fighting, including a lack of infrastructure, insufficient training, uncooperative behaviour from ICT service providers, and a lack of inter-agency cooperation.
Owonibi, O. E. & Ukwilulu, O. J.	2020 Examine the challenges associated with implementing community-oriented policing	Abuja Municipal Area Council, Nigeria.	Mixed method	multi-stage sampling, 400	questionnaires and oral interviews.	Descriptive statistics and thematic analysis	lack of equipment and technology to support services, and issues related to corruption
Ekwunife et al.	2020 evaluates the use of CCTV and Biometrics as Information and Communication Technology (ICT) tools for curbing criminality in Nigeria.	Ebonyi State Police Command Abakaliki	Mixed method	Purposive sampling, 25	Questionnaire and Interview guide	Descriptive statistics and thematic analysis	1. CCTV and Biometrics play important roles in crime prevention and offer advantages over traditional approaches to crime prevention. 2. Nigerian police are not very effective in utilizing these technologies for policing. 3. Ebonyi State Police Command Abakaliki has not made significant progress in the use of CCTV and Biometrics for crime control.
Josha et al.	2020 Discusses the pressing issue of insecurity in Nigeria and suggests considering an alternative approach	Nigeria	Qualitative	Purposive	Interview guide		1. Insecurity is a significant problem in Nigeria and suggests that E-Policing, which is part of modern security architecture, can help address the country's policing challenges.
Nwusu, U. K. & Mathias, B. A.	2023 Investigate the perceived usefulness of Electronic Policing (E-Policing) technology in property crime detection and control among police personnel	Southeast Nigeria.	Qualitative	Proportionate stratified random sampling technique, 605	Questionnaire	Descriptive statistics, chi-square statistical test	1. There was a seemingly neutral perception among the police personnel regarding the usefulness of E-policing in detecting and investigating property crimes within the Southeast zone of Nigeria.
Oladijimi & Abdulkareem	2023 Assesses user satisfaction with e-policing in Nigeria	Nigeria	Qualitative	Convenience, 567	Questionnaire	Partial Least Squares Structural Equation Modeling (PLS-SEM)	1. All quality dimensions (service quality, system quality, and information quality) had positive and significant relationships with perceived usefulness and user satisfaction with e-police. Perceived usefulness partially mediated the relationships between the quality dimensions and user satisfaction.
Aborisade, A. R. & Ariyo, G. O.	2022 To examine the experiences and perspectives of top-ranking police officers who supervised the enforcement of lockdown and other COVID-19 measures.	Nigeria	Qualitative	Purposive, 16	Interview guide	Thematic analysis	1. Inefficient technology implementation in the Nigeria Police force
Ibikunle, F. B. & Binpe, A.	2021 Examines the impact of Information and Communication Technology (ICT) on ineffective policing	Nigeria	Mixed method	Multi-stage, Simple (probability) Random Sampling, and Purposive Technique, 600	Questionnaire	Pearson's Product Moment Correlation.	1. The study reveals that the use of ICT and other technologies enhances the performance and effectiveness of the policy
Uduema et al.	2021 Examine how the Nigeria Police Force (NPF) uses social media and the challenges it faces in adopting social media for policing	Nigeria	Qualitative	Purposive, 40	Interview guide	Thematic	The NPF uses social media for surveillance, intelligence gathering, community engagement, and image building. 2. The force faces challenges such as financial constraints, untrained personnel, the spread of online fake information, privacy issues, and leaks of ongoing investigations.

Frank, I. & Binp e, A.	2014	Examine the impact of Information and Communication Technology (ICT) on effective policing	Nigeria	Quantitative	Multi-stage, Simple (probability) Random Sampling, and Purposive Technique for selecting respondents, 600	questionnaire	Descriptive, correlational	1. The use of ICT and other technologies enhances the performance and effectiveness of the police
Mustapha, A. & Abubakar, B.	2023	Examine e-policing in Nigeria lessons from the USA	Nigeria	Qualitative	The study adopts a desk/literature review method for data collection.	Data for the study are collected through a review of existing literature and desk research.	The study uses the McDonaldization theory to dissect the objectives of the study and analyze the findings	The study reveals that the strategy of information technology in policing in the USA revolves around due diligence, agency fit, future challenges, and communication. It highlights that timing, long-term cost, capacity of personnel, and leadership are critical determinants of success and failure in ICT and policing
Alhasan et al.	2019	Evaluate police-assisted mobile applications based on the number of application downloads and user ratings on the Google Play Store.	Nigeria	Qualitative	Purposive	Interview	Thematic	There is a level of forensic soundness in police-assisted mobile applications that can ensure evidence admissibility.
Peters, E. S. & Ojedokun, A. S.	2019	Investigate security devices that can aid in crime prevention	Nigeria	Experimental	Purposive,	laboratory	—	It suggests that these devices can contribute to day-to-day security and crime prevention efforts and may be valuable for law enforcement agencies and security organizations in addressing the growing issue of crime in society.
Fagbohun, O. O. & Oni, O. A.	2016	The study investigates the use of social media for policing and crime prevention	Lagos State Police Command	Mixed method	Purposive	Questionnaires and key informant interviews.	descriptive statistics	1. Police officers are generally positively disposed toward the adoption of social media for policing and crime prevention, with intelligence gathering being a major purpose. 2. A significant portion of the officers have not received training in social media usage for policing.
Ayinde, A. T. & Agwu, E.	2016	aims to analyze the impact of technological innovation on crime prevention and effective policing in Nigeria	Nigeria	Qualitative	—	Interview	Thematic	The study suggests that technological innovation has significant implications for policing, leading to changes in crime types and criminal behaviour. It recommends that security managers should be knowledgeable about technology, and the government should invest in modern crime-solving technologies.

#### 4.7 Data synthesis

This research employed a method called meta-synthesis through meta-aggregation, in which it collected outcomes from existing studies, organized these outcomes into clusters based on shared meanings, and then combined them to create a collection of statements that effectively encapsulated this amalgamation (Munn et al., 2013). The meta-synthesis was done based on the data extracted with the aid of the JBI-QARI. The researcher integrated the higher-order themes into the narrative, showing how they tie together individual studies and offer new insights. The study then interprets the implications of the synthesized findings in the context of the research question and existing literature.

#### 4.8 Reporting the study

Data reporting in a systematic review refers to the process of presenting and communicating the collected and synthesized data in a clear, organized, and transparent manner (Zorzela et al., 2016). It's a critical step that allows readers, researchers, and decision-makers to understand the evidence, findings, and conclusions of the review (Zorzela et al., 2016). Proper data reporting ensures that the systematic review is reproducible, and credible, and contributes to evidence-based decision-making (Dienes et al., 2016). This study will follow the PRISMA framework for study reporting.

### 5. Analysis

#### 5.1 Characteristics of studies included in the review

All the studies were published between 2010 and 2023. Out of the 16 studies included in this study. The 16 articles included in this analysis were conducted in Nigeria. It could be observed that the studies used several research approaches. It is observed that 5 of the studies used the mixed method approach, 4 used the quantitative research approach, 5 used the qualitative approach and 2 used the experimental designs is further observed that the majority of the respondents involved in the studies included in this review were police officers. The quantitative studies included in this review used a questionnaire as the data collection. Also, qualitative interview guides and the studies that used the mixed method approaches made use of both questionnaires and interviews for the data collection. Moreover, a

greater portion of the studies used the cross-sectional design and gathered primary data with the aid of questionnaires and interview guides. The distribution of the study does not show any regular pattern in relation to the year the studies were conducted. However, it is observed that 10 out of the 16 studies were conducted between 2020 and 2023, 2 of the studies were carried out in 2019, 1 study each was conducted in 2014 and 2018, and 2 studies were conducted in 2016. Also, only four of the studies state the specific local area in Nigeria where the studies were carried out.

## **5.2 Finding of the meta-synthesis**

### **5.2.1 Impact of technology-based policing on crime rates and the efficiency of law enforcement in Nigeria**

The review of the 16 studies included in this report indicated that 14 of the studies reported on the impact of technology-based policing on law enforcement and crime prevention in Nigeria (Nwusu, U. K. & Mathias, B. A., 2023; Onyepuemu et al., 2022; Joshua et al., 2021; Uduma et al., 2021; Ekwunife et al., 2020; Peters & Ojedokun, 2019; Alhassan et al., 2019; Ibikunle & Binpe, A., 2018; Ayinde & Agwu, 2016; Frank & Binpe, 2014).

### **5.2.2 Reduction in crime rate**

Majority of these studies 10 found that the adoption of technology in policing has improved law enforcement through the reduction of the crime rate in Nigeria (Onyepuemu et al., 2022; Uduma et al., 2021; Joshua et al., 2021; Ekwunife et al., 2020; Peters & Ojedokun, 2019; Frank & Binpe, A., 2018; Ibikunle & Binpe, A., 2018). The Nigeria Police Force (NPF) makes use of ICT and the Internet such as the use of social media for surveillance, intelligence gathering, community engagement, and image building (Uduma et al., 2021). The NPF also makes use of other technological devices such as CCTV, crime mapping and DNA tests. Though Peters and Ojedokun (2019) found that technology has not been fully implemented in many police commands within the NPF, its significant impact on law enforcement has greatly been observed.

### **5.2.3 No significant change in the impact of technology-based policing**

The review further shows that some studies have observed a neutral or significant impact of technology-based policing on law enforcement in Nigeria (Nwusu & Mathias, 2023). For example, Ekwunife et al. (2020) indicated that many Nigerian police officers are effective in the utilization of technological devices in day-to-day policing. Thus, though a majority of the studies included in this review found a significant positive impact of technology-based policing on law enforcement, it is very surprising that other studies are reporting no significant impact. This could be explained by the observation by Nwusu and Mathias (2022) who indicated that organizational technological culture influences the effective utilization of technological-based policing. In other words, some studies may observe a difference in the impact of technology-based policing on law enforcement if these studies focused on different police commands with differences in their organizational technological culture.

## **5.3 Acceptance of technology-based policing**

Out of the 16 studies, 4 reported on the acceptance of technology-based policing in Nigeria (Aborisade & Ariyo, 2022; Oladimeji & Abdulkareem, 2023; Alhassan et al., 2019; Fagbohun & Oni, 2016). These studies indicated that the majority of the respondents included in their studies showed a positive attitude towards the utilization of technology in policing in Nigeria. However, the studies reported the acceptance of technology-based policing is influenced by several factors such as the quality of service delivery, ease of use and user cost of technology-based policing.

## **5.4 Key challenges of technology-based policing and law enforcement in Nigeria**

### **5.4.1 Inadequate funds**

8 of the 16 studies included in this review reported on the challenges of technology-based policing in Nigeria. 4 out of these 8 studies reported that financial constraint is a major factor that hinders the effective implementation of technology-based policing. It is observed that the Nigerian government has not been committed to the provision of the required funds for the effective implementation of technology-based policing (Mustapha, Abubakar, & Onyepuemu et al., 2022; Uduma et al., 2021; Owonibi & Ukawilulu, 2020).

### **5.4.2 Inadequate technological infrastructure in most police commands**

It was also revealed that a lack of technological infrastructure hinders the effective implementation of technology-based policing in Nigeria (Mustapha & Abubakar, 2023; Onyepuemu et al., 2022; Uduma et al., 2021). These studies

reported that inadequate technological gadgets and facilities can aid the effective implementation of technology-based policing in Nigeria.

#### **5.4.3 Lack of technologically skilled police officers**

Furthermore, some studies identified inadequate skilled personnel as an impediment to the effective implementation of technology-based policing in ensuring law enforcement in Nigeria (Mustapha & Abubakar, 2023; Uduma et al., 2021; Fagbohun & Oni, 2016).

#### **5.4.4 Other hindrances to the effective implementation of technology-based policing**

Other studies also reported that factors such as corrupt organizational culture, uncooperative behaviour from ICT service providers, and a lack of inter-agency cooperation as hindrances to the effective implementation of technology-based policing (Onyepuemu et al., 2022; Nwusu & Mathias, 2022; Owonibi & Ukawilulu, 2020)

### **5.5 Discussion**

#### **5.5.1 Impact of technology-based policing on law enforcement**

The majority of the papers included in this review collectively agree that the implementation of technology-driven policing approaches holds significant potential for addressing security concerns and enhancing law enforcement in Nigeria. Adesola (2019) for instance, argued that the use of the Internet of Things framework in policing in Nigeria enhances real-time crime tracking and reduction. Similarly, Adigun (2020) indicated that bolstering the Nigerian police with ICT enables the NPF to gain a strategic competitive advantage against sophisticated criminals. Omoregbe (2019) has designed an e-policing system for crime reporting and control, while Nte (2020) discovered that closed-circuit television cameras in Abuja have acted as a deterrent to criminal activity. Uduma (2020) conducted interviews revealing that, although the Nigerian Police Force employs social media for surveillance, community engagement, and public relations. However, some studies also showed that technology-based policing did not have a significant impact on law enforcement in Nigeria.

The findings from these studies resonate with the findings of studies from other parts of the world. For example, Lum et al. (2017) asserted that the introduction of technology in law enforcement is expected to enhance effectiveness and efficiency. The use of technologies such as crime mapping (Clavell, 2018), facial recognition, DNA testing, and predictive algorithms (Capers, 2016) can augment police effectiveness and accountability. Nevertheless, research indicates that the influence of technology on policing is complex and frequently falls short of realizing its full potential (Lum, 2017). Hoey (1998) opined that technology can bolster fundamental police functions like communication and information sharing among police personnel and command units, however, Koper et al. (2014) observed that it does not always lead to tangible benefits such as decreased crime rates or improved community relations.

Furthermore, Lum (2017) indicated that law enforcement agencies often approach and employ technology in a conventional, reactive manner, constraining its effectiveness. They frequently neglect to strategically employ technology to genuinely advance policing (Koper, 2014).

The findings of this review seem to align with the observation of Colton (1979) who opined that earlier forecasts of technology revolutionizing policing have not materialized (Colton, 1979). The adoption of technology in police services has been slower than initially envisioned, and outcomes have been mixed, particularly for more intricate applications (Colton, 1979).

For technology to unlock its potential, law enforcement agencies must adopt new tools strategically and thoughtfully (Koper, 2014). They must move beyond a traditional, reactive mindset and contemplate how technology can align with broader objectives, such as building trust within the community (Lum, 2017). With oversight, transparency, and a strong emphasis on ethical considerations and civil liberties, technology may still aid law enforcement in better serving and protecting citizens in the 21st century (Neyroud, 2008). In essence, research indicates that the impact of technology largely hinges on how it is implemented and managed within the multifaceted realm of policing.

#### **5.6 Acceptance of Technology based policing**

The findings of this study indicated that the majority of the papers that were involved in the review found a positive acceptance rate among police officers and citizens in Nigeria. It was further shown that the acceptance is contingent on factors such as service quality, cost of technology-based policing services and the ease of use of technologies used in policing (Oladimeji & Abdulkareem, 2023).

The review of other studies from other parts of the world shows that the acceptance of technology-based policing can be influenced by several other factors. For instance, Colvin (2005) found mixed evidence on police officers' acceptance of technology-based policing methods. Some studies found high acceptance and identified key factors influencing it, while others found obstacles and lack of success stories. Two studies found that police officers accept technology when they perceive it as useful and easy to use (Lui & Hu, 2005; Colvin, 2005). Clavell (2008) maintained that these technological advancements also give rise to ethical, organizational, and societal challenges that demand attention to ensure their responsible and equitable utilization (Clavell, 2018; Neyroud, 2008). Multiple sources underscore that technology-based policing has the potential to erode civil liberties and privacy when used improperly (Clavell, 2018; Neyroud, 2008; Sheptycki, 2019). It is observed that robust surveillance technologies grant law enforcement access to extensive volumes of personal data, necessitating careful regulation and oversight to prevent abuse (Neyroud, 2008). A lack of regulation or oversight could inflict damage on the credibility of law enforcement agencies and public trust (Neyroud, 2008). Furthermore, technological systems are susceptible to bias and inaccuracies, requiring rigorous testing and auditing to rectify (Capers, 2016; Clavell, 2018).

The foregoing suggests that the acceptance of technology-based policing can be influenced by other factors that have not been considered in the Nigerian literature. It is thus, relevant for researchers, stakeholders and various police units to examine and incorporate other factors as discussed above to augment the acceptance of technology-based policing in Nigeria.

## 5.7 Challenges in Nigeria

The integration of technology into Nigerian law enforcement encounters notable obstacles. Financial limitations pose a significant hurdle, as numerous police departments lack the resources to invest in technology and provide proper training (Nte, 2020; Omoregbe, 2019). Moreover, the police force grapples with a shortage of technical expertise, with many officers lacking adequate training in technology utilization (Uduma, 2020). There are additional challenges linked to privacy concerns and the proliferation of false information. The deployment of surveillance technologies like CCTV cameras raises privacy-related issues, and social media platforms facilitate the dissemination of misleading information that can disrupt investigations (Nte, 2020; Uduma, 2020). Furthermore, internal corruption within the police force poses yet another impediment, as some officials benefit from the current state of affairs and resist reform efforts (Ikuteyijo, 2009). In summary, while technology-driven strategies hold promises for enhancing security in Nigeria, they have not been fully harnessed due to substantial challenges.

## 6. Conclusion

There are calls for reform aimed at enabling the Nigerian police to effectively harness technology. Daniel (2011) argues for the inclusion of "true federalism" into the police structure and increased investment in intelligence gathering. This review has shown that technology-driven policing offers the potential to improve law enforcement in Nigeria. Information and Communication Technology (ICT) and the Internet of Things (IoT) have the potential to be utilized for real-time monitoring of criminal activities, aiding in the reduction of increasing crime rates (Adesola, 2019; Omoregbe, 2019). Additionally, social media platforms empower law enforcement agencies to collect intelligence, foster community engagement, and bolster their public perception (Uduma, 2020).

However, several challenges mar the efforts of law enforcement agencies to effectively integrate technology in policing. Implementing reforms to address these challenges, such as enhancing funding and training, can enable Nigeria to capitalize on the advantages of technology in policing (Adigun, 2020; Nte, 2020). While it is acknowledged that technology cannot resolve all the deeply rooted issues within Nigeria's police system, which has historical ties to colonial oppression, it provides tools that, if appropriately implemented and regulated, could fortify law enforcement and contribute to safer communities (Johnson, 2013; Adedeji, 2012). With political determination and effective governance, technology-based policing has the potential to transform security dynamics in Nigeria.

The review shows that the majority of the studies conducted on technology-based policing and law enforcement in Nigeria involved and gathered data from police officers. However, the effective integration of technology in policing requires a good collaboration between the various law enforcement and the citizens. It is therefore recommended that researchers examine technology-based policing and law enforcement from the perspective of the citizens who directly receive the services of technology-based policing.

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