

Contributory Factors in the Effectiveness of the Crime Scene Operation (SOCO) Personnel in Criminal Investigation: Basis for a Proposed Strategic Plan

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Abstract:

Scene of the Crime Operations (SOCO) is a specialized unit of the Philippine National Police (PNP) responsible for processing crime scenes and preserving forensic evidence. This study examined the implementation and effectiveness of SOCO protocols in relation to first responders, investigators-on-case or duty investigators, SOCO personnel, and the release of crime scenes. It also identified the challenges encountered during protocol implementation. Findings revealed that SOCO protocols were consistently implemented across all operational areas, with respondents indicating a high level of compliance with established procedures. The protocols were likewise found to be effective in securing crime scenes, protecting lives, preserving and documenting evidence, and promoting coordination among responding units. Statistical analysis further showed a significant relationship between the implementation and effectiveness of the protocols, leading to the rejection of the null hypothesis. Despite these positive results, respondents identified several operational challenges, including crowd control, environmental conditions, time constraints, limited equipment, training deficiencies, and coordination issues among units. These factors may affect the efficiency of crime scene processing and evidence preservation. Based on the findings, the study recommends implementing a strategic capacity-building program that includes continuous training, simulation exercises, field-based learning, upgraded forensic equipment, professional development opportunities, and strengthened inter-agency coordination to enhance the competence and operational effectiveness of SOCO personnel.

Keywords — *First Responders, Investigator on Case/ duty investigator, SOCO, Release of the Crime Scene*

I. INTRODUCTION

Scene of the Crime Operations (SOCO) is a special unit within the Philippine National Police (PNP) that investigates and processes crime scenes. The primary work involves the collection, preservation, and analysis of physical evidence for purposes of investigation into criminal activity. Very little would happen in this world if there were total perfection in gathering, preservation, and analysis of evidence. Criminal investigation becomes crucial to the efficiency of the justice system; such evidence-gathering processes are kept by the SOCO, a unit

under the Philippine National Police (PNP), which draws importance to assuring the admissibility and credibility of evidence presented in court.

Although the advances in forensic sciences have enhanced the quality of crime investigations across the globe, SOCO still cannot completely ensure cross-border operational standards. The gaps show the presence of all these persistent problems, among which are inequality concerning access to modern forensic technologies, back-logs in processing of evidence, and inadequate training for forensic professionals in developing countries. Even in

developed countries, concerns persist about the reliability of forensic practices, courtroom admissibility of evidence, and the growing demand for transparency in investigative procedures. These gaps reveal a global challenge like the need to balance technological advancement with institutional readiness and public trust, underscoring the importance of localized studies to understand contributory factors affecting investigative effectiveness.

National Background

Scene of the Crime Operations (SOCO) is a special unit within the Philippine National Police (PNP) that investigates and processes crime scenes. The primary work involves the collection, preservation, and analysis of physical evidence for purposes of investigation into criminal activity. Very little would happen in this world if there were total perfection in gathering, preservation, and analysis of evidence. Criminal investigation becomes crucial to the efficiency of the justice system; such evidence-gathering processes are kept by the SOCO, a unit under the Philippine National Police (PNP), which draws importance to assuring the admissibility and credibility of evidence presented in court.

Local Background

Thorough consideration should be given to a well-sequenced inquiry into the contributory factors affecting SOCO's effectiveness during criminal investigations conducted by PRO4A. Aside from finding out the strengths and weaknesses of the operational aspect, such a study may also lead to the identification of the root causes-institutional, technical, and human-resources issues-that inhibit and hinder performance. With a comprehensive assessment, it shall be possible to establish evidence-based insights that would serve as guideposts in the development of appropriate targeted job interventions aimed at addressing the needs for improving the efficiency, responsiveness, and reliability of SOCO operations.

Foreign Literature

According to Brunetto et. Al. (2022) [1], the reliance on digital data is not limited to cybercrimes but extends to virtually all types of offenses, from financial fraud to violent crimes, where digital traces such as phone records, surveillance footage, or online communication can provide vital leads. However, even when the technical challenges of collecting and analysing such evidence are set aside, the exchange and handling of digital evidence among various stakeholders pose significant issues. This is particularly evident in cross-border investigations, where differing national laws and legal procedures complicate evidence sharing. The heterogeneity of legal frameworks across jurisdictions not only leads to delays but can also create legal conflicts that hinder or entirely block cooperation. The referenced article examines the current state of cross-border criminal investigations, focusing on how effective current collaboration protocols are and what legal and procedural challenges remain unresolved. By combining legal analysis with a practical, global overview, the article aims to bridge the gap between theoretical frameworks and real-world investigative needs. It highlights the importance of adopting horizontal strategies collaborative, flexible, and inclusive approaches to streamline international cooperation and ensure the timely and accurate exchange of digital evidence in the pursuit of justice. SOCO personnel are trained forensic scientists and crime scene assistants trained to handle all evidence in accordance with the law and scientific standards. Their work includes photographing the scene, gathering fingerprints, examining bodies, and documenting all findings in detail to support the legal process. As these pieces of forensic evidence being produced by SOCO are essential in solving crimes, this agency becomes a very significant entity in rendering justice.

Forensic science has become a global practice going beyond its traditional province of supporting criminal investigations and the justice system to include humanitarian, peace, and security dimensions. Collaboration in worldwide humanitarian efforts such as disaster victim identification in Thailand, post-conflict peacebuilding in Uganda, and management of

highly infectious human remains in West Africa are tangible examples. The global interconnectivity of these dimensions is reinforced by international organizations leveraging the power of collaboration and partnerships across the forensic community. This includes INTERPOL, the United Nations, and the International Organization for Standardizations (ISO) establishing various working groups aimed at developing international forensic science standards or guidelines for best practice. This prompts reflection on the contribution of forensic science to sustain peace and justice both locally and globally. (Bouzin, J.T. (2023) [2].

The Proactive Crime Scene Response is a technique utilizing targeted forensic analytical results to guide criminal investigations in real time according to Wickenheiser (2023) [3]. Analytical value of evidence maximized by forensic laboratories is directly related to the recognition, documentation, collection, and preservation of evidentiary items located at the crime scene. Improved education, coordination and communication between the crime scene investigators and forensic scientist experts creates a seamless analytical process flow, enabling greater focus on high value evidence with decreased response time and greater impact on investigational direction. Real time data from focused forensic analyses and use of databases provides primary investigative leads, with suspect identities, whereabouts at the time of crime commission, links to other crimes and other critical collaborative crime solving information.

Adherence to Standard Operating Procedures (SOPs) is a critical factor in ensuring consistency, reliability, and legal validity in forensic investigations. Research indicates that tailored SOPs designed for specific case types improve compliance and lead to more standardized and thorough evidence handling. This reduces the risk of errors and procedural lapses that could jeopardize investigations or court proceedings. For SOCO personnel, following SOPs strictly helps maintain the chain of custody and ensures that forensic results are credible and defensible. Therefore, training and policies must stress rigorous adherence to SOPs, while also allowing flexibility to meet the challenges posed by different case contexts (Vanhaelen et al., 2022) [4].

According to Smith et. al (2022) [5] exposure to a wide range of case types have a significant role in developing the skills and adaptability of SOCO personnel in criminal investigations. Studies indicate that investigators who receive structured training and mentorship while gradually encountering diverse crime scenes tend to build greater confidence and resilience. Conversely, those who face complex cases early without sufficient support often experience increased stress and reduced effectiveness. Varied experiences allow SOCO personnel to sharpen their observational skills, improve decision-making under pressure, and better apply forensic techniques to different scenarios. This diversity in casework is essential for cultivating versatile investigators who can handle the unpredictable nature of crime scenes, ultimately enhancing the thoroughness and accuracy of investigations.

Developing effective counter-SOC strategies is therefore crucial. Presently, these strategies typically include an awareness-raising element, which is seen as important for building public support for counter-SOC policies, and intolerance for organized criminal activities in those communities where SOC may be viewed as offering unique economic opportunities. For example, the UK Government's Serious and Organized Crime Strategy identifies raising awareness of the consequences of SOC as key to reducing the space for SOC networks to operate. This makes intuitive sense. The success of SOC in part depends on the complicity of members of the public and state officials. Beyond and more than the familiarization courses from a first-responder aspect, SOCO is trained to give scientific weight through the evidence analysis it provides in an event section, hence acting as an equalizer or enhancer toward a fair identity of the accused in the process of justice. Attendant on efficiency of SOCO personnel would decidedly determine the sustenance of law and order, hence, the maintenance of public trust and confidence in the justice system.

As stated by Cheeseman et.al. (2022) [6], making a social bad salient, messaging primes individuals to recall pre-existing pessimistic beliefs that the social bad cannot be effectively tackled. Such effects have been found to be especially likely for messages which highlight a 'descriptive' social norm,

emphasizing how widely practiced or facilitated a social bad is. Anti-corruption messaging, for instance, appears to lead individuals to focus on a belief that corruption is systemic and so unintentionally makes people feel that the problem is too big and intractable to try to resist.

Detection from the actual premises of SOCO shows that those challenges are more glaring. With a rapidly swelling population and a very rapidly growing incidence of crime, SOCO personnel in this region are subjected to more demands for timely and accurate investigative outputs. Reports indicate recurring constraints like modern investigative hardware shortages. (Bicchieri et. Al, 2022) [7].

In South Korea, many less serious crimes do not receive full forensic attention. This is mainly because there are not enough CSI personnel, and those who are available often have heavy workloads. As a result, evidence from minor cases may not be collected properly or may be overlooked. Forensic teams tend to focus on major crimes, like murder or sexual assault, while smaller cases are sometimes delayed or ignored. This creates a risk that important evidence could be lost or mishandled, which can affect the outcome of investigations. The situation shows the need to improve resources for forensic work and to make sure that all crimes, not just serious ones, get proper attention from investigators (Kang & Lee, 2024) [8].

As cited by Pang et.al (2022) [9], technical proficiency alone is not sufficient for effective forensic investigation. While the majority of practitioners reported confidence in performing hands-on forensic tasks, a significantly smaller percentage felt equipped to handle analytical demands, such as mathematical interpretation and scene reconstruction. This gap suggests that forensic competence must be viewed as multidimensional, requiring not only procedural knowledge but also critical thinking, judgment, and cognitive flexibility. For SOCO personnel, whose work often involves piecing together fragmented or concealed elements of a crime, strengthening cognitive competencies is essential to ensure thorough and accurate investigations. Therefore, any strategic plan aiming to enhance SOCO effectiveness must prioritize both

practical skill training and the development of deeper analytical capacities.

Forensic competence encompasses both technical skills and critical analytical abilities necessary for effective crime scene investigation according to Lindsay et.al. (2022) [10]. While many SOCO personnel demonstrate strong practical skills in evidence collection and laboratory procedures, there is often a gap in their ability to critically analysed evidence and reconstruct crime scenes. Developing these higher-order cognitive skills is essential to accurately interpret findings and provide reliable conclusions. Continuous training programs that integrate hands-on practice with scenario-based learning can help bridge this gap, ultimately improving the quality and accuracy of forensic investigations.

Barton (2022) [11], stated that effective crime scene awareness among SOCO personnel is crucial for preserving the integrity of evidence and ensuring thorough investigations. Proper recognition of crime scene boundaries, avoidance of contamination, and systematic documentation are foundational to successful forensic work. Crime scene awareness can lead to compromised evidence, impacting case outcomes. Continuous training and public education can enhance SOCO personnel's ability to maintain crime scene integrity and improve overall investigative quality. Forensic effectiveness, as stated by international studies, is highly dependent on the organization's support; however, both local and modern technologies as well as continuous professional training (INTERPOL, 2021). And yet, like SOCO, its full range of mandates, protocols, and constraints are important and relevant in the lives and uses of the bulk of citizens most of the time.

Moreover, Johnson (2022) [12]. explained that competence in evidence collection is essential for SOCO personnel to secure reliable forensic data. Awareness of proper techniques such as using gloves, packaging evidence correctly, and maintaining chain of custody prevents contamination and loss of critical information. Inadequate awareness in this area results in mishandled evidence that can weaken prosecutions. Regular hands-on training and adherence to strict protocols are key to bolstering SOCO effectiveness in evidence collection.

Local Literature

Despite notable technological and connectivity advancements, Indonesia and the Philippines grapple with outdated or inadequate cybercrime laws that fail to protect against cyberattacks, data breaches, and other digital infractions effectively (Putranti et al., 2022) [13]. The detailed analysis and comparison of the cybercrime legislation in Indonesia and the Philippines, focusing on evaluating their effectiveness in combating cyber threats and ensuring the security of digital environments. This involves a comprehensive exploration of the current cybercrime landscape in both countries, emphasizing the predominant cyber threats encountered.

Furthermore, Martinez (2022) [14] cited that SOCO personnel's awareness of forensic analysis extends beyond collection to understanding the significance and limitations of various forensic techniques. Awareness of how evidence will be analyzed helps them prioritize, document, and preserve materials effectively. Lack of knowledge about forensic processes can cause misjudgement in handling evidence, leading to missed investigative opportunities. Strengthening this awareness through inter-agency collaboration and ongoing education improves case accuracy and judicial outcomes.

While Delgado et.al (2023) [15] highlights that the general public's understanding of the SOCO's role in securing and managing crime scenes remains limited. Many people lack awareness of the importance of preserving crime scenes, often unintentionally contaminating or disturbing evidence before investigators arrive. This limited awareness underscores the need for public education campaigns to improve cooperation with SOCO personnel and enhance crime scene integrity in the Philippines

Garcia et.al (2022) [16] reveal that public knowledge about proper evidence collection is generally low. Many citizens do not recognize the critical steps involved in collecting and preserving evidence, leading to common mishandling or loss of valuable materials. This gap often complicates investigations and weakens the prosecution's case. Researchers recommend increasing community outreach programs to inform the public about SOCO

procedures and the importance of safeguarding evidence.

Moreover, Lopez et.al. (2023) [17] report that awareness of forensic analysis processes is minimal among the general population. There is often scepticism or misunderstanding about how forensic evidence is analysed and its role in supporting criminal investigations. This lack of awareness may affect public trust in forensic results and the justice system. To address this, experts advocate for transparent communication from SOCO units and forensic labs to demystify forensic science and build confidence among Filipinos

While Reyes et.al. (2022) [18] noted that adherence to standard operating procedures (SOPs) is identified as a significant determinant of SOCO personnel's effectiveness. Filipino studies reveal that consistent application of SOPs improves the accuracy and credibility of evidence collected at crime scenes. However, challenges such as resource limitations, workload pressures, and inconsistent training sometimes result in deviations from protocols. Addressing these barriers through enhanced training programs and institutional support is vital to ensure procedural compliance and maintain the integrity of investigations.

One major barrier to public understanding of SOCO operations is the lack of sustained and targeted public outreach programs. Most citizens only become aware of SOCO activities through media portrayals, many of which are dramatized or inaccurate according to Torres et.al.(2023) [19]. Without community-based information campaigns or forums, the public remains unaware of the real protocols and responsibilities of SOCO personnel. This gap leads to misconceptions about what SOCO teams can and cannot do, which may cause mistrust or interference during investigations. Strengthening grassroots outreach, school-based talks, and barangay seminars can improve public cooperation and appreciation of forensic procedures.

Another key factor is the limited integration of forensic science and criminal justice concepts in the Philippine basic and tertiary education system as to Del Mundo (2022) [20]. The general public lacks foundational knowledge about the legal process, chain of custody, and the scientific methods involved in

crime scene investigations. Without formal or informal education on the role of SOCO personnel, many Filipinos are unable to distinguish between law enforcement duties and forensic responsibilities. Educational materials that include simplified forensic content, as well as partnerships between PNP and academic institutions, could enhance awareness.

Similarly, Lopez et.al. (2023) [17] perceived lack of transparency in SOCO operations also contributes to public misunderstanding. Many forensic procedures occur behind closed doors or are subject to confidentiality, which is necessary for legal integrity but this also breeds speculation. Without clear communication from authorities about processes, findings, and limitations, the public may view SOCO actions with suspicion. Misinformation and rumours easily spread in the absence of verified updates. Introducing controlled information-sharing mechanisms, like post-investigation briefings or community feedback sessions, could strike a balance between operational security and public trust.

Conceptual Framework

This thesis is primarily based on CIRCULAR NUMBER 01-06_CLC – ADO - 01 SCENE OF CRIME OPERATION MANUAL SCENE OF CRIME OPERATION (SOCO): Scene of Crime Operation is a forensic procedure performed by trained personnel of the PNP Forensic Group through scientific methods of investigation for the purpose of preserving the crime scene, gathering information, documentation, collection, and examination of all physical evidence. II. AUTHORITY: II.1 Chapter 3, Section 24, paragraph c and Section 35 of RA 6975. II.2 PNP CL SO # 01-95 dtd Nov 16, 1995 III. MISSION: The SOCO shall provide forensic expertise to criminal investigation by preserving, securing, and if need be, by scientifically reconstructing the crime scene for the collection, documentation, and forensic examination of all collected physical evidence with the end in view of establishing fact/s relative to a criminal incident. IV. OBJECTIVES: IV.1. To conduct forensic investigations through the methodical means of collection, examination, preservation, and presentation of all evidence for the final disposition of

criminal cases. IV.2. To enable the police investigating/line units to expeditiously identify and arrest the criminal perpetrators through the collected and examined physical evidence. IV.3. To establish the facts before the competent courts based on collected and examined physical evidence. IV.4. To strictly adhere to the protocols governing forensic science. IV.5. To progressively acquire new technology and human skills to ensure that the operational capabilities shall be consistent with the continuous and evolving threats to public safety.

Under RA 6975, the PNP was formally given the authority to establish specialized units such as the Scene of the Crime Operatives (SOCO). This institutionalized SOCO's role in scientific crime investigation, particularly in evidence collection, preservation, and laboratory analysis. By placing SOCO under the PNP's investigative and technical support services, the law ensured that forensic investigation became an integral part of case build-up and not just a supplementary activity. This is the legal foundation for SOCO's functions, but its effectiveness depends on how well the PNP is able to implement its provisions. While the law mandates professionalization and modernization of the police, gaps such as limited equipment, insufficient training, and institutional constraints persist. These challenges highlight the gap between the legal mandate and the operational realities of SOCO, justifying the need for studies that assess contributory factors affecting their effectiveness in criminal investigation.

This PNP Criminal Investigation Manual is the main reference source for police investigators, especially the Scene of the Crime Operatives (SOCOs), in the performance of legally, uniformly, and scientifically compliant investigation methods. It defines the different crime scene response procedures, evidence collection methods, and mechanisms for evidence preservation, documentation, and chain of custody to ensure the admissibility of all the evidence in court. Among the issues that the manual stresses are the concept of coordination between different investigating units, forensic specialists, and the prosecutors if a stronger case is to be built up that can go well in court. It did include legality, professionalism, and accountability, but further stress on investigations respecting human rights while being

accurate and having integrity. The manual serves as the technical standards for SOCO in affairs pertaining to physical evidence-handling procedures, from initial scene processing through laboratory examination to report submission. In essence, the operationalization of the mandate of the PNP under Republic Act No. 6975 and Republic Act No. 8551 are made by ensuring that investigations are done efficiently, systematically, and completely in consonance with both national and international forensic.

This study based its understanding on the use of SOCO Manual, Republic Act No. 6975, and the PNP Criminal Investigation Manual. These manual legal and procedural dimensions of forensic investigation in the Philippines together establish the role of the Scene of the Crime Operatives (SOCO) in the preservation of the crime scene, collection and examination of evidence, and building the case through scientific methods. They thus define the mission, objectives, and protocols for the crime scene investigation that forms the measuring Caliber of the effectiveness of SOCO. As such, while they prescribe professionalism, modernization, and compliance with forensic standards, operational realities such as limited resources, inadequate training, and inequities within the institution prevent full compliance. In this sense, the significance of the conceptual framework is focused on the reality gap between the ideal standards prescribed by the law and manuals and the actual performance of SOCO personnel on the ground. Thus, the research will systematically allow for investigating contributory factors affecting the effectiveness of SOCO, identifying challenges, and proposing strategic interventions.



Fig. 1 Conceptual Model of the Study

This study used a conceptual model which is the Scene of Crime Operation (SOCO) Procedural Model, which illustrates the organized and systematic process followed during a crime scene investigation. The process starts with first responders who serve as the first people to arrive at the crime scene. Their main duty requires them to secure the site while establishing safety measures that protect against any evidence contamination or loss. The investigator-on-case assumes control of the scene after its stabilization to begin their primary investigative work. The SOCO team, which consists of forensic specialists conducts a thorough scientific investigation of the site after this point. The process requires the team to document the site through photographic evidence and sketching while they search for physical evidence which they will collect and label for future tests. The process demonstrates how critical accurate documentation is for handling evidence because it safeguards evidence which needs to be presented in court. The crime scene remains untouchable until all required processes for investigation and evidence collection have been completed. The crime scene investigation requires an organized approach because multiple people work together through evidence-based methods to achieve their shared goal.

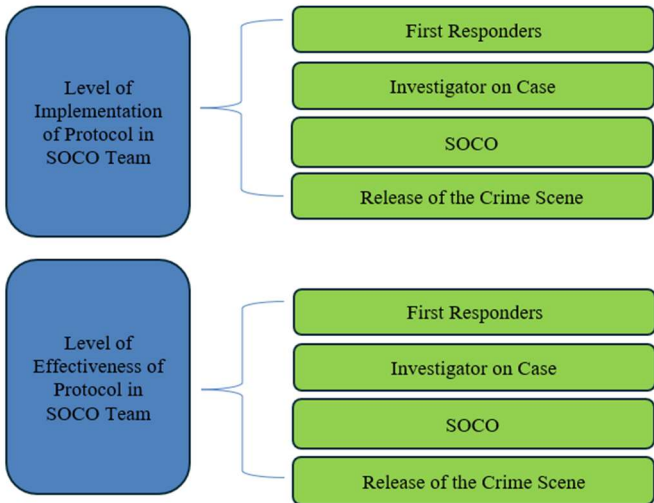


Fig. 2 Research Paradigm

Significance of the Study

The study explored the contributory factors affecting the perceived effectiveness of Scene of the Crime Operatives (SOCO) personnel in the conduct of criminal investigation. The findings of this research primarily form the basis for a proposed Strategic Plan of Action to enhance performance and support for SOCO operations.

SOCO Personnel. This study aid in such a way that they gain insights on how effective are the protocols be implemented that may be contributory factors of their performance, professionalism, and investigative efficiency, which in turn highlight areas needing improvement in their crime scene management and communication with the public toward enhancing their credibility and trust with a better understanding and support.

Law Enforcement Agencies. The findings of the study were useful to law enforcers in improving development training programs and operational guidelines for SOCO teams, ensuring that forensic practices in action are supported by community expectations and laws, and in strengthening partnerships between investigative units and the public.

Policy Makers and Government Officials. Those people may be able to gain data-driven insights that can inform decisions around criminal investigation, crime prevention, and allocation of resources.

Citizens. This study may benefit citizens or community people in improving awareness and understanding of SOCO's role and procedures in crime investigation, gain confidence in the justice system through greater transparency and professionalism and encourage community involvement and cooperation during crime investigations.

Future Researchers. This study may contribute to the body of knowledge in forensic science, criminology, and public perception studies. This will also provide a reference for future research on crime investigation effectiveness and community-based policing and inspire new studies on bridging gaps between law enforcement and society.

II. METHODOLOGIES

This chapter presented the research design of the study, the population sampling, the data gathering procedure, the formulation of the instrument, the establishment of the validity and reliability status of the instrument used in order to provide the needed answers to the problems enumerated.

Research Design

This study employed correlational research design. For McCombes (2023) correlational design is valuable in providing facts on which scientific judgment is based on determining the relationship of two variables using correlation analysis, based on the computed and analyzed data. Moreover, a correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength and/or direction of the relationship between two or more variables

The correlational part is to find out whether a significant relationship exists between the level of implementation of the protocols of SOCO Team in terms of First Responders, Investigation on Case/ duty investigator, SOCO and Release of the Crime Scene and using correlation analysis to show strength and direction into that relationship. Thus, this type of research design is appropriate in revealing existing truths, describing real conditions in the world, and showing data-driven insights by which things might be changed in the areas of protocol implementation and the challenges encountered and operations in law enforcement and forensic services.

Furthermore, correlational research design investigates the relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength direction of the relationship between two variables. The direction of a correlation can be either positive or negative.

Research Method

A mixed-method was a strategy that enables one to study naturally occurring phenomena as well as to answer questions about the distribution of and relationships among characteristics of people as they

exist in their natural setting through survey questionnaires.

In this study, data collection included for assessing the level of implementation of the protocols of SOCO Team and its effectiveness, as was done in this case with a survey research method. A survey method provides access to data collection from a representative part of the population, namely, the SOCO Team themselves and the investigators. This view allows the researcher to study the distribution of the variables and their interrelationship, that is, perceived effectiveness, and contributory factors such as First Responders, Investigation on Case/ duty investigator, SOCO and Release of the Crime Scene. This, therefore, makes sense, wherein the quantitative research is defined by Bhandari (2022) as an approach that is concerned with gathering numerical data that can be statistically manipulated to display patterns, examine relationships, and make generalizations to a wider population. Using the instrument of a structured survey with rating scales will effectively measure the study variables in an objective way and identify trends. However, the qualitative part on the challenges encountered by the respondents.

Scope and Limitation of the Study

The assessment and analysis of this research focused on the relationship exists between is level of implementation of the protocols of SOCO Team in terms of First Responders, Investigation on Case/ duty investigator, SOCO and Release of the Crime Scene.

This study was delimited to the participation of SOCO personnel and police investigators who are directly engaged in the conduct of criminal investigations within the designated duty coverage area of the researcher. It deliberately excludes other police officers who are not directly assigned to investigative or forensic functions, as well as citizens residing in the locale, since their perspectives may not provide the technical and operational insights required for the objectives of this research. Likewise, the study does not extend to sub-offices across the broader CALABARZON region, but instead focuses only on the cities and municipalities falling under the immediate jurisdiction of the researcher's duty coverage and focuses on the contributory factors

directly influencing the effectiveness of SOCO in criminal investigations.

III. RESULTS AND DISCUSSION

On the Level of Implementation of the Protocols of SOCO

The research results demonstrate that SOCO team protocol implementation has been executed at a high level throughout all performance metrics which the study measured.

First Responders. The research results showed that police and SOCO personnel control the crime scene by securing its boundaries and protecting people who are present while they render emergency services and maintain evidence security which led to a mean evaluation score of 3 that people understood as "Implemented"

Investigator on Case or Duty Investigator. The findings show that investigators take command of their investigation work when they need to handle their case and follow proper protocols by working with first responders and the SOCO team while they conduct witness interviews and handle evidence and case documents according to required formats which they implemented across all assessment points. This led to a mean evaluation score of 3 that people understood as " Implemented."

SOCO Personnel. The respondents reported that SOCO personnel demonstrate standard forensic procedures through their training as with the median rating of 3 and verbal interpretation of "Implemented" because they use proper techniques to gather and protect evidence while documenting all crime scene details and maintaining custody records while displaying professional and unbiased scientific capabilities which show their commitment to forensic standards.

Release of the Crime Scene. The crime scene release process followed established methods which required full evidence documentation and collection and necessary stakeholder coordination and legal and procedural compliance which strengthened accountability measures and built public confidence. The consistent median rating of 3 and verbal interpretation of "Implemented" in assessment areas

show that SOCO team protocols have been implemented through systematic procedures which enable personnel to fulfill their duties according to recognized forensic practices.

On the Effectiveness of the Protocols of SOCO Team

The research results show that SOCO team protocols achieve a high level of effectiveness in all essential functions needed for crime scene management. First Responders. This achieves their essential functions through crime scene security and evidence protection and human life and property safety and complete initial documentation process with an average performance score of 3 which means they perform their tasks effectively.

Investigator on Case or Duty Investigator. Investigative teams function with investigatory capacity because they access complete case documentation and handle evidence according to legal standards while they conduct witness interviews and first responder and SOCO personnel coordination with their investigations.

SOCO Personnel Forensic personnel from SOCO bases their work on standard practices to collect evidence and preserve evidence while using proper equipment for evidence documentation and custody chain maintenance and maintaining a professional and unbiased and scientific accurate approach to their work which guarantees forensic results will be trustworthy.

Release of the Crime Scene. The crime scene release process achieves success through complete documentation and evidence collection which follows operational protocols and legal requirements while maintaining stakeholder coordination and establishing accountability systems that build public confidence through transparent operations.

On the significant relationship of the Level of Implementation and Effectiveness of the SOCO Team Protocols

The research discovered that the SOCO team protocols demonstrate full implementation across all areas of crime scene management which includes first

responders and investigators and SOCO personnel and the crime scene release process. All indicators received uniform mean ratings of 3 which indicated that respondents agreed on both proper implementation and effective results. The test of significant relationship showed significant correlation between implementation and effectiveness at the 0.05 level. The research established that protocol adherence was positively affected by equipment limitations and training gaps and coordination issues and environmental constraints.

On the Challenges in the Implementation of SOCO Team Protocols

The study found multiple difficulties which prevent SOCO team protocols from being fully enforced during crime scene operations. Respondents identified issues related to crowd control and environmental factors, noting that bystanders, media personnel, and uninformed authorities often disturb the scene before it is properly secured, increasing the risk of evidence contamination. Respondents encountered time pressure because they had to manage multiple crime scenes at large locations and deal with medical emergencies that required immediate attention which disrupted their ability to follow standardized procedures. The respondents described logistical problems which included forensic equipment delivery delays and limitations in accessing essential tools and technology that prevented accurate evidence collection and documentation as well as effective processing within required timeframes. The training deficiencies which blocked work performance served as a major obstacle because employees without essential knowledge and real-world experience tended to make procedural mistakes which would damage evidence validity and proof effectiveness.

On the Proposed Strategic Program for Implementation.

Based on the result of the study, the researcher proposed a set of programs that would be of great help in increasing the effectiveness of implementation of SOCO Team Protocols.

IV.CONCLUSIONS

Based on the result of the study, the following are the conclusions drawn:

That the SOCO team protocols are implemented at a high level across all assessed indicators. The study shows that first responders, investigators on case, SOCO personnel, and the crime scene release process consistently follow established procedures.

That the SOCO team protocols are effective in achieving their intended objectives. Respondents reported that first responders, investigators on case, and SOCO personnel successfully carry out essential functions such as securing the crime scene, safeguarding human life, documenting and preserving evidence, and coordinating with relevant units.

The SOCO team protocols demonstrate consistent implementation which produces effective results in the complete implementation across all environments and shows significant relationship among variables compared and reject the null hypothesis.

Several challenges impede the strict implementation of SOCO team protocols. Respondents identified crowd control issues, environmental difficulties, time constraints, logistical limitations in equipment and tools, training gaps, and coordination problems among units. These challenges can delay procedures, compromise evidence preservation, and create operational inefficiencies despite the clear and systematic nature of the protocols.

Based on the study results, targeted programs focusing on training, equipment and technology upgrades, and improved inter-agency coordination are essential. These interventions would strengthen personnel skills, ensure accurate forensic outcomes, and maintain high standards in crime scene management from initial response to final release.

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