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Research Article

Preserving Evidence Integrity: Assessing Chain of Custody Issues in Tagaytay City Criminal Cases

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ABSTRACT

This study explores the challenges faced by investigators in Tagaytay City, Cavite, in maintaining evidence integrity through the chain of custody. Conducted in 2025, it employed a qualitative descriptive design using structured interviews with purposively selected investigators at the Tagaytay City Satellite PNP SOCO Forensic Office. Data were analyzed through thematic analysis to uncover recurring issues in evidence handling.

Findings revealed multiple challenges, including inconsistencies in investigator training, inadequate resources, and deficiencies in documentation practices. Many investigators demonstrated limited understanding of chain of custody protocols, resulting in procedural errors that compromise evidence reliability in court. Environmental factors such as extreme weather conditions and insufficient storage facilities further complicated the preservation of sensitive materials. Weak inter-agency collaboration, stemming from unclear communication and undefined roles, also hindered effective joint investigations.

The study recommends tailored training programs on digital evidence handling and environmental preservation techniques to strengthen investigator competency, adoption of digital documentation systems to minimize human error, and establishment of clear inter-agency protocols. Upgrading evidence storage facilities and securing supplemental funding through public-private partnerships are also proposed to resolve resource constraints. It underscores the need for systematic improvements in evidence handling practices to safeguard justice. By addressing identified challenges and adopting the recommended strategies, law enforcement agencies in Tagaytay City can enhance operational efficiency and ensure that evidence is preserved and presented with the highest integrity. The study contributes valuable insights into the critical role of effective chain of custody management within the Philippine criminal justice system.

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Keywords: Chain of custody issues, Criminal cases in Tagaytay city, Evidence integrity, Investigators' perspectives

Background

The chain of custody is an indispensable process for documenting the integrity of evidence from collection to court presentation. Revision: The term 'chain of custody' refers to the chronological documentation or paper trail showing the seizure, custody, control, and analysis of physical or electronic evidence (Longley, 2022)."

According to Salazar and Kelly Law Group, P.A. (2019), the issues concerning the topic of chain of custody in criminal investigations include: Improper labelling of evidence bags can result in confusion and a misfit of crucial evidence. Improper Methods of Collecting Evidence: Proper procedures are followed when evidence is collected to preserve the integrity of the investigation and should not be used if evidence wasn't collected by proper procedures. Improper Storage of Evidence: Certain evidence can be contaminated, degraded, or lost, and evidence can be unreliable due to the failures to store evidence in proper conditions. Indications of Tampering: Evidence tampering can arise from any of these and can cast doubts on the evidence's authenticity and chain of custody thereby making the investigation less trustworthy. Testing Errors: Errors in the way the testing is conducted can result in wrong results which can be misinterpreted and consequently affect the result of the case.

Chain of custody topic in the criminal investigation has legal basis in many laws and regulations concerning the preservation and handling of evidence. In the Philippines, the following legal provisions are relevant: The Constitution entitles a person the right to due process and fair trial, among other things, which must include ensuring that evidence is handled properly to maintain its integrity and admissibility in court. The Philippine Rules of Court: Evidence, particularly evidence that comes as a by product of the chain of custody process, must meet legal standards, and rules on evidence, specifically rules on evidence related to the authentication and admissibility of evidence, are critical in facilitating it. The Philippine Anti-Illegal Drugs Law (Republic Act No.

9165): This law details the way in which, seized illegal drugs are to be kept and handled and attention is laid to the fact that the information in the record shall be as clear as possible to prevent tampering or contamination of evidence. Republic Act No. 10640 strengthens the government's anti-drug campaign by amending Section 21 of Republic Act No. 9165 (Comprehensive Dangerous Drugs Act of 2002), particularly on the custody and handling of seized dangerous drugs and related items. It requires the apprehending team to immediately conduct a physical inventory and photograph the confiscated items in the presence of the accused (or representative), an elected public official, and a representative from the National Prosecution Service or media, who must sign the inventory and receive copies. The law also allows the inventory to be conducted at the place of seizure or the nearest police station or office, and recognizes that noncompliance with these procedures may be excused if there are justifiable grounds and the integrity of the evidence is preserved. Additionally, it mandates that forensic laboratory examinations be conducted promptly, with partial or final certifications issued to ensure proper documentation and evidentiary value in court.

This study is not only to understand the current problems in the chain of custody of the investigators in Tagaytay City Satellite PNP SOCO Forensic Office but also to acquire a deep understanding of its enemies in the process of evidence documentation. Therefore, it is to explore the effect of these challenges on the implementation of ways to ensure the continuity of the intact chain of custody.

The chain of custody is the process of keeping track of all the way evidence is brought from the crime scene to the courts and it goes through, stored, and transported. This is an incredibly important step to determining whether or not the evidence is honest and can be used in court. It has several steps from gathering evidence at the crime scene through safe packing, proper marking, and transport (D'Anna et al., 2023). The proof is kept in a safe place from then on, until it is needed to be

analyzed or shown in court. When evidence is moved from one caretaker to another, it is carefully recorded so that it is not altered or lost or tampered with. But investigators in Tagaytay City Satellite PNP SOCO Forensic Office have difficulty following this process, and it could change the way crime cases unfold. Some of these problems are not having enough tools or training and running things in the right way. The study's goal is to look into these problems and find better ways to follow the chain of command in Tagaytay City Satellite PNP SOCO Forensic Office, which is where crimes happen.

In upholding the verity and obduracy of criminal justice in drug-related cases, the proper operation of the chain of custody is imperative. The process of each link from the seizure and marking to the last link which is the turnover and submission of the illegal drug from the forensic chemist to the court plays an indispensable role in maintaining not just the integrity of the evidence but also the tenability and soundness of the criminal justice system in the Philippines. The result of such possible negligence, misconduct, and default from the valid execution of chain of custody can have profound repercussions for the individual cases and to the public trust in the country's legal framework of justice. Owing to that, the existence of chain of custody is crucial in the realm of ensuring the credibility of criminal justice system and understanding its concept and vitality creates course of action to prevent lapses.

Criminal detectives are trained pros whose job it is to look into crimes, collect evidence, talk to witnesses, and help catch criminals. In court, these officers help the lawyers make their case. This is a very important part of the criminal justice system. They learn how to look at things, study them, and write things down while they are at crime scenes. They also learn how to follow the rules for the chain of custody when they handle evidence (Soukara, 2020). These spies have to deal with a unique set of problems because they don't have enough tools, transportation issues, and life in Tagaytay City Satellite PNP SOCO Forensic Office is very different from other places. The study's main goal is to look at these problems and how they affect who is in charge. These changes will

make it easier and faster to solve crimes in the city.

Steps are taken to make sure that evidence is always right, from when it is first found to when it is shown in court. This is called tracking the chain of custody of evidence. The process starts at the crime scene, where trained pros look for and gather evidence. Then, important information is written on each piece of evidence, such as the date, time, place, and name of the person who gathered it. After that, the proof is carefully wrapped up so that it can't be changed or tainted (Nsofwa, 2019). The proof is kept in a safe place, and each time it changes hands, the person, the date, and the reason for the change are written down in a log. The proof will be kept safe until it needs to be studied in a lab or shown in court. The chain of custody must be followed at all times to ensure that the evidence presented in court is the same as what was first collected and has not been tampered with or changed in any way. Even though this process seems easy, the study found that it gives Tagaytay City Satellite PNP SOCO Forensic Office crime agents a lot of trouble.

Indeed, the chain of custody procedure has gradually developed over a period of time (D'Anna, 2023). And it can be evidently proven by the fact that investigators and forensic analysts utilizes it in their field of work in this day and age. The chain of custody procedure has been exercised by the aforementioned forensic experts because it became widely recognized or followed procedure in the world of criminal investigations. Here are the steps in the chain of custody:

Collection. The collection of evidence in criminal cases is a crucial step in the process of proving a crime (Rossinskiy, 2020). It includes the range of activities such as detecting, recording, demanding, obtaining, and preserving evidence (Holubov, 2021). This has become more complex due to the digital evidence (Morina et al., 2021) and it is vital, in order to understand the nature of the crime and its perpetrators.

In distributed and digital systems, collection of evidence is a vital part of the chain of custody. Kretz et al. (2024) have investigated the security and integrity of evidence by investigating the use of blockchain technology. Ah-

mad proposes a framework for real-time, tamper-proof evidence management and Kretz works on remote attestation. Yan et al. (2020) goes one step further and provide a protocol for the chain of custody of digital evidence using blockchain, attribute-based encryption and BLS signatures. Prayudi et al. (2019) also emphasizes the importance of information standards in the chain of custody procedure and provide a way of collecting, logging, and documenting digital evidence. These studies in all demonstrate the use of blockchain and encryption technologies to verify the integrity and security of the evidence in the collection of evidence.

Documentation. Chain of custody is considered as one of the most important concepts by Ahmad et. al (2020), and Zaid and Sabbar (2020), for reasons of documenting all evidence as well as for integrity and admissibility of evidence. Digital evidence is especially challenging and the Blockchain technology, blockchain based applications of digital chain of custody, and digital chain of custody implementations can help to ensure the integrity and authenticity of evidence. The integration of pseudo metadata to the documentation process for digital evidence can further enhance the documentation process with information recording and mapping (Prayudi, 2019). Completing the chain of custody will have important impacts on the validity of evidence and the outcome of trials (González, 2023). Written and electronic documents are so important in legal proceedings that the concept of document as evidence should be adhered to (El-Haija, 2024; Marochkin, 2022).

Packaging. Packaging the chain of custody is one of the most important parts of evidence management especially when we are dealing with digital evidence. As in Ahmad et al. (2020) and Hanafi et al. (2021), they provide creative solutions to enhance digital evidence storage and management security and dependability through the use of technologies such as blockchain, InterPlanetary File System (IPFS), and Hyperledger Fabric. According to Nascimento et al. (2022), a proper constitution will help prevent evidence from being invalidated and according to Zaid & Sabbar (2020), the application of a digital chain of custody to assure the integrity and authenticity of digital evidence.

Transportation. In his publications, Paddeu et al. (2019) and Hadavi et al. (2020) note the possible impacts of new technology on the transportation of evidence. According to Paddeu's et al assessment of future transport systems, technology developments could lead to more effective and safe ways to transport evidence. As stressed by the work of Hadavi's et al. on urban transport planning, it is necessary to understand the movement of different vehicle categories, including those of vehicles used to transport evidence. Berezniak (2021) and Gless (2019) offer legal and procedural points of view regarding evidence transportation. Berezniak's analysis of criminal offenses against traffic safety and transport operation emphasize the importance of trustworthy evidence in these situations. Gless's analysis of cross-border evidence accesses highlights how crucial it is to preserve the credibility and dependability of evidence while it is being transported.

Storage. Storage in chain of custody refers to that part in the cycle of custody, where the evidence is housed temporarily in a forensic laboratory or storage facility for secured preservation and safeguarding of evidence to ensure evidence is not accessible to unauthorized access, tampering or loss. This is a phase where evidence is kept for safe, to be used later to be further looked at or used in court proceedings. According to Yahya et al. (2023), investigators must be expert in the integrity of evidence when they store the evidence and when they are in the forensic examination stage of the investigation. In a way, that is the foundation for evidence that is admissible during a later trial in court. For this reason, in storage phase investigators should be obliged to take cognizance of the nature of the evidence and the choice of conditions of storage. For example, biological samples may need freezing to prevent degradation, or other materials to prevent contamination or degradation (Evidence Management - How Chain of Custody Serves the Justice System, 2023b). In our criminal justice system, the unbiased and efficient function depends on the correct retention and storage of materials (McCartney, C., & Shorter, L., 2020).

Analysis. Now, after a shred of evidence is collected from the crime scene and safely put away in a designated forensic laboratory or a

storage facility for the meanwhile, it, and proper scientific examination and evaluation, will follow. This is an important step in the custody of evidence chain because this is the time 'when the authenticity and value of the evidence being collected is established, using a variety of specialized techniques and methodologies suited to the nature of the evidence, such as DNA, ballistics, and toxicology' (Evidence Management - How Chain of Custody Serves the Justice System, 2023b). Forensic scientists investigating and evaluating evidence from crime scenes and other locations produce unbiased conclusions that can help to support an investigation, or convict a criminal, or clear an innocent person of suspicion (Ahluwalia & Sharma, 2023). This process furnishes a scientific basis to the relevance of the evidence on a case under investigation. In fact, it is essential that upon evidence analysis, the forensic analyst should rely on different kinds of scientific skills. Almakhatovich (2019) discussed that he advocated for the use of comprehensible criteria based on international best practices to evaluate and scientifically examine of evidence in criminal proceedings.

Court Presentation. Presentation in court is considered a rigorous phase in the context of the chain of custody in a criminal investigation as it offers preserved and analyzed evidence to a judge who opts to decide a case. In court presentation, a lot of things can happen and be done, such as the act of performing a thorough review of the Chain of Custody documentation (Evidence Management - How Chain of Custody Serves the Justice System, 2023b). Correspondingly, the presentation of evidence can be impacted by a variety of circumstances. According to Sheppard et al. (2020), investigators encountered challenges in displaying highly sophisticated forensic evidence in legal proceedings because of technological constraints. Hence, there should be a need for a courtroom technology upgrade to further assist and promote the proper presentation of evidence. Meanwhile, Blau et al. (2019) and Errickson et al. (2019) both highlight the value of utilizing visual aids during legal proceedings as they ameliorate the ability to efficiently discern the evidence presented. With the combination of oral statements and 3D imaging, it notably generates

effectiveness. Furthermore, as emphasized by Ostroumov (2024), communication is important between the court and the parties involved in presenting and scrutinizing digital evidence. All these studies stress the value of technological advancements and good communication for the presentation of evidence in court.

Investigators in the Observance of Chain of Custody in Other Countries talks about how investigators around the world keep the chain of custody going. The chain of custody is an important part of the criminal justice system in many countries because it makes sure that proof is honest and can be used in court. Police investigators are taught to carefully write down every step, from gathering evidence at the crime scene to presenting it in court. But the steps and problems can be very different based on the laws, finances, and cultural and social situation of the country (Damascena et al., 2022). For example, investigators may have access to advanced tools and well-established rules for how to handle data in rich countries with advanced forensic skills. In poor countries, on the other hand, inspectors may have trouble because they don't have enough tools, training, or facilities. To make sure that the evidence given in court is the same as what was collected in the first place and has not been changed or tainted, even though these details are different, the main idea is still the same. This world view gives us useful information and lessons that can help us follow the chain of custody better in Tagaytay City Satellite PNP SOCO Forensic Office and other places like it.

In the Philippines, criminal agents have to follow certain rules and deal with problems when they are trying to keep the chain of custody. This article discusses those rules and problems. In illegal cases, the Philippines, like many other countries, has laws that say the chain of custody must be followed. For this process to work, evidence must be collected from the crime scene, carefully packed, and labelled, moved, stored, and finally shown in court (Rodriguez et al., 2021). But it can be hard to use these methods because of things like not having enough room, tools, or training. Because the country is made up of many islands, it can be hard to move and keep proof.

The same as the case of Collins Taghoy Remulta who was charged for illegal sale and illegal possession of shabu and was found guilty by Regional Trial Court for violation of sections 5 and 11 of Republic Act No. 9165, otherwise known as the Comprehensive Dangerous Drugs Act of 2002. It absolved Remulta because the prosecution failed to record and maintain the integrity of the seized drugs, and the Supreme Court revoke the decision. And on account of this unfortunate circumstance, the CA reminded the authorities responsible for the process of the chain of custody of evidence to have faithfully complied with the rules or guidelines to keep the integrity of the evidence intact for it to become admissible in court and not junk the cases anymore.

In the Philippines, police must work hard to keep the chain of command honest so that proof can be used in court, even though there are problems. The point of the study is to look at these issues in Tagaytay City Satellite PNP SOCO Forensic Office so that the crime scene investigation process works better.

Statement of the Problem

This study aims to assess the challenges encountered by the investigators of Tagaytay City Satellite PNP SOCO Forensic Office in the observance and process of chain of custody. The findings that would emerge from this study will be used as the basis in proposing recommendations.

Specifically, the study seeks to answer the following questions:

1. What are the common challenges faced by investigators in Tagaytay City Satellite PNP SOCO Forensic Office when ensuring the proper handling and preservation of physical evidence?
2. What specific measures can be taken to improve the documentation and record-keeping practices related to the chain of custody in Tagaytay City Satellite Forensic Office?

3. What collaborative initiatives can be undertaken between Tagaytay City Satellite Forensic Office and other law enforcement agencies to streamline the chain of custody process?
4. What specific training programs or workshops can be developed to enhance the chain of custody skills and knowledge of investigators in Tagaytay City Satellite PNP SOCO Forensic Office?

Theoretical Framework

This research study is constructed based on Bryant's (2009) Criminal Investigation Theory. It shows how the research works, what methods are used, and what issues arise when trying to maintain the chain of ownership. This idea stresses how important it is to carefully collect, store, and record evidence. These steps are all very important for making sure that the crime investigation process is fair. This theory can be used to understand the issues that investigators in Tagaytay City Satellite PNP SOCO Forensic Office are having, which are listed in the description of the problem. There are many things that can break the chain of custody, such as the area's social, cultural, and economic background, the agents' education and training, and the way that law enforcement agencies communicate to each other and work together. It also may be helpful in thinking of ways for our writing and record keeping to be better, ways whereby police departments can work better together, or how to better train our police detective to learn more and be better at their jobs. The Criminal Investigation Theory can be used in Tagaytay City Satellite PNP SOCO Forensic Office to understand the problems that occur when the chain of command is followed.

Conceptual Framework

Here is a proposed thesis conceptual framework based on the given research questions:

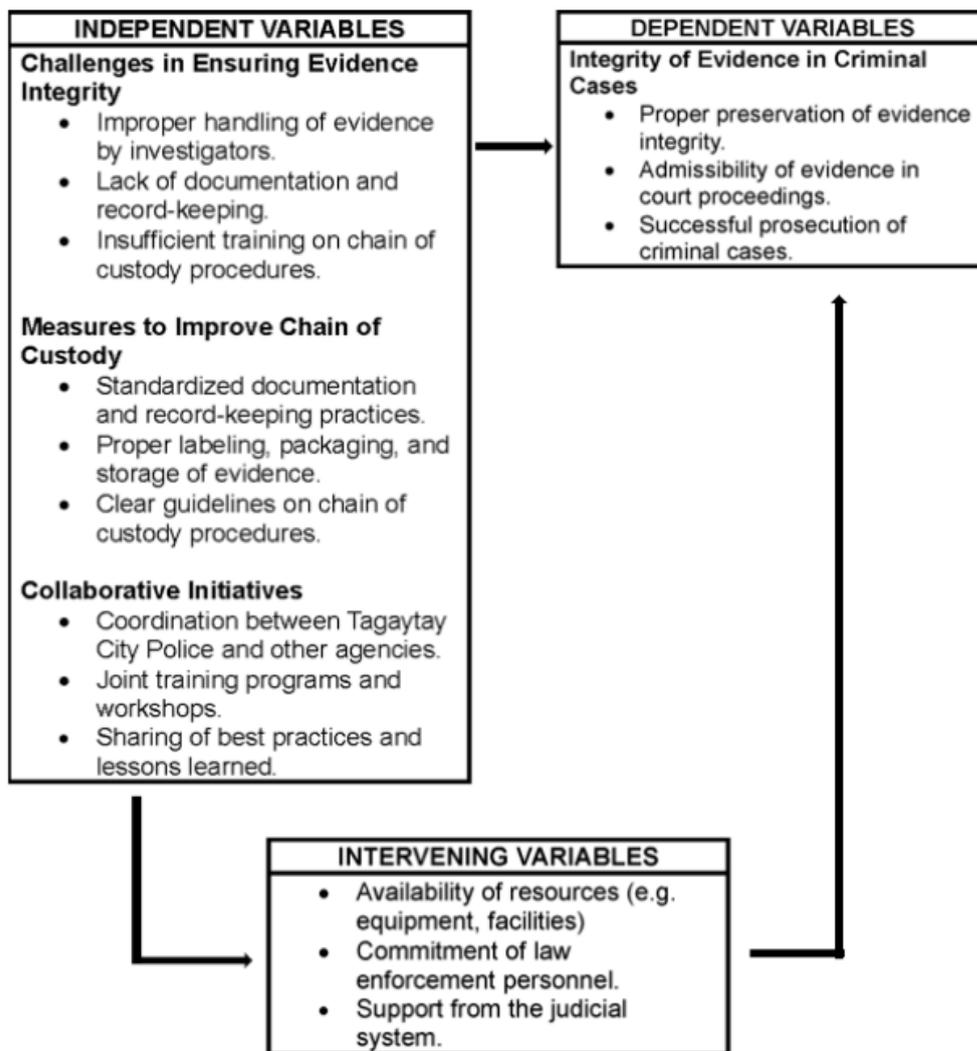


Figure 1. Conceptual Paradigm of the Study

The conceptual framework suggests that addressing the challenges in ensuring evidence integrity, implementing measures to improve chain of custody practices, and fostering collaborative initiatives among law enforcement agencies can lead to enhanced integrity of evidence in criminal cases in Tagaytay City Satellite Forensic Office. The intervening variables, such as resource availability, personnel commitment, and judicial support, may also influence the effectiveness of these efforts.

Significance of the Study

This study is deemed beneficial and could give relevance to the following:

Policy Makers. For the study encircles on the challenges prevailing on the faces of the investigators in the line of the observance of

chain of custody; the gaps will be unveiled, and they can make such recommendations that can be implemented for the cultivation of forensic investigations policies, especially in the course of keeping the chain of custody.

Investigators. It is vital and crucial that they are aware of the contemporary challenges and adversities that the forensic unit faces in the observance of chain of custody of evidence. The specific areas that are in need for immediate aid, innovations, and strict compliance are visible through this study for their understanding. Owing to that, this bestows them the information that they can utilize for an augmented and intact collection, transportation, and analysis of forensic evidence.

Criminology Students. This study enriches their knowledge and understanding on the

process and maintaining of chain of custody intertwined with the challenges that the investigators experiences. This study helps them on their future endeavors in the field of criminology.

Future Researchers. The speculation done in this study is utilize as an advertence for advances and newfangled researches and as one of the groundworks of their own bestowal in relation to the topic.

Scope and Delimitations

This study seeks to explore the perspectives of the investigators of Tagaytay City Satellite PNP SOCO Forensic Office, on the challenges that are prevailing in the critical observance of chain of custody. The study will center on the perceptions and opinions of the investigators of Tagaytay City Satellite PNP SOCO Forensic Office that would serve as basis for bridging gaps in their expertise, skills, protocols, and procedures for the chain of custody in Tagaytay City.

This study is limited only to the investigators of Tagaytay City Satellite PNP SOCO Forensic Office. The researchers will conduct data gathering through face-to-face interview. The sample size is limited to the participants who will agree to participate in the said interview. The questions that will be given to the participants will serve as the ground of information to the researchers' study. Furthermore, as this study make sure that the data will remain confidential, there is still a chance of breach of data and illicit access to the data gathered. Finally, the findings of this study are not wide-ranging as this study only fixates to a particular group of investigators which is in Tagaytay City Satellite PNP SOCO Forensic Office. Thus, it does not necessarily generalize that the findings of this study are similar to other areas of investigators.

Definition of Terms

The following terminologies were defined conceptually, operationally, and contextually to provide a common frame of reference essential for understanding the ideas of the researcher regarding the study:

Challenges. It was the sum total of the difficulties and struggles that the investigators face in maintaining the chain of custody.

Chain of Custody. The order and documentation of evidence to be used in judicial proceedings.

Chain of Custody Procedure. It refers to the proper documentation and record-keeping of evidence, handling, and storage of evidence, maintaining continuity of possession and the testimony and presentation in court.

Evidence Integrity. It pertains to the gathered evidence ensuring its truthfulness and reliability as it undergone investigative process.

Criminal Cases. Happens when the government files a case in court to punish someone (the defendant) for committing a crime.

Investigators. It referred to the persons who are conducting the investigation and handling the strict observance of chain of custody.

Investigators. The participants of this who are processing the chain of custody in Tagaytay City, Cavite.

Methods

This study used a qualitative descriptive research design to gather rich, detailed insights into the challenges faced by investigators in maintaining the chain of custody. These methods preserve flexibility and adaptability while enabling researchers to gather comprehensive data (Mashuri et al., 2022). Researchers used events as building blocks to conduct effective structured interviews. They also considered fundamental events that illustrate particular phenomenon, arrange questions for optimal flow, and refine through piloting and review (Bearman, 2019).

This method allows researchers to investigate the experiences of the investigators of Tagaytay City Satellite PNP SOCO Forensic Office rigorously and efficiently in handling chain of custody intertwined with the prevailing issues and challenges that they face. Considering that, the employment of a structured interview qualitative descriptive research design unequivocally gathered a comprehensive understanding and discernment into a problem or to develop new ideas for research related on the challenges of investigators in maintaining the strict observance of chain of custody in evidence.

Sampling Technique/Participants Selection

The researchers utilized Purposive Sampling in this research, a technique also known as judgmental, selective, or subjective sampling. It is a type of non-probability sampling method in which the researchers selected the members of the population to participate in their study through their own judgment fits for the criteria. A number of investigators in Tagaytay City Satellite PNP SOCO Forensic Office who undergone Criminal Investigation Course (CIC) were selected. Their expertise upheld the specializations vital and crucial for crime scene investigations intertwining with the gathering, preservation, and evaluation of evidence. They are entrusted by the police to ensure that the evidence is handled appropriately, and it adheres to the protocols maintaining the chain of custody.

It is convenient for the researchers to utilize Purposive Sampling of participants from the Tagaytay City Satellite PNP SOCO Forensic Office to ensure representation of diverse experiences and perspectives among investigators.

Participants of the Study

The research study fixated on investigators in Tagaytay City Satellite PNP SOCO Forensic Office from the population of investigators handling the chain of custody in Cavite Province. Considering that Tagaytay City is one of the sizeable areas in Cavite and with a low crime rate, the researchers' concluded to opt for the area around it. The vastness of the setting and the present condition of such environment that can affect the maintaining of chain of custody are substantial to explore. The researchers visited the Satellite Forensic Office in Tagaytay City, Cavite and the participants of the study were investigators. They were investigators who undergone Criminal Investigation Course (CIC) and they were four in number. The participants were available to answer the prepared interview questions.

Research Instrument

In this current study, the researchers used the structured interview to elicit an integral and comprehensive understanding in response to the research objectives. The employment of structured interviews attributed open-ended

questions formulated to obtain a profound and panoramic responses regarding the encountered challenges of investigators in the observance of chain of custody. These validated questions featured topics such as the common challenges faced by the investigators during the course of chain of custody, their specific measures taken along with collaborative initiatives between the station and other law enforcement agencies and any specific procedural obstacles that are present.

The qualitative aspect encompassed in-depth and structured interview with a selected group of investigators to apprehend their personal experiences of their encountered challenges, stances, and perceptivity. This interview was audio-recorded and transcribed for thematic analysis.

Data Gathering Procedure

The data gathering procedure was deliberately designed to establish a secure acquisition of definite and reliable information while strictly conforming to ethical standards. Researchers created self-made questionnaires that were validated by experts to ensure soundness and applicability. Before the deliberation of interview, ethics clearance containing the informed consent form, copy of their research proposal, letter to the Institution's Head, and their research questionnaire were submitted. Upon approval, a consent letter was forwarded to the Tagaytay City Satellite PNP SOCO Forensic Office for final authorization. They were apprised about the study, guaranteeing their anonymity and the privacy of their responses. The researchers then performed individual interviews utilizing the validated questionnaires, upholding a dutiful and careful course of action and questioning. Following the interviews, all of the responses that were gathered were thoroughly put together, establishing an output where no questions were left unaddressed, and the data was meticulously accounted and interpreted to generate viable matter of course.

Data Analysis

For data analysis, the basic qualitative approach was the method employed by the re-

searchers to construe the challenges of investigators on maintaining the chain of custody and what are the underlying meaning ascribed to their encountered challenges. The interviews data was 'probed' into using Thematic Analysis. Herzog et al.(2019) noted that Thematic analysis (TA) is a favoured and primary method for studying qualitative policy data. It is an exploratory tool for the identification and analysis of patterns of meaning (themes) and is concerned with the identification and analysis of patterns of meaning (themes) and is widely applicable, cost effective and flexible. Yen's approach was utilized to interpret this study, and data analysis generally comes after these steps. Coding. This step follows the systematic identifying and categorizing fractions of data in relation to the research question. It is to capture explicit and implicit meanings within the bounds of the data. Searching for themes. After the coded data, codes are then clustered for the prospective themes which constitute issues, challenges or experiences related to the research questions. Researchers are gaging for the underlying differences and similarities intertwined with interrelations which draw patterns in the coded data in order to distinguish the precise patterns that can help the researchers fathom the challenges that the investigators in Tagaytay City experience. Furthermore, in Yen's approach, it fixates on apprehending the framework within the place where the challenges occurred. Examining of themes. Researchers check the accuracy of the coded data and the whole established data set. Interpretation of results. In order to gather significant and indicative conclusions regarding the encountered challenges of investigators, the researchers interpret the results through the research objectives and synthesis. The themes and patterns are linked together towards the issues in order to convene a comprehensive understanding of the conferred issues. Subsequent to these steps in data analysis, the utilization of Yen's approach to qualitative case study design will help the researchers to probe on the collected data thoroughly and to create findings which will be vital in identifying and understanding the challenges of investigators in Tagaytay City.

Result and Discussion

PROBLEM NO. 1

What are the common challenges faced by investigators in Tagaytay City Satellite PNP SOCO Forensic Office when ensuring the proper handling and preservation of physical evidence?

Theme 1: Understanding of the Chain of Custody Process

This theme demonstrates that Preserving Evidence Integrity: Assessing Chain of Custody Issues in Tagaytay City Criminal Cases. (1) Variability in Investigator Knowledge (2) Effects of Environmental Conditions on Evidence Collection (3) Overcrowding and Insufficient Storage Facilities (4) Procedural Errors Leading to Evidence Exclusion (5) Influence of Case Type on Protocol Compliance (6) Common Documentation Errors in Evidence Logs (7) Establishing Dedicated Evidence Custodians (8) Importance of Resource Sharing Across Agencies (9) Improving Communication During Multi-Agency Operations (10) Transition from Theoretical to Practical Training Approaches (11) Impact of Resource Limitations on Evidence Integrity.

Subtheme 1.1: Variability in Investigator Knowledge

Investigators in the city of Tagaytay City understand the chain of custody process in different ways depending on how much training they received or how they have come across criminal cases. Some officers, especially those with forensic specializations, appeared to get it and how it could be practically applied, while others seemed to have missed the memo. This inconsistency is reflected in the different degrees of compliance with standard procedures, especially concerning minor offenses. The studies that have been highlighted show that clear and consistent training greatly increases the understanding and application of the chain of custody (D'Anna et al., 2023). The importance of the chain of custody cannot be overstated, as even minor lapses can lead to the dismissal of cases due to questions about evidence reliability (Spyropoulos et al., 2023). Documentation practices, though improving, lack case-specific examples and guidelines that address the unique challenges faced in Tagaytay City, such

as resource limitations and varying crime scene scenarios. Providing tailored training and updated procedural manuals can bridge the knowledge gaps and ensure consistent practices (Obeagu & Obeagu, 2024).

Subtheme 1.1: Variability in Investigator Knowledge

DATA SOURCE: Interview

EVIDENCE: Participant 1: "So yung chain of custody process, kasi yung chain of custody process namin dito sa Philippines, vital yan sa court. So, magkaroon ka lang ng kaunting pagkakamali or butas, yung sinampa mong kaso dun sa akusado, mapapawalang-bisa lahat yun."

Participant 2: "Actually wala pa ako experience sa criminal investigations kase di ganun hawak namin... pero galing na sa ano sa mga local police."

Participant 3: "Ang pagkakaintindi ko dito sa chain of custody ito yung proseso na parang pano malaman kung hanggang saan nakarating yung ebidensya."

Participant 4: "Simply is to establish the chain of custody submitted by the requesting party with regards to the evidence submitted."

Observation: Observations showed that investigators are aware of the chain of custody's importance but have varying levels of understanding. In training sessions, participants often ask about specific scenarios in crime scene procedures, indicating a need for clearer guidelines. This inconsistency reflects in real case operations where protocol adherence varies depending on the officer's background and experience. Those with forensic training were more confident in articulating the concept than those without.

Data/Documentation Training manuals on collection of evidence and processes of chain of custody were reviewed. These documents are a step-by-step guide but the examples are not localized to Tagaytay City's criminal cases. Chain of custody logs for drug related case records from the Tagaytay Police were clear but in other criminal cases, there were lapses such as timestamps and signatures missing.

Theme 2: Challenges in Evidence Collection

Respondents mentioned, the most common challenges during evidence collection, which are: lack of proper tools for collection of evidence, time pressure at crime scenes, and the inability to maintain control of the evidence in a crowded or chaotic environment. These often made it very difficult to be certain the evidence remained untainted. Inadequate labeling or storage at this stage, participants added, could cause major headaches down the line.

Subtheme 2.1: Effects of Environmental Conditions on Evidence Collection

Investigators in Tagaytay City Satellite PNP SOCO Forensic Office face problems in evidence collection, especially under challenging environmental conditions. Crime scene operations are often complicated by adverse weather and hence delayed documentation and enhanced risk of evidence contamination. While officers do what they can to secure evidence, they cannot use equipment like waterproof evidence bags and mobile documentation kits. This is consistent with previous research on this problem that underscores the fact that lack of resources can lead to mishandled evidence and loss of integrity (Ekuma & Fon, 2024). Furthermore, there are inconsistent labeling practices, delayed documentation at the scene and all of the above increase the likelihood of procedural lapses (Esteves et al., 2020). Thus, for these gaps, there are needs of investment in tools and equipments and training officers in dealing with dynamic and unpredictable crime scenes (Albeedan et al., 2024).

Subtheme 2.1: Effects of Environmental Conditions on Evidence Collection

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Pag bumabago... yung mga evidences na na c-collect namin sa crime scene, hindi siya ganun kadaling i-document. Lalo na pag sa open field."

Participant 2: "Sa collection kase dapat yung type of collection bago ko yun icollect sinusulatan ko na yung paglalagyan ko na envelope..."

Participant 4: "Syempre yung ano... yung halimbawa yung sa storage niya. Kasi hindi pa

naman kami high-tech... minsan alternative lang."

Observation The researcher watched officers in crime scene simulations and discovered that they struggled with outdoor situations, especially when the weather was bad. Sometimes there were delays in resource such as protective gear or waterproof containers, evidence packaging and labeling. Sometimes this delay would result in the documentation being incorrect or evidence being contaminated, a critical gap in practical tools and preparedness.

Data/Documentation: Field reports showed incidents where evidence from open fields or water bodies was poorly handled due to inadequate weatherproof containers. Crime scene photographs were reviewed for inconsistencies in labeling practices, including some evidence improperly tagged or documented after retrieval, rather than at the collection site.

Theme 3: Issues in Evidence Storage

It was described as a critical but problematic evidence storage. Participants expressed concerns regarding lack of storage facilities, wrong environmental controls, and narrow areas of access to secure areas. Many respondents also commented on how the evidence was mishandled because there was too much and there were no resources which made it less credible.

Subtheme 3.1: Overcrowding and Insufficient Storage Facilities

The storage of evidence is important to ensure its integrity, however resource constraints in Tagaytay City Satellite PNP SOCO Forensic Office have resulted in serious problems in this area. Particularly vulnerable are biological evidence like blood swabs and DNA samples because improper storage conditions can degrade the evidence so that it can not be used in court. The overcrowding and inconsistent temperature monitoring in existing storage facilities observed were similar to what other studies on evidence storage inefficiencies in developing regions have found (Sultana et al., 2024). Officers make such practices work while they improvise to fill these gaps, but these are not sustainable in the long term and may introduce more risk of error. These challenges can be

mitigated by investing in forensic grade equipment for storage, and running routine audits of storage conditions (Alketbi, 2024).

Subtheme 3.1: Overcrowding and Insufficient Storage Facilities

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Pagka yung evidence mo ay masilan, hindi mo siya agad-agad ma d-document... sa office na ginagawa."

Participant 2: "Pag blood swab tsaka buccal swab need na ilagay sa proper storage... nagdedegrade kase pag mali ang storage."

Participant 4: "Yung storage natin kasi minsan ano... alternative lang. Wala talaga siyang ano."

Observation Evidence storage rooms were observed to be overcrowded, and environmental controls were not adequate. DNA and blood swabs were refrigerated for storage, but biological evidence was limited to refrigerated storage for evidence, with some DNA and blood swabs stored in standard coolers rather than forensic refrigerators. If officers improvised storage solutions, the risk of degradation of evidence was increased.

Data/Documentation: The evidence logs documented delays for moving sensitive items to proper storage, if at all, on weekends or holidays. Internal memos highlighted the resource limitations, but offered no action solutions, for instance, to renovate the facilities. Refrigerated evidence temperature logs were inconsistent.

Theme 4: Compromised Chain of Custody

Some participants confessed that they have encountered cases of broken chain of custody. From the common scenarios it was missing documents, unclear handover records, poor record of evidence contamination. Sometimes these breaches were caused by human error, or because no protocols were clear, and this created problems in court proceedings.

Subtheme 4.1: Procedural Errors Leading to Evidence Exclusion

The credibility of criminal investigations in Tagaytay City Satellite PNP SOCO Forensic Office is still compromised by a chain of custody. Missing signatures and incorrect timestamps are errors that often lead to evidence being

disbelieved—or simply thrown out altogether—in court. Previous studies of evidence handling (Antkowiak et al., 2023) identify these lapses as usually occurring due to procedural inconsistencies and lack of oversight. Further observations showed that many officers do not have the confidence or preparation to explain procedural lapses in court, and their cases weaken. It supports findings, which highlight the importance of training in courtroom presentation to prepare investigators with the skills necessary to defend the integrity of the evidence (Daraojimba et al., 2023). Lapses in these processes can be minimized and the reliability of chain of custody processes improved with the establishment of stricter accountability measures and the use of digital tracking systems (Ozioko, 2024).

Subtheme 4.1: Procedural Errors Leading to Evidence Exclusion

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Tinatanong ako ng court, bakit walang pirma yung arresting officer papunta sa investigator..."

Participant 2: "Minsan mali yung sa time and date na nailalagay kaya nagkakaroon na siya ng issue."

Participant 3: "Hindi macocompromise kase dapat alam mo na din yung gagawin..."

Observation Observations of court hearings involving chain of custody issues revealed lapses such as unsigned handover forms or incomplete timestamps. And these lapses often meant evidence was questioned in court. During cross examinations, officers often appeared unprepared to defend their practice of chain of custody.

Data/Documentation: Review of court case records highlighted instances where evidence was excluded due to procedural errors, such as missing signatures on chain of custody forms. Audit reports from Tagaytay Police noted recurring issues in documentation accuracy, despite repeated training sessions.

PROBLEM NO. 2

What specific measures can be taken to improve the documentation and record-keeping practices related to the chain of custody in Tagaytay City Satellite PNP SOCO Forensic Office?

Theme 5: Adherence to Chain of Custody Protocols

Participants agreed that following chain of custody protocols was important but admitted that they did not always do so. Normally, workload, inadequate supervision and lack of accountability all led to deviations from normal procedures. This means that these protocols need to be better monitored and enforced.

Subtheme 5.1: Influence of Case Type on Protocol Compliance

The level of adherence to chain of custody protocols, however, depends on the nature and visibility of your case in Tagaytay City Satellite PNP SOCO Forensic Office. Because drug-related cases have high profile nature and standard operating procedures, they are subject to stricter compliance. While less serious crimes are less consistently documented and less routinely adhered to protocol. This discrepancy mirrors results from other studies, which show that investigators devote more effort to adherence in cases with more legal or public scrutiny (Antes et al., 2019). The observations were confirmed that officers are more likely to follow protocols when supervisors are present or when cases are closely monitored. In order to address this, protocols need to be consistently enforced, no matter what type of case you're working on. Adherence can be improved across the board (Adeniyi et al., 2024) by training sessions that highlight the equal importance of all evidence and regular audits.

Subtheme 5.1: Influence of Case Type on Protocol Compliance

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Isang tao lang dapat yung humahawak ng ebidensiya... siya lang yung pwedeng magdala sa court."

Participant 2: "Laging merong chain of custody yung mga ballistic namin na sinasubmit namin sa Imus."

Participant 4: "Chain of custody is very important with regards to the specimen submitted for examination."

Observation Lapses in court hearings where issues of chain of custody were involved were observed, such as unsigned handover forms or incomplete timestamps. Too often,

these lapses led to questions about evidence in court. Officers were often unprepared to defend their chain of custody practices and were often unable to do so during cross examination.

Data/Documentation Court case record review showed how evidence was excluded because of procedural errors, including unsigned chain of custody forms. Tagaytay Police audit reports also stated that documentation accuracy is still recurring, despite repeated training sessions.

Theme 6: Documentation and Record-Keeping

A weak point in the chain of custody process was identified as documentation. Examples of incomplete or missing records were relayed by respondents, which could raise doubts as to the reliability of the evidence. They perceived proper documentation practices to be essential but not practiced all that often because of time constraints or because people were not trained.

Subtheme 6.1: Common Documentation Errors in Evidence Logs

The backbone of a good chain of custody is proper documentation, but the inconsistencies in the way records are kept make the chain of custody unreliable in Tagaytay City Satellite Forensic Office. The observations showed that there is an error in human manual processes and that it causes incomplete or missing logs that slow the investigation and weaken the case in court. Lapses have been the focus of previous studies in which standardized templates and digital documentation tools have been emphasized in mitigating these (Atluri et al., 2024). Despite SOCO forms being a structured framework, officers' differing levels of familiarity in how to use them cause documentation inconsistencies. Digital evidence management systems and regular workshops on the best documentation practice can reduce the time spent on record keeping (Mintah et al., 2022).

Subtheme 6.1: Common Documentation Errors in Evidence Logs

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Document evidence... photograph and sketch yung ebidensya."

Participant 2: "Laging may scan yung receiving copy na pinaka-documentation namin."

Participant 3: "Meron kaming SOCO forms, doon kami nagsusulat evidence collected at the crime scene."

Observation The document review processes at police stations found gaps in the form of missing scans of handover forms and inconsistent digital record maintenance. Manual record keeping practices resulted in delays in accessing the critical evidence details during investigations.

Data/Documentation: Incomplete SOCO reports and cases where evidence photos were not attached to the corresponding case file were reviewed. Documentation procedures were stressed in training manuals, but there were no practical guidelines on how to deal with real world challenges.

Theme 7: Recommendations for Improvement

Participants made recommendations for improving the chain of custody process. They included better resources, consistent use of evidence tracking systems and stricter accountability measures. In addition, suggestions included the incorporation of digital tools that would automate the documentation processes and intervene in errors.

Subtheme 7.1: Establishing Dedicated Evidence Custodians

Accountability, error minimization and chain of custody practice are improvement recommendations. But participants stressed that evidence should have a single custodian for efficiency of evidence management and lapses. As an example, when these roles were clearly defined, Participant 1 indicated that accountability, and confusion, are removed when there is a single evidence custodian, and that this helped improve processes. But once responsibility was split between more than one person, gaps formed and communication, and errors ensued (Bjarnason et al., 2019). Briefings before court hearings showed officers often knew

little or nothing about what they were supposed to be doing with evidence and new standardized protocols were necessary. However, internal memorandums emphasized that clear practices were important, but they did not provide steps to remedy recurring problems (Alzubaidi et al., 2023). Other court feedback documents also indicate that too many errors were made with the documentation which necessitated the adoption of software-based tracking systems to mitigate human error and improve transparency. The findings are consistent with global evidence of the value of accountability and technology integration in sustaining evidence integrity (Kretser et al., 2019).

Subtheme 7.1: Establishing Dedicated Evidence Custodians

DATA SOURCE: Interview

EVIDENCE:

Participant 1: "Dapat evidence custodian talaga yung nag-ahandle... mas madaling matandaan."

Participant 2: "Dapat yung nagpapareceive ng evidence ay laging aware sa importance ng chain of custody."

Participant 4: "I-practice nila yung chain of custody sa lahat ng mga request for laboratory examinations."

Observation Observations of evidence handling processes resulted in a finding that assigning a single evidence custodian was more accountable and reduced errors. In some, rotating responsibilities amongst several people led to confusion and a lack of documentation. The review of briefings prior to court hearings found that there were gaps in explaining how proper chain of custody procedures should be followed and the need for consistent protocols.

Data/Documentation While these memorandums emphasized the need for clear chain of custody practices, however, they provided no recommendations for how to overcome recurring failures. The review of audit reports suggested that software-based tracking systems would improve transparency and reduce the possibility of human error. Discrepancies in documentation were identified as a major area for improvement in court feedback documents.

PROBLEM NO. 3

What collaborative initiatives can be undertaken between Tagaytay City Satellite Forensic Office and other law enforcement agencies to streamline the chain of custody process?

Theme 8: Collaboration Among Agencies

Respondents highlighted the need for collaboration of the Tagaytay City Satellite Forensic Office, other law enforcement agencies. Sharing of resources including technology and training were seen as important for dealing with chain of custody issues. Participants suggested forming joint task forces or agreements to set procedures for all agencies.

Subtheme 8.1: Importance of Resource Sharing Across Agencies

Vital for getting the chain of custody streamlined is to collaborate with agencies, particularly when there's a lot of agents involved. The importance of teamwork was discussed with each participant showing that SOCO is key to gathering and consolidating evidence when local agencies need assistance. Even so, the problem of having evidence handovers proceed nonsequentially with communication breakdowns leading to misplaced documentation or delay remains. For instance, collaborative operations often did not have a clear delineation of responsibilities, which lead to inefficiencies (Molenveld et al., 2019). When looking at MOUs reviewed, it appeared that there are agreements in place, but they are not very specific regarding resource sharing — that is, funding for joint operations or unified training programs. Shared resources, such as personnel and technology, are not enough for enhanced collaboration: it also requires structured communication channels to close gaps in transitions of evidence. Studies show that such inter agency coordination (Igwe, 2023) is improved by centralized systems and joint task forces. Unless these structural inefficiencies are addressed, agencies risk bringing into doubt the reliability of evidence in court.

Subtheme 8.1: Importance of Resource Sharing Across Agencies

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Tayo yung tumulong... pag SOCO, all in one na yun, lahat ng pieces of evidence na pwede nating icollect."

Participant 2: "Kelangan talaga ng fund kase minsan malalayo yung court duty."

Participant 3: "Personnel para dagdag sa duty receiving... technology para sa encoding ng mga ebidensya."

Observation Improved evidence collection processes were demonstrated by joint operations between agencies, such as SOCO and local police. Nevertheless, occasionally observed communication breakdowns during handovers resulted in delays or misplaced documentation. Collaborative meetings revealed no centralized resources, each agency using its limited capacity, which resulted in inefficiencies in the chain of custody.

Data/Documentation Collaborative practices were outlined in MOUs between agencies, but there were no specific details as to resource sharing, as in joint projects or training programs funded by one agency. Inter agency operations were documented with inconsistencies in record keeping, particularly where evidence was changed hands multiple times.

Theme 9: Role of Communication and Coordination

Investigators must communicate and coordinate well together to maintain the chain of custody, according to participants. The evidence handling process often suffered from poor communication and errors or delays. To overcome these challenges, it was recommended that better teamwork, and regular coordination meetings would be required.

Subtheme 9.1: Improving Communication During Multi-Agency Operations

Maintaining the chain of custody therefore requires effective coordination and communication. The first participant said it was important for SOCO to play its role in making sure all the evidence is counted and properly handled during high stakes cases. Nevertheless, observations of multi-agency operations found that handovers often led to missing signatures or incomplete logs, a finding consistent with previous work on procedural inconsistencies (Reinhold & Reuter, 2023). Participant 3 also mentioned that it's important to have clear

documentation of who is responsible for what in terms of 'last touch'. However, key evidence handling concerns were often unaddressed in the lack of structured agendas in coordination meetings. We found that chain of custody forms reviewed from collaborative operations were often missing proper signature logs indicating poor communication between agencies. These lapses serve as an indication as to why regular cross agency meetings, and enhanced communication protocols between the agency are needed. Clear and frequent communication, backed by standardized documentation templates, is researched to reduce errors and improve evidence reliability (Muinga et al., 2020).

Subtheme 9.1: Improving Communication During Multi-Agency Operations

DATA SOURCE: Interview

EVIDENCE: Participant 1: "Ang SOCO tumulong, diba pag tumawag sila ibig sabihin parang hindi nila kaya. Pag dumating kami, kumpleto na."

Participant 3: "Dun mo makikita kung sino yung last touch ng ebidensya."

Participant 4: "Very important... para ma-establish na hindi siya questionable pagdating sa court."

Observation Case reviews observations showed that communication among investigators was very important to reduce errors in evidence handling. But during high pressure situations, such as multi agency raids, miscommunication was common when responsibilities overlapped, and signatures or logs were missed. Structured agendas in coordination meetings were often absent and often missed opportunities to address critical evidence handling concerns.

Data/Documentation: Collaborative operations chain of custody forms identified frequent gaps in signature logs, indicating poor agency communication. The meeting minutes reflected the court evidence presentation focus but lack of internal coordination in investigations.

PROBLEM NO. 4

What specific training programs or workshops can be developed to enhance the chain of

custody skills and knowledge of investigators in Tagaytay City Satellite Forensic Office?

Theme 10: Training and Skills Development

A major obstacle to maintaining the chain of custody was identified by respondents as gaps in skills and knowledge. Many investigators lacked formal training in evidence handling, leading to inconsistent practices. Participants suggested workshops and practical training programs to improve their ability to follow protocols effectively.

Subtheme 10.1: Transition from Theoretical to Practical Training Approaches

Training and skills development are crucial to ensuring investigators can adhere to chain of custody protocols effectively. Participant 2 emphasized the need for lectures on procedural adherence, particularly on critical aspects like avoiding snow paint corrections in documentation, which courts do not accept. The training sessions that were observed often concentrated on theoretical issues rather, a practical, scenario-based exercise that would better prepare officers for the real-life challenges that could be faced. For example, gaps in courtroom presentation skills were observed in newer officers during training mock trials that did not seem to be able to articulate procedural actions confidently (Di Nota and Huhta, 2019). Training manuals provided overview of procedures but not localized case study that can be helpful to the Tagaytay City Satellite Forensic Office in terms of addressing unique challenges of the region. In addition, attendance in workshops is also inconsistent, as is evidenced by training logs. Research indicates that actually combining the theoretical knowledge with hands on exercises and case specific training significantly increases adherence to chain of custody protocols (Morgan, 2023). Tailored programs with mandatory participation can improve investigator competence, evidence reliability.

Subtheme 10.1: Transition from Theoretical to Practical Training Approaches

DATA SOURCE: Interview

EVIDENCE

Interview Participant 2: "Lecture kung paano lumalakad yung chain of custody... bawal ang snowpaint correction sa court."

Participant 3: "Meron naman silang training yung criminal investigation course."

Participant 4: "Kailangan ng training... para ma-enhance yung kaalaman sa chain of custody."

Observation Often, training sessions observed would focus on theoretical aspects of the chain of custody, but there were few, if any, practical, scenario-based exercises. Less experienced officers had trouble with applying procedures in real life scenarios, especially during mock trials. A few attendees indicated a desire for more specialized training targeted to a particular type of evidence, for example, digital or biological.

Data/Documentation Training manuals offer evidence handling process overview but lacked case studies that are applicable to the evidence handling process in the context of the Tagaytay City. Attendance logs for workshops indicated inconsistent attendance with some people skipping key sessions because of other responsibilities.

Theme 11: Resources and Support

There was a lack of resources, such as personnel, funding, and technology. Participants stated that these limitations prevented them from handling the evidence properly. And they suggested that the government ought to lend more support to ensure the availability of such resources.

Subtheme 11.1: Impact of Resource Limitations on Evidence Integrity

The limited resources make it very difficult for law enforcement agencies in Tagaytay City Satellite Forensic Office to perform effective chain of custody practices. Lack of funding has resulted in outdated technology, understaffed units and insufficiently equipped storage facilities that all detract from integrity of evidence. The observations confirmed that manual processes were being used and they are not only time consuming but also error prone, especially during peak workloads. Both studies have emphasized that the resource constraints usually compel procedural flaws making the criminal investigations weak (Maslen & Paine, 2019). Government investment in forensic technology and staffing and partnerships with private and

NGO partners to bring additional funding and expertise to address these problems will be necessary (Biden, 2023). Facilities can be greatly upgraded and automated systems implemented to dramatically improve resource efficiency and the reliability of evidence handling.

Subtheme 11.1: Impact of Resource Limitations on Evidence Integrity

DATA SOURCE: Interview

EVIDENCE: Participant 2: "Funding for evidence custodial tasks... minsan sariling bulsa pa nagagamit."

Participant 3: "Technology para sa encoding, kasi minsan napupuno na ang computer lalo na sa drugs."

Participant 4: "Personnel dapat alam niya yung trabaho bilang evidence custodian."

Observation Training sessions observed often focused on theoretical aspects of the chain of custody but lacked practical, scenario-based exercises. Less experienced officers were unable to apply procedures in 'real life' scenarios, especially during mock trials. Attendees also said they need specialized training on evidence types such as digital or biological.

Data/Documentation Training manuals provided an overview of evidence-handling procedures but lacked detailed case studies relevant to the Tagaytay City context. Attendance logs for workshops revealed irregular participation, with some personnel missing critical sessions due to conflicting duties.

Conclusion

The chain of custody was the critical role that was studied in the study of evidence integrity during criminal investigations in Tagaytay City Satellite Forensic Office. The research analyzed the challenges, practices, and ways to improve evidence handling, and identified key factors hindering effective evidence handling, and offered actionable solutions. This study draws conclusions regarding what needs to be done immediately to improve evidence reliability and strengthen the criminal justice process.

1. The investigator training in Tagaytay City Satellite Forensic Office is highly variable, with most investigators not understanding the process in the chain of custody. Some

officers with forensic training seemed to know their way around procedures, but lapses in compliance were seen in less critical cases, too. Therefore, this disparity highlights the need for well-organized and well-integrated training programs which enclose theoretical knowledge and practical applications. It is unlikely that evidence integrity can tolerate procedural errors without these measures.

2. Extreme weather conditions, and chaotic crime scenes, present enormous barriers to collecting and preserving evidence as expected. On the other hand, secure evidence, though documented and secured in the field, is all too frequently outside the province of investigators, in some cases by aggravated lack of appropriate tools like waterproof containers and mobile documentation kits. Not only do these conditions increase the risk of evidence contamination but also impede on critical process that can very disadvantage the investigation. Maintaining evidence integrity under all circumstances requires that we address these issues.
3. One of the weakest links in the chain of custody process was documented and record keeping practices. However, the reliability of evidence in court was frequently undermined by errors such as incompleteness or absence of logs, missing signatures and inconsistent timestamps. Most of the time, these lapses occur because manual record keeping systems are both time consuming and prone to human error. Without improvements in documentation protocols and the adoption of digital systems these inefficiencies will continue to jeopardize case outcomes.
4. There is a lack of structured coordination and communication among law enforcement agencies preventing inter agency collaboration. There is a tendency for joint operations to be blighted by unclear roles and responsibilities, which results in misplaced evidence, delays in handovers and procedural gaps. Well defined protocols, regular meetings and shared resources are needed to be able to collaborate effectively and to

have consistent practices across all agencies.

5. As a result, Tagaytay City Satellite Forensic Office now faces limited resources with insufficient funding, outdated technology and understaffed units that still need to be improved for law enforcement. In addition to hindering the ability to lawfully collect and store evidence for later use, these constraints are also implicated in procedural lapses which dilute investigations. Understanding these resource limitations is key to ensuring that the chain of custody process is adequately run and performed without flaw.

Recommendation

Based on the findings of this study, a series of targeted recommendations have been developed to address the challenges identified in the chain of custody process. These recommendations focus on improving investigator training on digital evidence handling and environmental preservation techniques, upgrading resources, enhancing inter-agency collaboration, and implementing efficient documentation systems. By adopting these measures, Tagaytay City Satellite Forensic Office can significantly improve evidence handling practices and ensure the integrity of criminal investigations.

Recommendation 1: Make sure to constantly run tailored training on digital evidence handling and environmental preservation techniques program to improve investigators know about the chain of custody process. Tagaytay City Satellite Forensic Office should conduct an Investigator's Training Proficiency Program on Chain of Custody (ITPPCC) ---a three-day program that integrates theory and practice to boost and deepen investigators' expertise in maintaining evidence integrity. The training program will begin with a strong theoretical foundation session to accumulate in-depth knowledge about the chain of custody process. On the following day, it is dedicated to hands on simulations and scenario-based exercises to prepare officers for real-life challenges. The unmediated trainings and strict mentoring will simulate contemporary challenges such as unpredictability of the weather, limited re-

sources, and the urgency for polished cooperativeness among different agencies. With an emphasis on proper documentation, immersive practice in recreated crime scenes, and the efficient utilization of digital evidence tools, the training program is to establish the consistency of procedures, diminish inaccuracies, and ensure that the evidence is deliberately safeguarded and ready for court presentation.

Recommendation 2: Establish dedicated evidence custodians to oversee handling and storage of evidence. This helps you strengthen accountability, and as well as helping you minimize errors like misplaced documentation and inappropriate storage. Specialized training is needed for custodians to be ready to handle this important job.

Recommendation 3: Replace the manual documentation system with the digital evidence management tools. Such systems can record keeping but in automation style with a lot less human error and more transparency. Features in digital systems should include automated timestamps, secure access, and real time tracking to provide reliability of evidence throughout its lifecycle.

Recommendation 4: Upgrading evidence storage facilities to the standards of forensic evidence. It involves supplying the right instruments: waterproof containers, forensic refuges, secure storage. Evidence degradation should be prevented and that protocols be met, through regular maintenance and audits of storage conditions.

Recommendation 5: Developing clear protocols and regular coordination meetings to strengthen inter agency collaboration. Communication, roles and responsibilities and sharing such resources as training programs or technology should all be the focus of these initiatives. High profile cases can be a joint task forces and parallel cooperation among agencies is achieved.

Recommendation 6: Strengthen Resource Support through Government Funding and Carefully Regulated Partnerships

Encourage increased government funding and explore carefully regulated partnerships with private organizations, non-government organizations (NGOs), and development insti-

tutions to mitigate resource constraints in evidence management. Additional funding may be allocated for the procurement of modern forensic equipment, improvement of evidence storage facilities, recruitment of qualified personnel, and provision of advanced technical training for law enforcement officers and forensic practitioners.

However, to maintain the neutrality, credibility, and integrity of criminal evidence, any partnership with external organizations must be strictly limited to financial, technical, or capacity-building support only, without granting private entities any access, control, or influence over the handling, custody, examination, or disposition of evidence. Clear legal safeguards, transparency mechanisms, and government oversight protocols should be established to ensure that all evidence management processes remain under the exclusive authority of authorized law enforcement and forensic institutions. This approach ensures that while external resources may enhance operational capacity, the chain of custody and evidentiary integrity remain fully protected from potential private sector interference.

Recommendation 7: Reviewing the chain of custody process and conducting regular audits and reviews of compliance and recurrence of

issues. Audits to these should look at assessing storage conditions, documentation practices and procedural adherence. These reviews should be used to recommend corrective actions and to improve evidence handling practice continuously.

Action Plan

The Action Plan outlines key initiatives fixated at heightening efficacy in various collaborative on digital evidence handling and environmental preservation techniques and cooperative movements within Tagaytay Component City Police Station. By focusing on cultivating the streamlined adherence to chain of custody protocols, transition to digital record-keeping systems, enhancing storage facilities and tools, and further improving the communication and resource sharing. Each component of the plan has been meticulously constructed to address particular objectives, with distinctly defined timeframe, consigned personnel, and necessary resources. The outlined actions are sketched to be administered around pertinent forensic units, bearing sustained development and calibration intertwined with entrenched protocols and compliance to professional standards.

Topic	Objectives	Place	Time Frame	Resource Material	Person in Charge
Investigator Training	Improve adherence to chain of custody protocols.	Training Academy, Tagaytay	Q1 2025	Training manuals, case studies	Training Division
Digital Documentation	Transition to digital record-keeping systems.	Tagaytay Police HQ	Q2 2025	Digital systems, IT infrastructure	IT Department
Resource Upgrades	Enhance storage facilities and tools.	Tagaytay Forensic Office	Q3-Q4 2025	Forensic-grade storage equipment	Regional Police Chief
Inter-Agency Collaboration	Improve communication and resource sharing.	Multiple agency locations	Biannual	Shared protocols, centralized databases	Agency Heads

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