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Interagency Collaboration in Law Enforcement: Lessons from Ghana on Adoption of Technology in Policing and Law Enforcement

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Abstract

Interagency collaboration has gained recognition among experts as an effective means through which countries can enhance law enforcement. This study therefore sought to understand how technologies are being utilized to enhance interagency collaboration in law enforcement in Ghana. This research employs a qualitative methodology and a case study research design. The purposive sampling technique was used to select twenty-six participants to take part in the study. A semi-structured interview guide was used to gather data from the participants and thematic analysis was used to analyze the data. The findings showed that interagency collaboration enhanced resource utilization and efficiency, improved information sharing and intelligence gathering, and strengthened community trust and public safety. It was observed that the integration of technology has diverse impacts on interagency collaboration. The main themes that emerged from the interview include; the utilization of digital platforms for joint operations, improved communication and data sharing, and increased accountability and transparency. It emerged from the interview that factors such as security and data privacy issues, uneven technology infrastructure development, and legal and ethical concerns impede the ability of security agencies to utilize technology for interagency collaboration for law enforcement. The study concludes by making recommendations for policy and practice.

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1. Introduction

Interagency Collaboration in Law Enforcement gained major attention among researchers and policymakers across the world following the 9/11 attacks in the USA where law enforcement and intelligence agencies embraced the discourse and objectives of improved information sharing and interagency cooperation (Middle and Gupta, 2007). In this study, the researchers seek to understand how technologies are being utilized to enhance Interagency Collaboration in Law Enforcement in Ghana.

Akella and Cannon (2017)^[1] define law enforcement as the policies and practices enacted by various formal and informal institutions and groups within a community to regulate social interactions, safeguard its members, and compel adherence to the community's expected standards and values. The ultimate goal of law enforcement is to ensure that all entities and individuals in the community adhere to the laid down rules and regulations that govern actions and practices. The police department is acknowledged as the primary agency responsible for law enforcement among many jurisdictions' community (Cordner, 2023)^[9].

Although literature recognizes the police as the primary institution tasked with the enforcement of law and order, collaboration with other agencies can enhance law enforcement. Collaboration is a prevalent concept across all sectors of the organizational landscape—public, corporate, and nonprofit (Mitchell, O'Leary, and Gerard, 2015) ^[19]. An expanding body of literature on public administration indicates that the public sector has entered a "collaborative era," characterized by heightened engagement in collaborative initiatives (Cohen, 2017) ^[7]. Organizational collaboration is defined as a process in which independent entities engage in both formal and informal negotiations, collectively establishing rules and frameworks that regulate their relationships and decision-making regarding the issues that unite them; it entails shared norms and mutually advantageous interactions (Koppenjan *et al.*, 2022) ^[16]. It can thus be characterized as 'the formal and informal processes among networks of interdependent agencies through which cross-jurisdictional issues are addressed and cohesive policies and public services are formulated' (Mu *et al.*, 2019). A defining feature of interagency collaboration is the significant intensity of ties among the participating partners (Mu *et al.*, 2019). Keast, Brown, and Mandell (2007) ^[17] differentiate between cooperation, coordination, and collaboration. At the minimal intensity level, cooperation denotes the exchange of information and expertise among players who interact just when required. Coordination refers to the mechanisms via which entities synchronize their objectives and actions. Collaboration, unlike cooperation and coordination, denotes the close and extensive interaction among numerous actors, characterized by the integration of activities, shared risks, resources, capacities, and responsibilities, culminating in the joint achievement of goals and outcomes. New organizational frameworks, such as partnerships, are frequently created to facilitate the advancement of collaborative processes (Mu *et al.*, 2019) ^[20]. The improvement of coordination and interaction between agencies of the criminal justice system at all levels has been a long-standing objective in Ghana. Law enforcement collaboration is described as the process of law enforcement operations or operational planning that involves two or more enforcement agencies that operate across national boundaries or boundaries within the criminal justice system (Russell-Einhorn *et al.*, 2004). Kibusia and Musya (2024) ^[15] noted that when it comes to the fight against terrorism and criminal activities, the dissemination of information, and the mobilization of resources among several units, departments, and interdependent institutions is imperative. In Ghana, agencies and departments including the Ghana Police Service (GPS), National Identification Authority (NIA), Driver and Vehicle Licensing Authority (DVLA), forensic analysts, and private investigators collaborate to ensure law and order, investigate criminal issues and apprehend suspected criminals (Thiel, 2020) ^[34]. Interagency collaboration among law enforcement agencies can take many different forms. The majority of these types of collaboration can be classified into four broad models: task forces, partnerships, law enforcement councils, and data-sharing networks.

Previous studies such as (Costumato, 2021; Siddiquee, and Xavier, 2020; Wilkins *et al.*, 2016) ^[10, 31, 39] have reported that collaborations can enhance operational efficiency because the efforts of other institutions can be supplanted by more effective activities conducted through the collaboration, thereby diminishing the overall information costs for

individual organizations and averting the execution of similar operations concurrently. Moreover, collaboration facilitates the exchange of resources and information, fosters synergy, enhances flexibility, and improves implementation ability, potentially increasing the efficiency of organizational activities (Siddiquee and Xavier, 2020) ^[31]. Efficiency improvements are not the sole advantageous outcome of interagency collaboration on organizational performance. Researchers have demonstrated that interagency collaboration may enhance the quality of organizational processes and services. Interagency collaboration can generate cost savings, foster new opportunities for participating agencies, and enhance existing programs (Wilkins *et al.*, 2016) ^[39].

The foregoing shows that interagency collaboration can improve policing and enhance law enforcement. This study argues that the integration of technology can enhance the collaboration among these institutions and enhance law enforcement. Horst (2020) asserted that technology is infiltrating all aspects of society and transforming daily practices. The extensive utilization of digital technology, such as smartphones, advanced algorithms, and high-speed internet can heighten engagement and communication between individuals and security institutions (Horst, 2020). For example, the technology acceptance theory posits that security organization organizations, such as the Ghana Police Service, may utilize technology in their daily operations to enhance efficiency (Silva, 2015). However, proponents of the innovation diffusion theory factors such as organizational readiness, communication channels, and leadership support impact the successful adoption of technology in law enforcement. Thus, researchers and policymakers need to examine how these factors influence the effectiveness of technology integration in collaboration among law enforcement institutions. Nevertheless, previous researchers have not conducted studies in this regard. For instance, Nweke and Francis (2024) ^[22] focused on how technology is influencing police operations in Ghana. Okafor and Obika (2022) ^[24] focused on the impact of technology on policing in Ghana. Apau and Koranteng (2020) ^[3] explored the digital forensic infrastructure of the Ghana police service. The evidence from the literature shows that the majority of researchers have focused on the Ghana police service utilizing technology in its operations leaving a dearth of evidence on the adoption of technology and law enforcement collaboration in Ghana. This study therefore sought to fill the gap in the literature by examining the integration of technology in interagency collaboration in law enforcement in Ghana.

2. Research Methodology

2.1. Research approach

This research employs a qualitative methodology. Qualitative research seeks to thoroughly understand social phenomena in their natural contexts (Turale *et al.*, 2020) ^[35]. In contrast to quantitative research, which uses numerical data to quantify and evaluate hypotheses, qualitative research utilizes non-numeric data to investigate and offer a more profound, comprehensive, and full narrative of occurrences (Turale *et al.*, 2020) ^[35]. Qualitative research elucidates relationships, personal experiences, and societal conventions (Tesar, 2021) ^[33]. This study employed a qualitative approach to examine participants' experiences and perceptions regarding using technology in interagency collaboration in law enforcement.

It facilitated a comprehensive examination of the issue under investigation, enhancing the researchers' understanding of how agencies utilize technologies to enhance collaboration in law enforcement.

2.2. Research Design

For this study, the researchers could select from several different qualitative research designs, including phenomenology, grounded theory, and ethnography (Priya, 2021)^[28]. On the other hand, the researchers chose to conduct this study using the case study design. According to Priya (2021)^[28], the case study design allows the researcher to collect and analyze specific data within the context of its actual occurrence. The goal of this practice is to achieve a comprehensive understanding of a specific event. According to Kekeya (2021)^[14], the case study is an appropriate research design to use if you are interested in acquiring specialized, contextualized, and in-depth knowledge on a specific real-world subject. It makes it possible for the researcher to study the significant aspects of the case, as well as its interpretations and implications. Through the utilization of the case study design, this study explored how technology is being employed to enhance interagency collaboration for law enforcement. This approach enabled the researchers to contextualize the debate and acquire a more in-depth comprehension of the issue that was being investigated.

2.3. Research population

The population comprises all individuals or entities that exhibit the qualities of interest to the researchers (Hossan *et al.*, 2023)^[11]. The research population is also known as the target population (Hossan *et al.*, 2023)^[11]. Researchers aim to extrapolate their sample findings to this extensive

population (Stratton, 2021)^[32]. The research population consisted of officers from law enforcement agencies such as the Ghana Police Service, the Ghana Immigration Service, and Customs. The study also focused on the population from the National Identification Authority, Ministry of Interior, Ministry of Communication, and National Investigation Bureau. Also, the study focused on specific individuals who are security experts, technology experts, and communication experts. The researchers were of the view that focusing on these institutions and the individuals will enable a comprehensive data gathering and discussion of the phenomenon under study. The study was conducted in the Greater Accra region and the Ashanti region. Focusing on these regions was necessary because both regions have a significant presence of law enforcement agencies and advanced security infrastructure. Further, there is a higher rate of criminal activities in these two regions compared to other regions in Ghana. Focusing on these regions therefore helped the study gather the relevant data and provide valuable insight into adopting technologies for interagency cooperation in law enforcement.

2.4. Sample size and sampling technique

The researchers were unable to reach all the entities in the defined population from the Greater Accra and Ashanti Regions. Consequently, it was essential for the researcher to choose a suitable sample to represent the intended population. Rahman *et al.* (2023)^[29] characterized the sample as a subset of the designated population. The sample is derived from the specified demographic. The sample size for this study was twenty-six (26) participants. The details of the sample are given in Table 1.

Table 1: Sample size distribution

Stakeholder agency	Region	Sample size
Law enforcement personnel		12
Ghana Police service	Both Regions	6
Ghana Immigration Service	Greater Accra	3
Customs	Greater Accra	3
Government regulation authorities		8
National Identification Authority	Greater Accra	2
Ministry of interior	Greater Accra	1
Ministry of Communication	Greater Accra	2
DVLA	Ashanti	1
National Intelligence Bureau	Accra	1
Experts		6
Technology experts	Both Regions	2
Security experts	Both Regions	2
Communication experts	Both Regions	2
Total		26

The researchers ascertained the sample size for the police administration population using judgmental sampling. The researchers employed purposive sampling to choose the study participants. Andrade (2021)^[2] contended that purposive sampling is a nonprobability sampling method utilized to guarantee the selection of particular or appropriate persons for participation in the investigation. Purposive sampling was employed to pick participants from this population group, since the researchers aimed to identify a specific cohort from whom pertinent data could be collected and evaluated to fulfill the study's objectives.

2.5. Instrumentation and data collection process

Research instruments are the tools utilized by researchers to collect data during their investigations (Mulisa, 2022)^[21]. Common instruments employed in research for data collection encompass observation, questionnaires, documentary analysis, and interviews (Mulisa, 2022)^[21]. This study utilized an interview guide to gather participant data. The researchers produced the interview guide per the study's objectives. The interview guide items sought participants' perspectives on the impacts of interagency collaboration on law enforcement and how technology is enhancing interagency collaboration in law enforcement.

Every segment of the interview guide of four question items. The researchers collected the data via a face-to-face interview. The participants provided the researchers with informed consent before the interview, having been apprised of the study's purpose. The researchers thereafter conducted interviews with participants who had consented to partake in the study. The interviews place at different workstations of the participants, whilst other interviews occurred at mutually agreed locations between the researchers and the participants. Nonetheless, several participants let the researcher do a telephonic interview due to their unavailability during the data collection period. The researchers solicited the participants' consent to utilize the audio recording for subsequent reference. The mean duration of each participant interview was 35 minutes.

2.6. Data analysis

Thematic analysis was employed to analyze the study's data. The researchers employed the six steps delineated by Braun and Clarke (2006) to analyze the data from the study. The researchers transcribed the audio recordings of the interview. The researchers reviewed the interview transcript multiple times to ensure familiarity and comfort with the data set. The researchers subsequently initiated the identification of codes and the generation of emerging themes from the interview to address the research questions. Direct quotations from the interview, accompanied by a narrative, were employed to convey the investigation's conclusions.

2.7. Ethical considerations

The study complied with ethical standards governing qualitative research. The researchers obtained the subjects' informed consent before initiating the data-gathering process. Moreover, the study safeguarded the confidentiality of the data obtained from participants by ensuring that it remained inaccessible to unauthorized individuals. To safeguard the participants' confidentiality, the researchers employed pseudonyms in the presentation of the study's results. The study ensured proper acknowledgment of the researchers and prior studies listed within it.

3. Findings

The study presents the findings on three main research questions; how interagency collaboration impacts law enforcement, what is the impact of technology on interagency collaboration and what challenges impede the effective integration of technology in interagency collaboration in law enforcement.

3.1. Impact of interagency collaboration on law enforcement

The study examined the impact of interagency collaboration on law enforcement in Ghana. Three main themes emerged from the interviews with the participants. The themes include; enhanced resource utilization and efficiency, improved information sharing and intelligence gathering, and strengthened community trust and public safety.

3.2. Enhanced resource utilization and efficiency

Some of the participants indicated interagency collaboration improves the utilization and optimization of resources in law enforcement. The participants expressed that pooling resources such as staff and equipment among the several stakeholder agencies eliminates redundancy and enhances the efficient utilization of resources. One of the participants had

this to say;

"The collaboration with other stakeholder agencies helps us to consolidate the resources we have such as staff members, technology, and infrastructure. This consolidation of resources helps us to avoid duplication and redundancy. Further, the consolidation of resources has rendered our operations significantly more streamlined and efficient, as each agency contributes uniquely" [P3, Ghana Immigration Service].

Some of the participants also emphasized that the collaboration enhances the sharing of expertise and experience from stakeholder agencies which enhances operational performance. The participants were of the view that the sharing of experiences and expertise allows departments to deal with difficult situations with the minimum use of resources. This is what one of the interviewees had to say;

"The primary benefit of interagency collaboration is the availability of specialized tools and experience that may be unavailable domestically. Collaborating enables us to manage intricate instances more efficiently, without straining our resources or budget" [P13, Legal expert].

3.3. Improved information sharing and intelligence gathering

It emerged also from the interview that collaboration between law enforcement agencies enhances information sharing and intelligence gathering. The participants explained that the collaboration between these agencies consolidates relevant data, resources, and expertise. It was revealed that the collaboration between these agencies enhances real-time data dissemination and intelligence gathering which improves the early detection, prevention, and response to criminal activities in the community. One of the participants said;

"The collaboration between the security agencies and the regulatory authorities ensures that each of these organizations is abreast with the cases that are at hand. Because we have established communication channels, we easily and quickly share the needed information among the required agency to aid effective decision-making" [P16, National Identification Authority].

Furthermore, the interview showed that collaboration among the agencies fosters strong relationships and trust. The participants were of the view that the established relationship and trust help these independent authorities to level the disagreement and possible conflicts that may arise thereby promoting effective law enforcement. A participant said;

"We have built these collaborations through effective stakeholder engagement and dialogue with clearly defined terms and conditions. Because of this, the independence and authority of these agencies do not conflict with others. Each of the agencies knows what is required of them and adherers to that appropriately which aids law enforcement" [P12, Customs].

3.4. Strengthen community trust and public safety.

The interview with the participants also revealed that efficient interagency cooperation in law enforcement enhances community and public safety. The participants

revealed that the collaboration between the law enforcement agencies promotes community engagement, accountability, and transparency. Further, the participants were of the view that enhanced trust, accountability, and transparency improve the confidence of the police. This is what a participant said;

“The collaboration between the stakeholder agencies fosters community trust. For example, sometimes the customs service or the immigration service can organize engagement forums and invite the Ghana Police Service to talk at these forums. The bringing together of these agencies creates a form of bond between the services and the public. More importantly, the public sees us – the security agencies – as one; hence they develop some trust that we can protect their safety since we are together” [P2, Police Officer].

The interview also showed that when the public develops trust in the security agencies, they develop an interest in partnering with the police and other law enforcement agencies to deal with criminal activities and promote public safety. One of the police officers had this to say;

“The community is more inclined to support the police when they trust the security enforcement agencies. For instance, because the public trusts the security agencies, they have the confidence to report suspicious activities to the police, assist in police investigations, and participate in community policing activities” [P4, Police Officer].

The findings from the study indicate that the collaboration between the law enforcement agencies in Ghana creates a suitable and conducive environment that enhances community engagement and motivates the public to be involved in law enforcement practices.

3.5. Impact of technology on interagency collaboration for law enforcement

The findings of the study further revealed that law enforcement agencies make use of technologies to enhance collaboration. It was observed that the integration of technology has diverse impacts on interagency collaboration. The main themes that emerged from the interview include; the utilization of digital platforms for joint operations, improved communication and data sharing, and increased accountability and transparency.

3.6. Utilization of digital platforms for joint operations

The findings show that the technology provides law enforcement agencies the opportunity to create digital platforms that enhance interagency collaboration and joint operations. The interviewees expressed that law enforcement agencies in Ghana employ common digital platforms such as interagency management systems (IMS) and centralized crime databases to conduct collaborative investigations, monitoring, and handling of criminal activities. According to the participants, these common platforms provide a consolidated interface for the distribution of relevant data which enhances the capacity to harmonize operations across agencies and ensures that authorities utilize the most current information. For example, one of the participants had this to say;

“Technology has provided us with the opportunity to create interagency databases. The establishment of these databases removes the barriers and delays that were associated with the retrieving and sharing of essential information. This initiative has significantly enhanced the collaboration that exists between us” [P7, Customs Officer].

Another participant also had this to say;

“The law enforcement agencies utilize common digitalized platforms and make use of real-time technological tools to monitor suspected criminals across the various regions in Ghana and share instantaneous updates which were not allowed in the previous systems” [P1 Technology Expert].

It is clear from the participant’s expression that technology provides digital platforms that empower law enforcement agencies to supplement their existing collaboration to enhance law enforcement and deal with criminal activities.

3.7. Enhanced communication and improved information sharing

Enhanced communication and information sharing is another theme that emerged from the interview. The participants expressed that technology provides a suitable mechanism that improves communication and dissemination of information which enhances interagency collaboration for law enforcement. It was revealed that law enforcement agencies utilize digital technologies such as shared databases, cloud-based platforms, and encrypted messaging systems to expedite efficient and more secure means of communication among law enforcement agencies. One of the participants said;

“We have been able to set up real-time and encrypted messaging systems. We can exchange sensitive data and information among ourselves without much concerns about security breaches. This development has significantly improved precision and efficiency in the collaborative process.” [P5 Police Officer].

It is evidenced that technology has led to improvement in communication which helps law enforcement agencies to effectively collaborate, enhances communication and information sharing, and promotes law enforcement in the community.

3.8. Increased accountability and transparency

The interview with the participants further revealed that technology enhances accountability and transparency among law enforcement agencies. The participants expressed that the integration of technologies such as body-worn cameras and computerized record-keeping systems enhances openness and accountability in interagency collaboration. It was revealed that digital technologies allow agencies to document important incidents and evidence, enhance the review of operations, and address the disparities that may occur in operations. Accountability and transparency ensure trust and dependability among law enforcement agencies. One of the participants had this to say;

"The introduction of digital technologies such as body-worn cameras limits the chances for conjecture. Most of the activities of the personnel of the security agencies are recorded and preserved. These serve as evidence and assist in further investigations. The availability of evidence reduces the possibilities for miscommunication, fosters trust among the agencies, and improves collaboration for law enforcement." [P11, Ghana Police Officer].

Participants also emphasized the difficulties in preserving the privacy and integrity of recorded data. One participant stated,

"The accountability aspect is commendable, yet we must consistently verify that the footage and digital records are securely stored." Any illegal access or breach might jeopardize the entire organization" [P9, Communication expert].

This illustrates the intricate equilibrium between maintaining transparency and safeguarding sensitive information against breaches, which might compromise both the privacy of officers and the integrity of ongoing investigations.

3.9. Challenges of the integration technology for interagency collaboration in law enforcement

It emerged from the interview that the security agencies impede their ability to utilize technology for interagency collaboration for law enforcement. The key challenges that were observed from the interview include security and data privacy issues, uneven technology infrastructure development, and Legal and Ethical Concerns.

3.10. Security and data privacy issues

It emerged from the interview that security and data privacy issues are one of the major challenges that impede the use of technology for interagency collaboration for law enforcement. It was revealed the use of technologies such as body-worn cameras helped these security agencies to gather relevant data and evidence for combating criminal activities, however, there are sometimes issues with data security and privacy. For example, one of the participants said;

"The utilization of digital technologies helps us to gather relevant data on criminal issues. However, we sometimes have problems relating to data security and privacy issues. For example, there are instances where we experienced data hacking, breaches, and unauthorized access to the data stored on digital platforms" [P16, National Identification Authority].

Furthermore, the interview showed the agencies shared data among themselves through interagency collaboration. It revealed that the agencies sometimes have problems with the issues of confidentiality and transparency. According to some of the participants, there is a need to ensure the confidentiality of data available to the various independent security agencies. However, the demands of transparency in the collaboration require them to share the data with other agencies which limit the autonomy and confidentiality of individual agencies. This is what a participant said,

"One major challenge faced by the agencies has to do with data management transparency and confidentiality. Some of the time agencies have to release certain data that are deemed to be confidential to the other agencies due to the terms of the collaboration. It is obvious that they have to share data due to accountability and transparency, but it conflicts with the autonomy and independence of each of the autonomous agencies that are involved in the collaboration" [P21, Security expert].

3.11. Uneven technology infrastructure among agencies

The participants indicated that there is a disparity in the digital infrastructure among the various law enforcement agencies in Ghana which poses challenges for interagency collaboration. The inconsistent use of technology throughout the criminal justice agencies was identified as one of the major themes creating serious obstacles to interagency collaboration. Not every agency equally possesses or is familiar with the use of the same digital tools; thus, not all agencies collect, record, and manage data in the same manner. This inconsistency creates gaps in transparency and accountability in that the agencies may struggle to share information properly or coordinate their efforts due to differences in technological capabilities and standards. As one participant explained,

"Some of the agencies just do not have the budget to invest in the same technology we use, which means that they cannot share data as effectively. It slows down the whole process. So financial and resource issues hinder some agencies from adopting highly advanced technologies for ease of collaboration" [P16, National Identification Authority].

Another participant identified some operational problems:

"It becomes complex to work with agencies that are using those antiquated systems. We might be on electronic records, cloud platforms, and everything else, and they are on a manual system. It makes real-time coordination close to impossible." [P2, National Intelligence Bureau].

These underlines operational friction engendered by a system not allowing new technology to mesh with older ways of operation, where the speed of critical information exchange is retarded, weakening collaboration between agencies. These gaps in technology access and use have wider ramifications in terms of overall collaboration, operational bottlenecks, and lack of transparency in law enforcement operations.

Legal and Ethical Concerns

The analysis revealed that the applications of body cameras, along with many other modes of surveillance, raise very serious legal and ethical complications, particularly those touching on consent to record, possible misuse of footage, and infringement on joint operations. Some participants were concerned, if not alarmed, by how such omnipresent technologies complicate the work of the police—for instance, ironing out the privacy laws and the development of ethics standards that accompany deploying body cameras in the

name of transparency and accountability. One of the participants stated;

"There are times when we have to be very discreet when we record, in sensitive situations when there is no consent from parties. It is a balancing act: transparency versus privacy. This is evidence of the difficulty in trying to be open by recording and at the same time trying to take care of private information in sensitive or private premises where consent may not be available" [P3, Customs Officer].

Another participant recounted one probable case of its misuse and leakage and shared:

"We have strict protocols, but there is always a concern that footage could be used inappropriately or leaked, especially in high-profile cases. It is not just about gathering evidence, but about safeguarding the rights of everyone involved." [P5, Police Officer].

This quote means the participant feels apprehension about the fact that footage might become mishandled or disclosed inappropriately, compromising the safety of records and faith in the police. These are the legal and ethical issues that further complicate the surveillance technology. Agencies will have to handle body camera footage with strict guidelines to avoid breaching privacy and misusing it, yet be transparent enough for public trust.

4. Discussion

The findings on interagency collaboration in law enforcement in Ghana bring into focus pragmatic benefits that could go a long way in enhancing the operations of security agencies. It was revealed from the analysis of the data gathered from the participant's interagency collaboration promotes efficiency. Waltersmann *et al.* (2021) ^[37] noted that efficiency, apart from improving resource utilization, would imply that resources, such as personnel and equipment, are better used when operations and responsibilities are shared. Arguably, interagency collaboration can improve the capacity of law enforcement agencies to deal with the increasingly complex nature of security challenges. The findings of this study show that information sharing and intelligence gathering in real-time, high-speed decision-making allows law enforcement agencies to engage in high-level proactive activities against perceived perils. Finally, the last importance of interagency cooperation concerns the establishment of a good relationship between the citizenry and the law enforcement agencies, paramount to long-term security based on increased community trust and public safety. These same themes are thus a reflection of global findings when compared with similar studies such as (Pickering and Fox, 2022; Cohen, 2018; Rajae *et al.*, 2013; Joyal, 2012) ^[26, 6, 30, 13]. The findings from these studies have established that collaboration among the different structures involved in the policing of the cities leads to effective utilization of resources, efficiency in information flow, and the gaining of public confidence in high-crime areas. Generally, interagency cooperation has been tagged along with effective strategies for preventing crimes in most cases; especially in South Africa, where shared intelligence forms the basis for dealing with organized crime (Ogbu *et al.*, 2023) ^[23]. The results of this study can be related to the Systems Theory: organizations are

interconnected and work in harmony to achieve one goal (Whitchurch and Constantine, 1993) ^[38]. The systems approach theory stipulates that these agencies are mere subsystems in the same security umbrella in which effectiveness or efficiency in the discharge of duties by an agency interrelates to others. In that respect, therefore, communication and resource sharing complement the entire system hence ensuring public safety (Whitchurch and Constantine, 1993) ^[38]. This fell in line with theoretical underpinnings, which emphasized the need for coordinated action in vastly interlinked organizational complexes.

The findings from the study further indicated that the application of this technology provokes practical insight into the bettering of inter-agency collaboration of law enforcement agencies in Ghana. It is found that digital channels support the coordination and co-performance of law enforcement agencies to undertake joint operations with much ease: streamlining operations through smooth real-time coordination and improving outcomes. Communication and data dissemination have been improved in that access and sharing of critical information are helped to take place much quicker (Oliveira *et al.*, 2017) ^[25]. It also points out several challenges regarding data security and privacy, showing the risks that this increasing trend of trust in digital systems can bring. The findings compare favorably with previous studies. For example, Ikeanyibe *et al.* (2023) ^[12] found that digital platforms such as shared databases and communications tools have seen interagency cooperation rise by a high margin within Nigeria, especially in counter-terrorism operations. The same indirectly suggests that issues such as cyber threats and breaches of privacy are still major concerns regarding data security (Kibusia and Musya, 2024) ^[15]. Kenyan law enforcement agencies have equally benefited from digital platforms during their joint operations, though laws on data protection lag and create vulnerabilities (Kibusia and Musya, 2024) ^[15]. These findings relate well with the Technological Determinism Theory which says technological changes bring about changes in the structure of society and individual behaviors (Azam *et al.*, 2021) ^[5]. Technology has indeed facilitated much closer collaboration in law enforcement and brought new risks in its wake concerning data security. This hypothesis is supported when the study shows how digital tools have currently altered the way agencies collaborate yet at the same time introduce new challenges that will have to be met. It underlines the two-edged face of technology in concerns of collaboration efforts within interagency law enforcement.

Specific results regarding the barriers that prevent the security agencies in Ghana from effectively using technology to achieve interagency collaboration reveal pragmatic challenges. In this regard, all three most salient areas of concern-security data privacy issues, different technological infrastructure development, and legal and ethical issues represent failures on the part of law enforcement agencies. Among these, specific security and data privacy issues become more vital due to increased vulnerability to illicit access to sensitive information with greater use of digital platforms. The unevenness of the technological infrastructure in these agencies inhibits certain agencies from joining hands and collaborating towards a particular goal. Additionally, legal and ethical considerations missing comprehensive rules of engagement on data use and sharing inhibit the ability of agencies to fully apply this technology in their operations. In most developing countries like India and Nigeria, the gap in

the development of technological infrastructure acts as one of the significant barriers to interagency cooperation between urban and rural law enforcement units (Wahyudi and Syauqillah, 2022)^[36]. Data privacy and security challenge all: in European Union countries, rigid data protection laws, such as the General Data Protection Regulation, inspired and complicated collaboration between agencies (Comiskey, 2020)^[8]. Because these are often the uses that are not doctrinally ruled on, agencies often do not know the limits in the ways of data sharing or even digital surveillance. These also can be fitted into the framework of the Diffusion of Innovation Theory, which explains the difference in adoption rates for technological innovations depending on the different factors impeding them: infrastructures, social systems, or regulations (Pinho *et al.*, 2021)^[27]. Thus, the speed at which technology diffuses in law enforcement agencies is slower in cases where there is unequal technological infrastructure and when there does not exist a strong legal framework for it. This explains just why some agencies have more hurdles to cross in adopting the digital tools of collaboration and exactly how the same is to be overcome if the integration of technology into law enforcement is to be successful.

5. Conclusion and Recommendations

This study considered the contribution of interagency collaboration in law enforcement in Ghana and how this collaboration is supported by technology. The qualitative approach was adopted by this study and semi-structured interviews were used to gather data from participants drawn from law enforcement agencies countrywide. Thematic content analysis was used in identifying and categorizing the main findings. The study established that integrating technology into interagency collaboration on law enforcement in Ghana was faced with huge potential and challenges. Digital platforms have increasingly been one way through which joint operations have been enforced, through improved communication and facilitation of data sharing. However, there are some critical barriers: Security and data privacy issues, uneven development in the technological infrastructure, and legal and ethical issues inhibit the full realization of benefits from the use of technology.

The study makes the following recommendations to improve the integration of technology in interagency collaboration for effective law enforcement in Ghana. The study recommends that law enforcement agencies collaborate with the private sector and IT experts by using their expertise and resources in the development and deployment of the technology. Developing a public-private partnership could provide very advanced technologies and infrastructure without requiring full financial burdens by law enforcement agencies. Secondly, securing government funding and grants directly assigned for the technological advancement of law enforcement agencies may help ease the burden. This would contribute significantly to diversifying budgetary allocation priorities toward technology infrastructure development and enhance overall operational capabilities. Finally, improving training and capacity building ensures that existing personnel can make the most of available technology, at least where the infrastructure is not uniformly state-of-the-art. This can be achieved by investing in training programs aimed at optimizing resources; in this way, while agencies are awaiting broader infrastructural development, they can better exploit their already existing systems.

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