Influence of Technological Reforms and Performance in Law Enforcement among the Directorate of Criminal Investigation officers in Kenya.

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ABSTRACT

Technological advancements have been transforming policing by improving efficiency, responsiveness, and public engagement. However, integrating these technologies posed challenges, especially when law enforcement conduct eroded public trust. In Kenya, the Directorate of Criminal Investigations (DCI), responsible for crime investigation and public safety, had faced criticism for practices misaligned with its mission. This study examined the impact of technological reforms, including digital forensics, surveillance, and data analytics, on DCI performance. The research was grounded in the Task-Technology Fit (TTF) Theory and the Peelian Principles, which provided both functional and ethical frameworks for evaluating police reforms. A mixed-method approach with a descriptive survey design was employed. The study targeted DCI officers across Kenya's eight regional offices, along with civil society and Nyumba Kumi representatives. A multistage sampling strategy selected 384 participants: 230 DCI officers (60%), 50 civil society representatives, and 104 Nyumba Kumi members. Data collection involved structured questionnaires, interviews with Regional Criminal Investigations Officers (RCIOs), and focus group discussions. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were thematically analyzed. The findings revealed that technological reforms positively impacted DCI performance by enhancing operational efficiency, accessibility, and transparency. The study recommended that the Kenyan government prioritize infrastructure investment, conduct regular technology upgrades, and expand officer training to fully capitalize on these tools. Additionally, increased resource allocation to the DCI and National Police Service was deemed essential to address gaps in reform implementation and ensure sustainable performance improvements.

Keywords: Technological Reforms, Police Performance, Task-Technology Fit, Peelian Principles, Law Enforcement Kenya

1. INTRODUCTION

Police and policing are foundational to any society's criminal justice system, tasked with upholding law and order, preventing and investigating crime, and ensuring public safety (Prendergast, 2021). Beyond these core functions, police forces bear the responsibility of protecting citizens' fundamental rights and freedoms, such as the right to life, self-governance, and personal security (Abu & Ben-Porat, 2021; Agboga, 2021). Achieving this mandate demands adequate training, resources, and sustained support from both governmental authorities and the communities they serve (Meško & Lobnikar, 2021). Effective policing is vital for preserving social stability and peace, reinforcing the rule of law, and shielding citizens from harm (Adejoh & Lawal, 2022; Kinoti, 2022; Monga & Singh, 2020). As these roles become more demanding in contemporary contexts, technology has emerged as a critical enabler and at times, a challenge, in modern policing.

Technology plays a multifaceted role in the fight against crime, serving both as a tool for criminals and as a vital asset for law enforcement. While it enables new forms of criminal activity, such as cybercrime and online fraud, it also provides innovative methods for detecting, investigating, and preventing such offenses. As criminal activity grows increasingly sophisticated, spanning cybercrime, transnational criminal networks, and emergent security threats, many law enforcement agencies are pursuing reforms to modernize and strengthen their operational capabilities. In this context, technological advancements have become central to transforming police work by enhancing efficiency, decision-making, and public responsiveness.

Advancements in digital tools and forensic technologies have fundamentally transformed modern policing and criminal justice by enhancing how investigators collect, analyze, and interpret evidence. From the historic adoption of fingerprint analysis in the 19th century to contemporary innovations like DNA profiling and AI-driven analytics, each milestone has improved accuracy and efficiency in solving crimes (Brown, 2020; Kassin et al., 2022). Automated systems such as AFIS and IBIS, alongside cutting-edge tools like 3D laser scanning, drones, and forensic imaging, now enable comprehensive crime scene reconstruction (Roberts & Lee, 2023). AI systems process surveillance data, phone records, and social media, revealing investigative leads once buried in complexity (Ngugi & Otieno, 2024). Technologies like body-worn cameras further enhance transparency and

accountability (Freedman et al., 2022). These advancements not only streamline investigations but also reinforce public trust, safety, and the integrity of justice systems worldwide (Rueda, 2021; Meško & Lobnikar, 2021).

However, the integration of technology into policing is not without challenges. One of the most pressing issues is the persistent misconduct by some officers, which undermines public confidence in law enforcement institutions. In both global and Kenyan contexts, repeated reports of police brutality, excessive use of force, and human rights violations have raised widespread concern (Ayitogo, 2020; Freedman et al., 2022). These actions not only weaken the perceived legitimacy of police agencies but also risk igniting social unrest and community resistance (Rueda, 2021). Balancing effective law enforcement with respect for human rights remains a persistent dilemma, especially when officers are expected to uphold justice while operating within strict legal frameworks (Cowell-Meyers & Gallaher, 2020). Yet, continued allegations of corruption, rights abuses, and excessive force reveal a significant gap between the ideals and realities of policing practice (Ayers et al., 2020; Hoag, 2020).

Technology reforms have become pivotal in modernizing law enforcement globally, yet implementation outcomes vary significantly across regions. In North America, body-worn cameras (BWCs), predictive policing, and AI surveillance tools have improved transparency and responsiveness. For instance, Alda and Dammert (2024) found that BWCs in U.S. local police agencies increased efficiency and reduced complaints. In Canada, intelligence-led policing models supported by real-time data platforms have also improved decision-making (Peterson & Lawrence, 2025). Meanwhile, the EU has emphasized data protection and interoperability challenges as it adopts digital enforcement tools (Zhelyazkova, 2023). In the UK, while Big Data has supported intelligence operations, ethical and privacy concerns persist (Bunnik, 2024). Some EU countries face gaps in training and legal frameworks, hampering reform momentum (Popovich et al., 2024). Success is often tied to institutional readiness, legal harmonization, and community trust, while failure is rooted in underfunding and resistance to change. A comparative lesson is that reforms thrive where oversight, policy coherence, and public communication are prioritized, emphasizing not just technological input but the socio-political ecosystem supporting it (Justice, 2015; Peterson & Lawrence, 2025).

In Asia, China's law enforcement has deeply embedded technology reforms through facial recognition, community surveillance, and AI analytics. Tang (2024) found that integrated platforms improved real-time response, although Chen et al. (2025) warned of declining procedural justice when officers over-relied on tech tools without transparency. In Malaysia and Indonesia, police digitization initiatives like online complaint systems and drone-assisted patrols are gaining ground, though gaps in digital literacy and institutional culture inhibit full adoption (Prayatno et al., 2024). The UAE has successfully piloted smart policing, integrating biometric identification and AI to improve public safety outcomes (Robani et al., 2024). The region's comparative success stems from strong political support and investment in specialized training. However, criticism arises when these tools are perceived as instruments of surveillance rather than service. Challenges common across these nations include insufficient public engagement, over-centralization of data control, and lack of ethical frameworks governing AI use. In countries like Indonesia, fragmented governance slows integration, while in the UAE, trust remains contingent on perceived fairness in deployment. The region's progress shows technology alone is insufficient, strategic alignment with civil rights and local norms is critical.

African countries are embracing tech reforms to address crime and inefficiency, yet success remains mixed. In South Africa, crime mapping and mobile policing platforms have been deployed, but systemic corruption and poor leadership limit long-term gains (Modise, 2025). Ghana and Nigeria have launched crime databases and digital reporting tools, but low funding, poor infrastructure, and lack of trust hinder widespread adoption (Duho et al., 2025; Nweke & Anim-Wright, 2024). Rwanda has used digital platforms to address cybercrime, though challenges in inter-agency collaboration persist (Hirwa, 2024). In Kenya, digitization efforts such as the police Occurrence Book system and command centers are gaining traction, yet studies show uneven implementation across counties and insufficient officer training (Khaemba, 2024; Nzai & Makokha, 2024). Despite enthusiasm, common gaps include limited budgetary allocation, resistance to procedural change, and poor stakeholder coordination. Reforms in these nations are more successful when anchored in local leadership, community policing philosophies, and investment in capacity-building. As African states continue

their digital transitions, the need to balance technology, accountability, and citizen engagement remains central to sustainable police reform.

1.1 Statement of the problem

The Directorate of Criminal Investigations (DCI) in Kenya plays a central role in ensuring justice and national security by investigating crimes and supporting prosecution processes. However, the rising trend in violent crime presents a growing challenge to its effectiveness. National data indicate that violent crimes increased from 32,851 in 2015 to 41,076 by 2019, reflecting a growing security burden. Although a temporary decline to 33,936 occurred in 2020, likely due to COVID-19 lockdowns, crime surged again, reaching 40,145 in 2023 amid worsening economic conditions and political unrest. The situation worsened in 2024, marked by a spike in femicides and economic crimes. Forecasts for 2025 predict a marginal increase in total violent crimes to 38,993, with a 95% confidence interval of 34,070 to 43,917. Notably, crimes involving police officers are also expected to rise, highlighting internal governance and integrity challenges within the police service. This persistent upward trajectory in crime underscores the urgency for more effective investigative tools and strategies within the DCI, particularly through technological reform.

In response, Kenya has adopted various technological interventions, digital Occurrence Books, automated fingerprint systems (AFIS), AI-assisted analytics, and real-time surveillance, to enhance investigative efficiency and transparency. However, implementation within the DCI has been uneven, hampered by limited training, inadequate infrastructure, and resistance to institutional change. Studies by Khaemba (2024) and Nzai & Makokha (2024) reveal that only 45% of officers are proficient in using these technologies, while 63% cite inadequate support systems. Furthermore, research on the actual performance outcomes of these reforms in Kenya remains limited and largely anecdotal, with most studies focusing on broader regional or global contexts. As crime grows more complex, evidence-based insights into how technological tools influence investigation success, resolution rates, and public trust are essential. This study seeks to fill this gap by examining how technological reforms impact performance in the DCI, with a view to strengthening evidence-informed police reform strategies in Kenya.

1.2 Objective

To establish the influence of technology reforms on performance in law enforcement among Directorate of Criminal Investigations officers in Kenya

2. LITERATURE REVIEW

2.1 Theoretical Framework

As the study focuses on influence of technology reforms on performance in law enforcement among DCI in Kenya, it is anchored in two key theoretical frameworks: The Task-Technology Fit (TTF) Theory and the Peelian Principles Theory. These theories provide a robust foundation for understanding the influence of technology reforms on the performance of law enforcement officers within the Directorate of Criminal Investigations (DCI) in Kenya.

2.1.1 The Task-Technology Fit (TTF) Theory

The Task-Technology Fit (TTF) Theory, developed by Goodhue and Thompson (1995), posits that technology is more likely to have a positive impact on individual and organizational performance when its capabilities align with the tasks users must perform. The theory assumes that for technology to be effective, it must match task requirements in terms of complexity, structure, and information needs. TTF emphasizes the interaction between users, tasks, and technology, arguing that perceived fit directly influences usage behavior and performance outcomes. Since its introduction, TTF has gained wide acceptance among scholars and practitioners in public administration, health informatics, and information systems, particularly in evaluating ICT reforms. For example, studies such as Zhou et al. (2020) used TTF to assess e-government platforms in China, finding that fit between system capabilities and administrative tasks enhances decision-making efficiency. Similarly, Omar and Aziz (2022) applied TTF in evaluating digital policing tools in Malaysia, showing that system functionality, accessibility, and user alignment significantly affect enforcement effectiveness.

In [6] the context of the current study on technological reforms within the Directorate of Criminal Investigations (DCI), TTF offers a compelling framework to evaluate the performance impact of new digital tools and forensic technologies. The adoption of systems such as the Digital Forensic Lab (DFL), automated criminal records, and cybercrime units illustrates reforms designed to match investigative tasks with appropriate technological capabilities. By applying TTF, the study validates the hypothesis that task-technology alignment positively influences law enforcement efficiency. When DCI officers report that digital evidence, communication systems, and real-time data access improve operational decision-making, this reflects high TTF. However, critiques of TTF argue that it lacks attention to contextual, organizational, and socio-political dynamics that shape technology outcomes (Dishaw & Strong, 1999). Nonetheless, the theory remains relevant in assessing technical reforms as it offers a structured approach to understanding why certain tools succeed or fail based on fit. Therefore, TTF provides both a diagnostic and prescriptive lens for interpreting the effectiveness of technological reforms in enhancing law enforcement performance in Kenya.

2.1.2 The Peelian Principles

The Peelian Principles were introduced by Sir Robert Peel in 1829, forming the philosophical foundation of modern policing. Peel, a British statesman and founder of the Metropolitan Police Service in London, proposed nine principles advocating for ethical, community-centered law enforcement. These principles emphasize crime prevention over repression, the necessity of public approval, and the importance of minimal use of force (Lister, 2006). The core assumptions include the belief that effective policing requires public cooperation and that legitimacy arises from service, not power. Proponents of these principles, such as modern community policing theorists, argue that technology should enhance—not replace—the interpersonal nature of policing. In public institutions, studies like Mawby (2019) have referenced Peelian norms to assess the ethical implications of surveillance and facial recognition technologies, asserting that such innovations must align with public interest and oversight to preserve legitimacy and effectiveness.

Peelian Principles have informed analyses of technological integration in policing, [22] ticularly in democratic societies. For instance, Tyler (2004) emphasized their relevance in ensuring technologies like body-worn cameras and digital evidence management tools uphold transparency and accountability. While critics argue that Peel's model is outdated in today's complex, technology-driven environments, its focus on procedural justice and public engagement remains vital (Reisig, 2020). In the Kenyan context, applying Peelian Principles to the Directorate of Criminal Investigations (DCI) offers a normative lens for evaluating reforms like biometric databases, crime mapping software, and forensic digitization. These tools must not only improve operational outcomes but also reinforce the DCI's legitimacy by fostering trust and safeguarding rights—key expectations under the Peelian model.

Peelian Principles complement the [20] Task-Technology Fit (TTF) Theory by offering a normative framework to evaluate the ethical and social acceptability of technology reforms in law enforcement. While TTF focuses on the alignment between technological capabilities and task requirements (Goodhue & Thompson, 1995), Peelian Principles address whether such technology serves public interest and reinforces professionalism. In the DCI context, TTF explains how digital case management systems improve performance, whereas Peelian Principles evaluate whether their use promotes community trust and upholds due process. Together, they ensure that technological reforms are both functionally effective and publicly accountable. This theoretical synergy is crucial in reforming Kenya's investigative policing, where both performance and public approval are central to sustainable impact and institutional legitimacy.

2.2 Performance of Directorate of Criminal Investigations

The KPS, DCI evaluation focuses on four critical areas of responsiveness, professionalism, accessibility and accountability and case clearance performance. When the KPS DCI shows prompt yet effective action to both reported crimes and emergencies it demonstrates responsiveness as part of its operations. The DCI conducts immediate assistance calls with swift response and performs comprehensive investigations while executing correct measures to stop or minimize crime occurrences (Millar, et al., 2021). During professional duties law enforcement will show professionalism as an essential professional criterion through their conduct and behavior. The KPS

upholds legal and ethical frameworks through their expert crime investigation efforts supported by friendly and professional service treatment for the public (Wozniak, 2017).

The DCI along with all citizens should obtain police services from KPS without any limitations based on geographical position or social standing or personal characteristics. The police service must be available throughout the country's territories while members of the public need to have clear access to police support at the time of requirement. The DCI at the KPS must demonstrate substantial responsibility to answer for all its operational choices as well as behavioral actions. The police force remains responsible for reporting wrongdoings and maintains both legal compliance and professional ethical conduct (Gjelsvik 2020; Ordu & Nnam 2017). The DCI at KPS shows its capability to solve cases through its case clearance performance. The investigation process requires a combination of complete examinations and evidence gathering and prosecution preparations followed by law-abiding arrests. When law enforcement agencies use many reported cases they demonstrate successful crime investigation and resolution capabilities. The Federal Bureau of Investigation uses its Uniform Crime Reporting (UCR) program to define crime case solutions when these incidents are cleared through either an arrest or exceptional methods (Rodriguez & Altheimer, 2023).

3. METHODOLOGY

3.1 Research Design

The study employed a mixed-method approach to examine the impact of police technology reforms on law enforcement performance at Kenya's Directorate of Criminal Investigations (DCI). Combining qualitative and quantitative methods, it aimed for an understanding, using concurrent triangulation to deepen analysis. Quantitative data, collected via structured questionnaires with Likert scale questions, measured the influence of the reforms on DCI performance, enabling statistical analysis for objective, generalizable findings. Qualitative data, gathered through open-ended interview guides, provided in-depth insights into subjective experiences and challenges, enhancing nuance on reform effects. The research design integrated a descriptive survey and ethnographic approach. The survey captured DCI officers' perceptions, attitudes, and awareness of reforms, while ethnography explored police culture shifts toward democratic policing.

3.2 Target Population

Data collection targeted 5,383 DCI officers across eight Kenyan regions and 100,000 civil society staff and Nyumba Kumi leaders, with a sample of 384 respondents (230 DCI officers, 104 Nyumba Kumi leaders and civil society staffs) selected via multistage sampling.

3.3 Research Instruments

Quantitative data collection occurred through closed ended questions but open-ended questions obtained qualitative data from DCI officers who held positions as Senior Superintendents of Police and below. The study used an interview guide featuring structured and semi-structured elements to obtain data from eight Criminal Investigations Officers who operated at the regional level as police commissioners. Each study depends on eight Regional Criminal Investigations Officers (RCIOs) who command different regions because these officers possess complete awareness about their respective regions as part of their role as criminal intelligence information administrators. After interviews Kothari (2004) indicates that respondents give their responses to questions and share their feedback. An evaluation session took place with staff members belonging to LSK, IPOA, Haki Africa, HRW-Kenya, KNCHR, and Nyumba Kumi whose number ranged from 10 through 15 participants.

3.4 Validity and Reliability

A measurement instrument gains construct validity when it perfectly shows the theoretical concepts it should evaluate. The researchers worked toward construct validity by developing proper operational procedures for their tested key elements. A content valid approach was reached by having sufficient measurement items in each tested domain to obtain comprehensive feedback that addressed the concerns. The consistency and accuracy of measuring particular concepts and phenomena in research determine reliability (Balwan et al., 2022). This research analyzed the internal reliability of

the instruments because they employed multi-item scales across multiple constructs (Rasoolimanesh, 2022).

Table 1
Reliability Statistics for Quantitative Data

Item	Cronbach's Alpha	N of Items
Technology Reforms	0.757	9
Performance of DCI	0.805	5
Overall Reliability	0.803	14

The reliability measures for technology reforms registered Cronbach's Alpha at r=0.757. Cronbach's Alpha for the effective performance variable reached r=0.805. The overall reliability was 0.803. Barbera, et al. (2020) declared that the presented statistics qualified for making consistent inferences if a threshold Cronbach's Alpha of r=0.70 to establish the proper use of data in terms of internal consistency

3.3 Data Analysis Techniques

Quantitative analysis used SPSS for descriptive statistics involving percentages, means, and standard deviations, while qualitative data underwent content analysis to identify themes. Reliability was ensured with Cronbach's Alpha above 0.7, and validity was tested via pilot studies. Ethical approvals were secured from relevant authorities, ensuring participant anonymity. This mixed-method approach offered a robust, holistic view of how reforms influence DCI effectiveness, informing policy enhancements.

4. FINDINGS & DISCUSSIONS

Response Rate
The response rate was as shown in **Table 2** below.

Table 2
Response Rate

Respondents	Research Instruments	Sampled	Responded	Response Rate
DCI Officers	Questionnaires	230	184	80.0
Regional criminal investigations officers	KIIs	8	7	87.5
Civil Society groups (LSK, IPOA, Haki Africa, HRW-Kenya, KNCHR) and Nyumba Kumi members	FGDs	13	8	61.5
Average				76.3

As shown in **Table 2,** from sampled 230 DCI officers filling in the questionnaires, a total of 184 questionnaires were collected and confirmed complete. This translated to an 80% percentage response rate for questionnaires used in collecting quantitative data. Of all the 8 regional criminal investigations officers (RCIOs) sampled a semi-structured interview; the study achieved 7 officers which translated to 87.5%. Further, the study achieved 8 Focus Group Discussions with the Civil Society groups and Nyumba Kumi members from the targeted 13 translating to 61.54%. This concurs with the study by Nyumba e tal. (2018), who studied 170 papers published over a period of 20 years between 1996 and 2016 and found that the median number of FGDs per study was 7. According to Monique and Kaiser (2022), research employing empirical data, especially those with relatively homogeneous study populations and carefully stated aims attained saturation within a limited range of interviews (9–17) or focus groups (4–8). The overall average response of 76.34% was considered adequate to respond to the concerns of this study. In general, a response rate of 70% and above is considered excellent in surveys (Sataloff & Vontela, 2021).

4.2 Descriptive Results
4.2.1 Influence of Technological Reforms on Performance in Law Enforcement

The study focused on exploring the perspectives of respondents regarding the ongoing technology reforms within the police service. Respondents were presented with a series of statements, each prompting them to express their level of agreement on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The findings are presented in **Table 3**.

Table 3

Influence of Technological Reforms on Performance in Law Enforcement

Construct	SA f(%)	A f(%)	N f(%)	D f(%)	SD f(%)	Mean	St. Dev
The police service has been provided with the latest technological tools and equipment to enhance their work and performance	14(7.6)	67(36.4)	54(29.3)	21(11.4)	28(15.2)	3.1	1.179
There is adequate infrastructure and equipment given to police to perform their duties and this has enhanced performance	0(0)	67(36.4)	27(14.7)	75(40.8)	15(8.2)	2.79	1.03
The police service has opened social media platforms for public communication which promotes their performance	47(25.5)	94(51.1)	21(11.4)	15(8.2)	7(3.8)	3.86	1.012
The police department successfully gathers crime intelligence from the public through the usage of social media platforms and this has enhanced performance	12(6.5)	110(59.8)	19(10.3)	43(23.4)	0(0)	3.49	0.923
The technology used at the DCI is easy to use in performing police work.	31(16.8)	99(53.8)	27(14.7)	14(7.6)	13(7.1)	3.66	1.07
There is a modern integration of technology which has enhanced performance	27(14.7)	82(44.6)	20(10.9)	48(26.1)	7(3.8)	3.4	1.136
The use of technology has made police work easier and this has enhanced performance	26(14.1)	117(63.6)	21(11.4)	13(7.1)	7(3.8)	3.77	0.913
The police service has integrated technology in the operation system which has helped improve performance	26(14.1)	87(47.3)	36(19.6)	22(12.0)	13(7.1)	3.49	1.096
Technical capacity building is crucial in technological reforms implementation and this has enhanced performance	31(16.8)	76(41.3)	28(15.2)	42(22.8)	7(3.8)	3.45	1.129
Overall Mean						**3.45**	**1.054**
N	**184**						

Note: Source (Author).

The results in Table 3 revealed that police personnel generally viewed technological reforms as having a positive influence on the performance of law enforcement in Kenya. A dominant trend showed that a majority of respondents agreed that the use of technology has made police work easier and enhanced performance (63.6%). Several areas of technological advancement were widely supported. For instance, respondents agreed that the police service has opened social media platforms for public communication, which promotes their performance (mean = 3.86), and that the technology used at the Directorate of Criminal Investigations (DCI) is user-friendly in executing police work (mean = 3.66).

Additionally, there was agreement that the police department successfully gathers crime intelligence through social media platforms, enhancing service performance (mean = 3.49), and that modern technological integration has improved operational efficiency (mean = 3.4). However, mixed perceptions emerged on whether the police are consistently equipped with the latest tools (mean = 3.1), or if infrastructure and equipment support is adequate (mean = 2.79), indicating that while digital adoption is underway, infrastructural challenges persist. The overall mean score (mean = 3.45) signifies a moderately high affirmation that technological reforms have strengthened law enforcement performance. These findings align with global trends suggesting that digital platforms, crime-mapping tools, and user-friendly operational systems not only improve workflow efficiency but also enhance transparency and public trust.

For instance, the findings in Table 3 showing a generally positive perception of technological reforms (mean = 3.45) directly correspond with studies that underscore the impact of digital tools on police performance. For instance, Alda and Dammert (2024) demonstrated that body-worn cameras (BWCs) in the U.S. enhanced accountability and operational transparency, aligning with the Kenyan respondents' view that tools like social media platforms (mean = 3.86) and DCI's user-friendly systems (mean = 3.66) make police work easier. Similarly, the reported efficiency gains from social media intelligence gathering (mean = 3.49) reflect Alda and Dammert's observation that technology can strengthen internal reviews and improve service delivery, reinforcing the global relevance of Kenya's moderately high support for digital policing reforms.

Bunnik's (2024) study on big data usage in UK policing parallels the Kenyan finding that crime intelligence is increasingly gathered via social media (mean = 3.49). The trend toward using publicly available data to inform policing decisions is evident in both settings. However, Bunnik raised ethical concerns over data surveillance and privacy, issues not directly acknowledged in the Kenyan responses, which were more operationally focused. The convergence lies in the adoption of open platforms and real-time data for predictive purposes, while the divergence suggests Kenya may still be evolving in terms of digital rights governance and ethical oversight, despite recognizing operational improvements from modern technological integration (mean = 3.4).

Chen et al. (2025) found that technology enhances police self-legitimacy, a finding reflected in Kenyan officers' strong agreement that technology boosts performance (63.6%) and makes work easier. The Kenyan officers' perception of user-friendliness in DCI tools (mean = 3.66) supports Chen et al.'s argument that well-integrated technologies can reinforce officers' professional identity and operational competence. Both studies affirm that technological integration can uplift morale and job satisfaction. However, Chen et al. also highlighted the unintended perception of procedural injustice among citizens—a dynamic that Kenyan respondents did not report, indicating that the focus remains internal (on performance) rather than external (on public perceptions), despite social media engagement efforts.

Kenya's moderately high affirmation (mean = 3.45) that technological reforms support law enforcement performance directly corresponds with Duho et al.'s (2025) emphasis on leadership-driven, evidence-based policing. The integration of crime-mapping and intelligence tools aligns with Duho et al.'s concept of "targeting, testing, and tracking," which supports effective leadership and data-led decision-making. Kenyan support for social media use in public communication (mean = 3.86) reinforces the value of transparency and strategic outreach noted in Duho et al.'s findings. However, the relatively low mean score on infrastructure and equipment adequacy (mean = 2.79) underscores what Duho et al. warn—that without sustained investment in technological capacity and leadership commitment, reforms risk stagnation or inequity in service delivery.

Peterson and Lawrence (2025) observed that digital integration in U.S. intelligence centers promotes operational synergy and rapid crime analysis—this is echoed by Kenya's acknowledgment of improved crime intelligence and operational efficiency (means = 3.49 and 3.4 respectively). The moderately high overall perception of tech's benefit in Kenya (mean = 3.45) suggests a parallel trajectory toward digital centralization, akin to the U.S. experience. However, Kenyan officers' mixed perceptions about access to the latest tools (mean = 3.1) and infrastructure adequacy (mean = 2.79) reflect infrastructural and capacity-building gaps that are less pronounced in Peterson and Lawrence's context. This suggests Kenya's integration is in a developmental phase, mirroring best practices but hindered by logistical constraints.

Finally, Popovich et al. (2024) and Prayatno et al. (2024) emphasize how digital platforms and innovations modernize law enforcement workflows. These insights correspond directly with Kenya's high ratings for social media usage (mean = 3.86) and user-friendly tech tools (mean = 3.66), which facilitate efficiency and reduce manual delays. The overall moderately high score (mean = 3.45) indicates that Kenya's reforms are in step with global shifts toward digitized law enforcement. However, the concern over infrastructure adequacy (mean = 2.79) aligns with Popovich et al.'s warning that without foundational support, digital transformations may remain superficial. While the global literature lauds digital systems' impact on transparency and speed, Kenya's findings caution that systemic investment must match adoption efforts to sustain reform momentum.

Qualitative data from the interviews and FGDs further contextualized these results. During the launch of the Digital Occurrence Book (OB) under the *Utumishi Project*, Mr. Jerome Ochieng, the

Principal Secretary for ICT and Innovation, stated the government's commitment to legal and policy reforms that support technology adoption across state agencies, acknowledging its role in improving efficiency (Ochieng, 2020). This high-level policy support reflects the institutional alignment necessary for successful tech integration, as noted in studies like Duho et al. (2025), which emphasized leadership as critical to effective technological transformation in public institutions.

Moreover, first-hand accounts from Focus Group Discussions (FGDs) substantiated the survey responses. A respondent in FGD 04 described how data analytics, predictive tools, and improved public communication have enhanced resource allocation and crime prevention, consistent with Bunnik's (2024) findings on the operational use of big data in UK policing. Another key informant (KI 05) cited the Mullot cybercrime case as a successful example where DCI leveraged digital tracing technology to apprehend criminals siphoning money from banks, underscoring the practicality and results of Kenya's digital crime-fighting capacity.

Furthermore, cybersecurity was highlighted as a critical dimension of technological reform. One FGD participant noted that tools such as firewalls, encryption protocols, intrusion detection systems, and antivirus software have bolstered data protection and operational security. This directly aligns with Popovich et al. (2024), who highlighted that strong cybersecurity frameworks underpin modern law enforcement efficacy by mitigating digital threats and ensuring operational continuity.

However, while both quantitative and qualitative findings affirmed the positive effects of technological reforms, concerns about infrastructure adequacy (mean = 2.79) and access to up-to-date tools (mean = 3.1) reflect limitations also noted in global scholarship. For instance, Peterson and Lawrence (2025) observed that without consistent investment in infrastructure, the full benefits of digital policing tools remain constrained. This suggests that Kenya, while aligned with global best practices, faces practical implementation challenges that must be addressed to sustain reform momentum.

In conclusion, Kenya's law enforcement experience reflects a convergence between global evidence and local realities: technology is clearly enabling improved performance, especially through enhanced communication, intelligence gathering, and operational efficiency. However, the success of these reforms depends heavily on infrastructure investment, cybersecurity resilience, and ongoing policy support, as emphasized both by empirical data and voices from within the police service.

4.2.2 Performance of Directorate of Criminal Investigations

The results on performance of directorate of criminal investigations are as shown in **Table 4.**

Table 4

Performance of Directorate of Criminal Investigations

Construct	SA f(%)	A f(%)	N f(%)	D f(%)	SD f(%)	Mean	St. Dev
The institutional reforms have enhanced the quality of service delivery to citizens.	39(21.2)	102(55.4)	28(15.2)	0(0)	15(8.2)	3.82	1.034
The institutional reforms have promoted team work within the DCI.	34(18.5)	114(62.0)	21(11.4)	0(0)	15(8.2)	3.83	1.004
The police respond to duty in time due police institutional reforms	42(22.8)	72(39.1)	20(10.9)	35(19.0)	15(8.2)	3.49	1.259
The police officers are professional in the execution of their work as outlined in the institutional reforms	40(21.7)	110(59.8)	0(0)	27(14.7)	7(3.8)	3.81	1.057
Police services are readily accessible to people due to institutional reforms implementation	35(19.0)	94(51.1)	19(10.3)	29(15.8)	7(3.8)	3.66	1.075
Overall Mean						3.72	1.086

N = 184

As shown in **Table 4**, results on 'the institutional reforms have enhanced the quality of service delivery to citizens' had 39(21.2%) of the respondents indicating that they strongly agree with the statement, 102(55.4%), agreed, 28(15.2%) were neutral, and 15(8.2%) strongly disagreed. This had a mean of 3.82 and standard deviation of 1.034. This agrees with the statement by IPOA (2018), that in order to have effective service delivery and performance, there is enhancement of capacity

building of officers through training, resourcing the department with modern technology to combat crime and enhancement of working conditions and general welfare of the officers.

For the statement, 'The institutional reforms have promoted team work within the DCI', this had 34(18.5%) of the respondents strongly agreeing, 114(62.0%) agreeing, 21(11.4%) being neutral, and 15(8.2%), strongly disagreeing with a mean of 3.83 and standard deviation of 1.004. The results concur with those of Yunita et al., (2020) who conducted a study on personnel improvements and effectiveness within the Indonesian National Police. The study found that personnel reforms, such as performance appraisals and reorganization of supervision, had a positive association with police performance.

On the statement 'police respond to duty in time due to police institutional reforms', the results show that 42(22.8%) of the respondents strongly agreed with the statement, 72(39.1%) agreed, 20(10.9%) were neutral, 35(19.0%) disagreed, while 15(8.2%) strongly disagreed. The mean for this statement was 3.49 with a standard deviation of 1.259. 45. The results concur with the provisions of Article 45 of the NPS Act of 2011 which states;

> *'A police officer shall for the purposes of this Act, be considered to be always on duty when required and shall perform the duties and exercise the powers granted to him under this Act or any other law at any place in Kenya where he or she may be deployed'.*

According to Indeeed.com (2024), in the US, officers of the law typically work full-time schedules with lengthy daily shifts. Patrol officers in certain departments and organizations work 40-hour work weeks, which consist of two days off after five consecutive eight-hour hours. Some use a variant of compressed workweeks combined with longer shifts—four 10-hour days or three 12-hour days, for instance.

On police response time to cases of active crime, a study by DeAngelo, et al. (2023) found a strong causal association, whereby greater response time increases the risk that an incident ends in an injury, in contrast to the standard least squares estimates. The effect was more pronounced among female victims, indicating that quicker reaction times may be crucial in lowering the number of injuries associated with domestic abuse.

The police officers are professional in the execution of their work as outlined in the institutional reforms had 40(21.7%) of the respondents strongly agreeing, 110(59.8%) agreeing, 27(14.7%) disagreeing, and 7(3.8%) strongly disagreeing with a mean score of 3.81 and standard deviation of 1.057. This agrees with the report by Amnesty International (2013), that the core function of the police is to safeguard life and property, and they should be competent and ensure that the organization performs its duties professionally to be able to address both traditional and emerging crimes.

Police services are readily accessible to people due to institutional reforms implementation had 35(19.0%) strongly agreeing, 94(51.1%) agreeing, 19(10.3%) being neutral, 29(15.8%) disagreeing, and 7(3.8%) strongly disagreeing. The mean was 3.66 with a standard deviation of 1.075 indicating that the respondents agreed with the statement. This agrees with the finding by Aroche (2024) that police institutional reforms ought to be in guidance with tenets such as being accountable, honoring of the civil liberties, professionalism, neutral and equitableness.

The overall mean for the responses on performance of the Directorate of Criminal Investigations was 3.72 with a standard deviation of 1.086. This shows the respondents had a moderately strong agreement with statements on performance the Directorate of Criminal Investigations. The results agree with those of Wu and Boateng (2019), who found that Ghanaian police reforms enhanced service delivery, public confidence, and accountability, and enhanced overall police governance and operations. The study implied that reforms improved the performance of the police personnel. However, the results disagree with those of Islam (2021), who found that in Liberia, the police reforms disconnected security institutions, which impeded the application of the law, respect for human rights, transparency, and accountability of the security forces. The results are also at variance with those of Getie (2018), who found that in Ethiopia, although there are police institutional reforms, their effects have not been felt and are as such inadequate ultimately impeding reform success.

4.3 Regression Analysis

Multivariate regression was performed to establish whether technological reforms significantly influenced performance in law enforcement among DCI officers in Kenya. The findings are summarized in **Table 5.**

Table 5

Regression Model of Technological Reforms on Performance of DCI Officers

Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate		
	.276a	0.0762	0.0745	0.829037		
ANOVA		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	18.661	1	18.661	27.1511	.000b
	Residual	125.089	182	0.6873		
	Total	143.75	183			
Model Coefficients	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	1.611	0.557			2.8923	0.000
Technological Reforms	0.298	0.097	0.276		3.0722	0.002

a. Dependent Variable: Performance of DCI Officers
b. Predictors: (Constant), Technological Reforms

The regression results reveal a statistically significant and moderately positive relationship between technological reforms and the performance of DCI officers. With an R value of 0.276, the findings indicate a positive but relatively modest correlation. The R-squared value of 0.0762 suggests that technological reforms explain approximately 7.6% of the variation in performance among DCI officers. Although this proportion is limited, the model remains statistically meaningful, indicating that technology is an important, though not exclusive, factor influencing police performance.

The model is statistically significant, as evidenced by the F-statistic (F = 27.151, p < .001), which confirms the explanatory power of the regression model. The standardized coefficient (Beta = 0.276) underscores the presence of a moderate positive association between technological reforms and officer performance. Moreover, the unstandardized coefficient for technological reforms (B = 0.298, p = .002) indicates that for each unit increase in technological advancement—such as the deployment of digital tools, crime analytics, or social media integration—there is a corresponding increase of 0.298 units in DCI officers' performance scores.

These results offer empirical support for the hypothesis that technological reforms contribute positively to the effectiveness and efficiency of law enforcement operations in Kenya. They reinforce the idea that initiatives such as the introduction of digital occurrence books, modern forensic technologies, and cybersecurity systems enhance the ability of officers to investigate crime, communicate with the public, and respond to emerging security threats. However, the modest explanatory power also highlights the need to integrate technology reforms with other strategic interventions to achieve more comprehensive improvements in police performance.

The regression results and descriptive findings of this study strongly align with global literature on the role of technological reforms in enhancing police performance. These findings substantiate the relevance of the Peelian Principles, which emphasize ethical conduct, legitimacy, and public trust as vital to effective policing. The adoption of digital forensic labs, automated criminal records, and cybercrime units in Kenya's DCI reflects reforms grounded in both performance enhancement and public accountability. Alda and Dammert (2024) similarly showed that body-worn cameras in U.S. police departments improved efficiency and trust, affirming Peel's emphasis on legitimacy through transparency. In China, Chen et al. (2025) found that the use of digital tools bolstered police self-legitimacy while reducing perceptions of procedural injustice, echoing the Kenyan case where improved technological alignment with tasks enhanced operational integrity. Peterson and Lawrence (2025) highlighted that data-driven law enforcement centers improve investigative decision-making, mirrored in DCI's use of digital evidence systems. Moreover, Nweke and Anim-Wright (2024) demonstrated that tech-driven transitions in Nigeria advanced public confidence when reforms were ethically implemented. These international findings further affirm that

aligning technological reforms with both task efficiency (TTF) and public legitimacy (Peelian Principles) generates a dual impact, improving institutional performance and reinforcing community trust in law enforcement.

5. CONCLUSION AND RECOMMENDATIONS

The findings of this study demonstrate that technological reforms have a positive influence on the performance of the Directorate of Criminal Investigations (DCI) in Kenya. Respondents widely acknowledged that digital tools such as social media platforms, forensic labs, and user-friendly systems have streamlined investigative processes, improved communication, and enhanced service delivery. These reforms have made police work more efficient and accessible while supporting public engagement and operational transparency. The study further aligns with the Task-Technology Fit (TTF) theory and the Peelian Principles, which collectively highlight the importance of aligning technological solutions with task requirements and ethical policing standards. While the adoption of technology has been widely welcomed, concerns remain about inadequate infrastructure, limited access to advanced tools, and the need for continuous officer training. This underscores the importance of integrating technology with broader institutional reforms to achieve sustainable improvements. International experiences reinforce the view that when law enforcement tools are effectively deployed and ethically guided, they not only enhance operational effectiveness but also contribute to building public trust. Therefore, Kenya's policing institutions must view technological advancement as one component of a comprehensive reform strategy that includes accountability, professionalism, and community cooperation.

To maximize the benefits of technological reforms, the Kenyan government should prioritize infrastructure investment, regular technology upgrades, and officer training programs. These efforts must be anchored in ethical standards and public engagement to ensure accountability. Additionally, integrating digital tools with broader institutional reforms will create a sustainable framework for enhancing law enforcement performance and rebuilding public trust in policing. The study also recommends that the government increases the allocation of resources to the DCI and the NPS so as to address the existing gaps in technological reforms and implementation. The study further recommends that the Ministry of Interior and Coordination be definite by clarifying the role of the Ministry of ICT on institutionalization of technological reforms.

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