International Journal of Innovative Research and Scientific Studies, 8(6) 2025, pages: 1781-1789

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Smart crime informatics and decision support for police–community partnerships

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Abstract

Nowadays, technology continue to rise with new ways to improve public service delivery, especially in areas like law enforcement and public safety. In the Philippines, traditional crime reporting systems faced challenges in law-and-order; they had delayed responses, manual processes, and a lack of community involvement. To deal with these concerns, this study aims to address the challenges to develop Digital Crime Informatics and Community Relationship Management System with Decision Support for Police Provincial Offices. The study utilizes a developmental research approach guided by the Agile Software Development Life Cycle (SDLC). To design, develop and test the system, ISO/IEC 25010 Software Product Quality Standards were used. Findings revealed that the system met important quality standards such as usability, performance efficiency, security, and functional suitability, while the decision support feature enabled the Philippine National Police (PNP) to effectively monitor crime data and location-based information to improve their resource allocation and patrol planning. In conclusion, the system makes police work more efficient, strengthens community involvement in crime reporting demonstrating the potential of technology- driven solutions to improve law enforcement and public safety. The practical implication of this study is that the developed system can serve as a scalable and adoptable model for adoption in other provinces, that supports a modernize way of crime reporting and police-community collaboration.

Keywords: Civilian, Crime, Decision Support, Law Enforcer.

DOI: 10.53894/ijirss.v8i6.10033
Funding: This study received no specific financial support.
History: Received: 14 July 2025 / **Revised:** 15 August 2025 / **Accepted:** 18 August 2025 / **Published:** 19 September 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Introduction

In today's digital age, technology has improved the way people live, work, and connect with their communities. With just a few clicks or taps, services once considered slow or inaccessible are now delivered efficiently—bridging gaps in communication, streamlining public transactions, and empowering individuals to be more involved in governance and

social safety. Different government agencies across the globe are adopting digital transformation not only for modernization but as a step to build trust, promote transparency, and ensure the safety and welfare of the citizens.

In the Philippines, public safety and crime prevention remain essential components of law and enforcement [1]. However, traditional systems of crime reporting and police-community engagement have long been hampered by manual processes, a lack of timely access to data, and minimal citizen participation

Crime reporting systems are analytically important for crime detection and they also play an important role in preventing many crimes. Traditional reporting methods are time-consuming. Phone calls or going to the police station is inefficient. Modern technology makes crime reporting more efficient and improves the accuracy and speed of much of the data collected [2].

As reflected in the Republic Act No. 6975, Section 35, stated that establishing a computer center as one of the administrative and operational support units of the Philippine National Police can help them improve their way of record keeping and other works [3]. One notable initiative under this mandate was the launched of the “e-Sumbong [4] a program under the former PNP Chief Gen. Guillermo Eleazar, which enabled the citizens to report crimes or complaints and police misconduct through digital channels such as email, hotlines, and social media [5]. Each report is secured and checked manually by designated PNP personnel, and each information that is valid and needs immediate action will be forwarded to the concerned police station for proper action. The PNP process of handling records and monitoring complaints has gained the use of Information Technology. However, as observed by the researcher, it is necessary to be more advanced with technological advancements in monitoring, record keeping, decision-making, and consolidating valid reports from the community.

With that, the researchers aimed to develop an online system for Police provincial offices, an online system that enhances the service of our law enforcer to the community. With the system, people can easily report crimes and issues or send concerns and attach files for the report's validity, and the Police personnel can keep track and monitor all the records and take immediate action. The personnel can also put their old records in the system for better consolidation of new and old records. This will help the system to give proper support to the Police Officers. Furthermore, the system can provide statistics of crime reports per barangay and municipalities to assist the police in determining which area has the highest crime rate so they can send PNP personnel to patrol the area.

Similarly, the study of Kale showed that challenges experienced using the current manual system of the PNP about handling reported crimes could be eliminated using an online crime reporting system [6]. It reduces human error and significantly improves the overall efficiency of police operations. The system also has a feature that allows it to monitor and record crime reports online. In addition, to be more valuable and advanced, the researcher added a feature to the system, decision support, to help PNP personnel monitor delinquent areas by providing additional PNP personnel to do a time-to-time patrol so the community will feel safe and secure.

To improve the reporting functionalities, the system integrates a decision support system—a feature that provides analytical insights that is based on aggregated crime data. Understanding and analyzing the data will give better decision support to PNP personnel to improve location-based tracking of crimes and investigations [7]. Additionally, in the study of Hertweck et al. discussed how a decision support system can be more effective and vital in providing timely information to make decision-making efficient [8].

Decision support system is intended to aid police personnel in identifying delinquency patterns [9] allocating resources more effectively, and enhancing visibility in vulnerable areas by providing additional PNP personnel to do a time-to-time patrol so the community will feel safe and se-cure, thereby improving community safety. This initiative aligns with Sustainable Development Goal (SDG) 16: Peace, Justice, and Strong Institutions [10]. This SDG aims to promote transparency and accountable institutions, that enhance access to justice, improving the public safety, and especially strengthening the rule of law through innovative technology.

1.1. Statement of the Problem

The PNP's strides to modernize its crime reporting and relation to the community via "E-Sumbong" and the adoption of technology through Information Technology have not sufficed as the present systems are manual-oriented, disintegrated, and cannot support the decision-making aspect. Specifically, the study sought to answer the following: How will the system be developed based on the Agile System Development Model in terms of project initiation and requirement phase, system design phase, development phase, testing, and deployment? How may the IT experts evaluate the proposed system based on the following ISO/IEC 25010 criteria: functional suitability; performance efficiency; compatibility; usability; reliability security; maintainability; and portability? How may the end-users evaluate the proposed system based on selected ISO/IEC 25010 criteria: functional suitability, performance efficiency, and usability. What is the level of effectiveness of the implementation of the developed system in supporting police operations and strengthening community trust and safety?

2. Literature Review

2.1. Digital Crime Informatics in Law Enforcement

Computer crime informatics in Police is the field of science concerned with the intelligence and information-gathering products of security services. This development is fueled by the recording number of digital crimes, which are challenging law enforcement organizations to adjust their tactics and techniques to fight against these crimes that are on the rise [11].

It reflects the shift towards laws that work in the digital realm and stand a good chance of serving justice expeditiously. The law, however, tends to lag behind the rapid rise in high-tech crime, leaving holes in enforcement and

prosecution despite innovations. The latter point stresses that the continuous requirement of new technology and laws to tackle digital crime is increasingly intricate [12].

Furthermore, integrating digital informatics in policing promotes inter-agency cooperation and information sharing. Centralized databases, real-time analytics, and predictive policing technologies enable police units to better respond to emerging threats and connect the dots between cybercrime networks. However, this requires continuous training, updated legislation, and ethical standards to foster responsible use of digital technologies in crime prevention and prosecution.

2.2. Community Involvement and ICT Integration in Crime Reporting Systems

Integration of innovative technology in crime monitoring system is a great help as well as on how the community will involve in crime reporting. The study of Jurado and Quinto [13] reveals that implementing the e-policing system in the Police Investigation Unit gives better impact. Still, of course, some challenges were drawn during the implementation, like a lack of proper training and knowledge about the system and the internet connection.

In the study of Abidi et al. also points out India's serious crime problem and the immediate necessity for better crime prevention [14]. A proposed android application system is usable by several police authorities. A proposed web application system is also usable by some police authorities. These applications considerably help reduce crime, effectively stop criminal activity and substantially aid victims and witnesses.

Similarly, Tabassum et al. discuss the significant impact of the Internet and information technology on the public and private sectors [15]. With the increasing popularity of internet services and applications, individuals prefer online platforms for reporting suspicious activities instead of visiting police stations. Kn et al. conducted a study that a crime reporting system is a service that Police provide, and there is a gap between reported and unreported crimes [16]. The authors argue that this gap can increase the community's risk of becoming victims and hinder law enforcement's ability to do their job.

Additionally, it will have more impact on the police force if the community is involved in crime reporting. Schreck et al. examined the role of community involvement in crime reporting systems in the United States [17]. The authors found that community involvement can improve the accuracy and completeness of crime reporting, improving crime detection and prevention. The existing literature and studies found that integrating Information Communication Technology has developed a more effective and efficient way of helping the community solve and alleviate crimes in the community.

2.3. Decision Support Systems (DSS) For Law Enforcement

Decision Support Systems (DSS) are a key component in helping to improve public safety and prevent crime by bringing together multiple technologies and data sources to assist in making decisions. These are systems that are made to parse out complex data, assist in emergency response and better administer resources, all in the name of making public safety work more efficiently. DSS stands for a computerized system that supports decision-making by analyzing data and providing recommendations. They use network, computer, and multimedia techniques for the processing and visualization of public safety related information [18].

Furthermore, in the study Hu [19] a decision support system was introduced, which enhances the decision-making process of the Police—the system's ability to analyze data and make predictions can streamline the process of digital policing. By integrating big data analytics [19]. DSS can identify patterns and predict potential criminal activities, enhancing proactive measures [20].

In addition, DSS can support the definition of the best installation sites for police installations, such as a case analyzed on the police military nuclei in Recife, Brazil. The use of the Maximal Covering Location Problem (MCLP) model to compare existing locations of police units with optimal locations makes it clear where police deployment strategies must be focused in order to improve operational effectiveness and response times [21]. DSS based on natural language processing and machine learning can help classify crime reports more effectively, which can be helpful to support faster and more accurate crime analysis [22].

3. Research Methods

The researchers used a developmental research approach with the help of Agile SDLC to design and develop the system. The Agile SDLC model is a hybrid of iterative and incremental processes that focuses on process flexibility and customer satisfaction through the quick delivery of functional software products [23]. This method delves into the developed system's intricacies, encompassing a comprehensive input-process-output framework. The researcher collects and integrates diverse information sources by analyzing the various inputs, such as crime data, community interviews and feedback, and assessment of their manual system.

Figure 1 shows the IPO (Input-Process-Output) model for a research paradigm focused on developing the Digital Crime Informatics and Community Relationship Management System with Decision Support for Police Provincial Offices. It guides the researcher from gathering needed information to designing and developing the system.

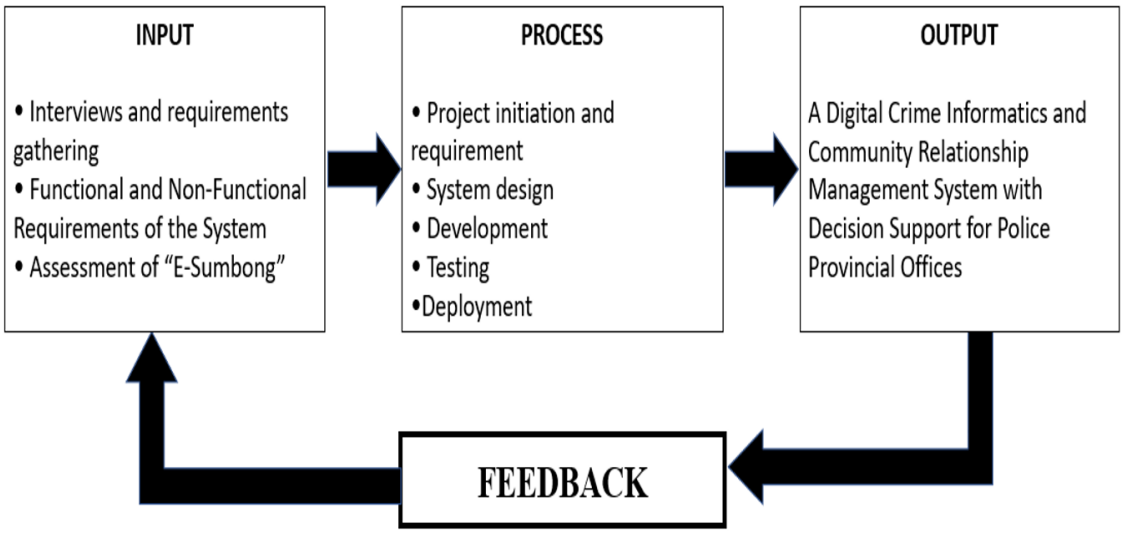

Figure 1.
The Research Paradigm

In addition, a descriptive research technique was utilized in the study to collect data via survey questionnaires to evaluate the validity of the system functioning in terms of system features anchored in the parameter of ISO/IEC 25010 Software Product Quality Standards, which include functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. Additionally, a self-made questionnaire was distributed via google form to evaluate the effectiveness of the system's implementation. To ensure that the questionnaire was valid and reliable, a series of consultations and discussions with scholars and practitioners was done. The reliability coefficient was computed by Cronbach's Alpha, which measures internal consistency, that is, how closely related a set of items are as a group. The result is 0.852, which was considered that the evaluation instrument is statistically reliable and the items included to assess the effectiveness of the system is consistent. This reliability coefficient indicated that the test was reliable.

As seen on Table 1 the respondents include 5 IT practitioners. Also, from a total of 2287 population size, 341 has been computed using Slovin's Formula for PNP personnel of Nueva Ecija as end-user. The researcher conveniently selected a random end-user from the community which is the civilian with a total sample of 341 who are residents from different places in Nueva Ecija. Respondents were interviewed and polled in various ways, including a virtual and face to face presentation, and using Google Forms.

Table 1.
Distribution of Respondents.

Respondents	Sample	Percentage
IT Expert	5	0.72%
PNP Personnel (End-users)	341	49.64%
Civilian (End-users)	341	49.64%
Total	687	100.00%

Table 2 shows 10 of the 341 PNP respondents were purposively selected police personnel from Jaen Police Station, Nueva Ecija and also participated in the evaluation for the level of effectiveness of the system during the implementation. Table 2 presents information based on the role of the respondents from Jaen Police Station. These respondents represented key functional roles in the police station from chief of Police, administrative personnel, investigation officer, WCPD/desk officers and intelligence personnel. This is to provide in-depth insights on the effectiveness of the system's implementation.

Table 2.
Respondents from Jaen Police Station, Jaen Nueva Ecija

Respondents	Sample
Chief of Police	1
Administrative Personnel	2
Investigation Unit	2
WCPD / Desk Officers	3
Intelligence personnel	2
Total	10

The system was evaluated using survey questionnaire, which consisted of three (3) sets of questionnaires for data collection. The IT experts used the first set of questionnaires to evaluate the system's technical characteristics based on the

ISO 25010 Software Product Quality Standards, such as functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

The second questionnaire was administered to 341 administrative staff or PNP personnel of Nueva Ecija and 341 end-users who are residents from different places in Nueva Ecija to evaluate only the basis of ISO 25010 Software Product Quality Standards such as functional suitability, performance efficiency, and usability.

The third part of the questionnaire, the level of effectiveness of the system's implementation, was evaluated by Jaen Police Station, Jaen Nueva Ecija as the venue of pilot testing, based on the following criteria: very effective, effective, needs improvement, and poor. It was made up of six (6) items that the researcher formed rated at 4-point scale.

Interactions between users and the system are depicted in the use-case diagram in Figure 2.

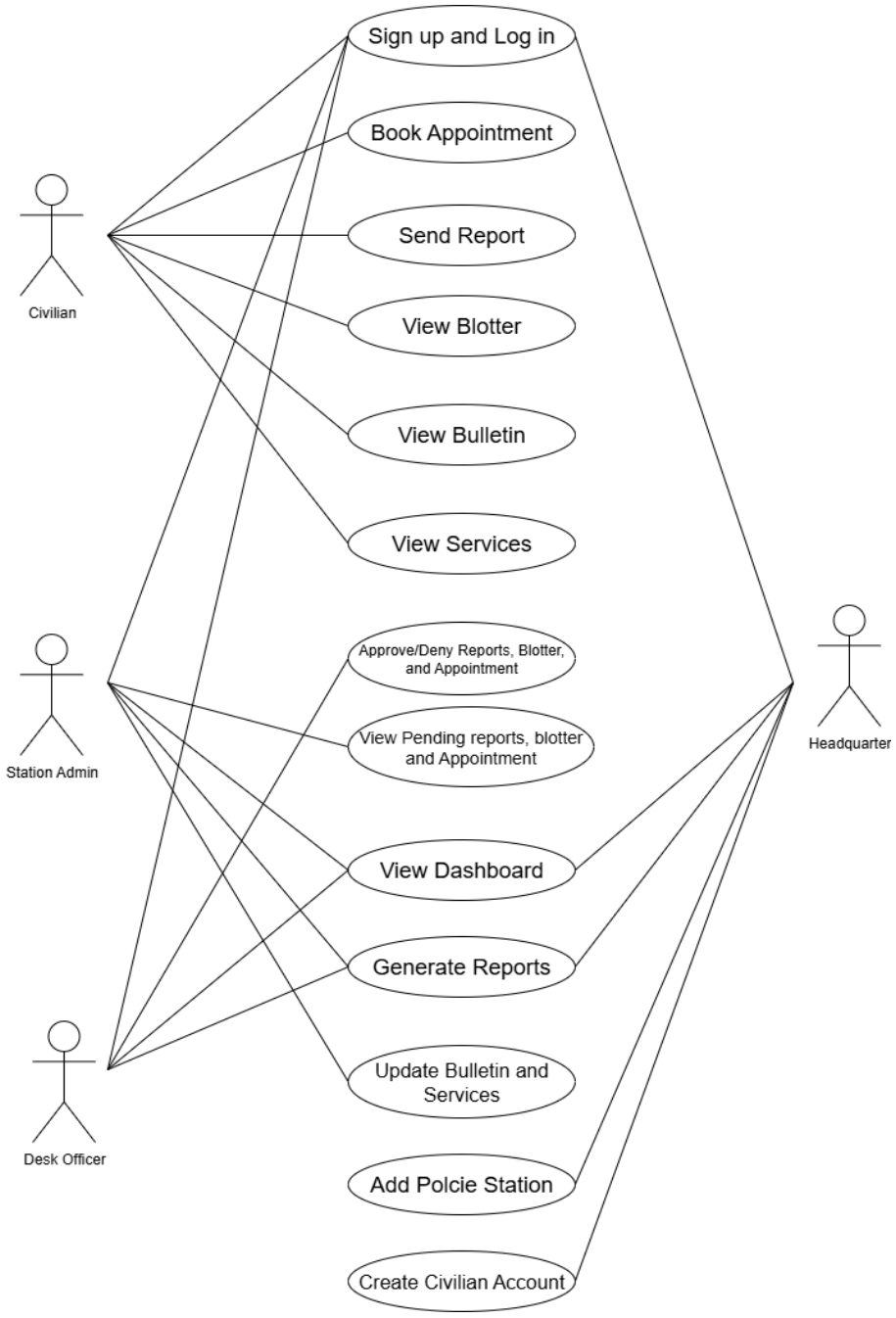

Figure. 2.
Use case diagram.

As shown in the Figure 2 the system has four types of users. They are the civilian, headquarter, station admin, and station desk officer per police station. Each user has different roles and access to the system. The diagram shows that the civilian account can log in, book an appointment, send reports, view blotters, bulletins, and services. While monitoring civilians ' activity, desk officers will then approve or deny submitted reports and blotters from civilian. They can also view dashboard with statistics of approved crime reports and generate reports. Following that, the police station admin account can log in, view pending appointments and blotter request, generate reports, view dashboard, and update bulletins and

services. Finally, the headquarters can log in, view dashboard, add police station, create civilian account, and generate reports.

4. Results and Discussion

The study's findings will be shown in different parts here. First is the use of Agile SDLC in the development of the system. The quantitative responses were also presented based on the feedback/answers of 687 respondents, composed of end-users (PNP personnel and civilian), and IT practitioners, to the standardized evaluation questionnaire. The responses were further evaluated to determine the performance of the system.

Meanwhile, the level of effectiveness of the implementation of the system results were derived from a purposively chosen sub-sample of 10 police officers from the Jaen Police Station (who were also part of the 341 police officer participants). Their opinions provide a deeper insight into system implementation difficulties, use in practice within field operations, and recommendations for further system improvements.

4.1. Agile SDLC

Findings reveal that the system successfully developed with the used of Agile Software Development Life Cycle (SDLC), which emphasizes iterative progress, stakeholder collaboration, and adaptability to changes [24]. The successful implementation of the system reflects the outcomes of each Agile phase as follows:

Project Initiation and Requirement Phase: During this phase, end-users such as police personnel from various units suggest some input on the requirements regarding the development of the system and some operational needs. The core of this phase focused on identifying the functionalities, especially in crime reporting, case tracking, and data sharing.

System Design Phase: Prototypes were made using the data gathered during the project initiation and requirement phase. Police officers' inputs helped the researcher decide what features to add, such as usability features that would make the system easy for all users.

Development Phase: The system was developed in incremental sprints. Different features were added according to the needs of the end-users; real-time reporting was also included, data access into other units within the police station was implemented, and secure login was.

Testing Phase: Each system iteration underwent user acceptance testing (UAT). One participant said, "We use the system to view case status updates and as well as to track progress," indicating that actual users validated critical workflows.

Deployment Phase: The system was ready for implementation upon completing testing, and monitoring is needed to ensure a smooth transition. The Chief of Police stated, "This system helps me monitor the overall flow of operations," reflecting confidence in system reliability post-deployment.

These results demonstrate that Agile SDLC helped develop the system according to its purpose and considered a user-centered framework for system development. The iterative model enabled the developer to adapt quickly to the operational demands of the police force while ensuring user satisfaction.

4.2. ISO/IEC 25010 Software Product Quality Standards

The quantitative data analysis focuses on the evaluation made by the IT experts and the end-users (PNP and civilian) based on the ISO/IEC 25010 standards. Table 3 shows the summary of ratings given by IT experts for various descriptors of a system.

Table 3.
Summary of evaluation made by IT Experts based on ISO/IEC 25010.

Descriptors	Weighted Mean	Verbal Description
Functional Suitability	3.47	Very Functional
Performance Efficiency	3.4	Very Efficient
Compatibility	3.5	Very Compatible
Usability	3.57	Very Usable
Reliability	3.5	Very Reliable
Security	3.56	Very Secured
Maintainability	3.5	Very Maintainable
Portability	3.4	Very Portable
Overall Weighted Mean	3.49	Very Functional, Very Efficient, Very Compatible, Very Usable, Very Reliable, Very Secured, Very Maintainable and Very Portable

As shown in Table 3 the descriptors include functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The ratings for each descriptor are above 3.39 with an overall weighted mean of 3.49, indicating that the IT experts consider the system a quality product and considered very functional, efficient, compatible, usable, reliable, secure, maintainable, and portable. Similar findings were reported by Lagan S. et al., who found high ratings for functional suitability and usability [25]. It supports the assertion that well-designed systems typically receive positive evaluations from experts, making the system more meaningful and valuable.

In addition, Table 4 shows the summary of combined ratings given by end-users, both PNP and civilian, for various descriptors of the developed system based on the ISO/IEC 25010 standards.

Table 4.
Summary of Evaluation made by End-users (PNP and Civilian) based on ISO/IEC 25010.

Descriptors	Weighted Mean	Verbal Description
Functional Suitability	3.63	Very Functional
Performance Efficiency	3.61	Very Efficient
Usability	3.58	Very Usable
Overall Weighted Mean	3.61	Very Functional, very efficient and very usable

As shown in Table 4 the ratings for each descriptor show a positive impact with an overall weighted mean of 3.61, indicating that PNP and civilian end users consider the system very functional, efficient, and usable. It aligns with the study's findings by Pedrosa et al., highlighting the positive impact of user-centered design in achieving high usability scores in public service applications [26]. It emphasizes the needs, preferences, and behaviors of the end users that make the system function well, and by prioritizing user insights, public services can be more effective and performed efficiently by improving user satisfaction and usability.

After using the developed system for a couple of months, the Jaen Police Station personnel evaluated the functions and content of the system. Table 5 shows the evaluation results regarding the level of effectiveness of a Digital Crime Informatics and Community Relationship Management System with Decision Support for Police Provincial Offices indicates that the system was rated as very effective, with an overall average weighted mean of 3.79.

Table 5.
Summary of PNP Personnel's evaluation on the level of effectiveness of the systems Implementation.

Software Product Quality Categories	Weighted Mean	Verbal Description
1. The system covers all the defined user design tasks and user goals.	3.82	Very Effective
2. The system delivers the right results with the required degree of accuracy	3.74	Very Effective
3. With a large number of accesses, the system will remain usable at the same time.	3.73	Very Effective
4. There is time for the system to process and return a response.	3.77	Very Effective
5. The system enables messages between services to be exchanged.	3.84	Very Effective
6. It is easy to use and run the system.	3.86	Very Effective
Overall Weighted Mean	3.79	Very Effective

It reflects the system's effectiveness across various system product quality categories, including task completion, result accuracy, usability under heavy user volume, response time, exchange of information and ease of use. A similar study conducted by Kale in his study about Online Crime Reporting System, that crime monitoring systems would be more effective if the design were based on the actual needs of the police officers and the community (end-users) that also demonstrated high-reliability ratings, emphasizing the importance of these systems in supporting law enforcement agencies effectively [6]. It also highlights the significant decision support system for police officers that enhanced their ability to respond effectively to potential criminal activities**.**

The scores also revealed that the system is very effective, easy to use, and performs well. All respondents agreed that the system has significantly improved and positively impacted their daily work. Respondents from multiple units—from the Chief of Police to desk and intelligence officers—highlighted its contribution to faster crime reporting, better coordination among departments, and improved service delivery.

Qualitatively, feedback from respondents also emphasized the value of interconnectivity. One intelligence personnel say, *"Inter-unit coordination improved as the system supports real-time updates and smooth data exchange between services."* This statement proved how digital transformation can bridge communication gaps in law enforcement, a finding supported by the broader literature on e-policing systems [27].

Additional insight emerged from qualitative responses grouped by role and indicator. A WCPD desk officer remarked, *"The system allows us to report and manage VAWC-related cases properly, and it lessens the paperwork,"* highlighting the system's relevance to specialized units. It aligns with the study of Yuyang et al. that a good system based on predefined roles ensures that they can access relevant information based on their needs and simplify task management, resulting in work easily [28]. From the investigation unit, personnel noted, *"We use the system to retrieve case status updates and track progress,"* indicating its effectiveness in case monitoring and continuity.

The personnel gave some suggestions, including the integration of offline functionality of the system that may be used during their work outside the police station, enhancing the user interface, adding some tools such as maps or timelines, and adding more options to cover more specific case types (e.g., VAWC). These suggestions underscore the system's value and the users' desire for continuous development, leading to greater reliability, efficiency, and convenience [29].

Participants also observed that the system becomes slower when many users access the system simultaneously, which shows the need for technical enhancements on how the system can handle multiple users without logs, particularly in system responsiveness [30].

Most responses were positive, but minor issues to improve were observed in some areas. These are having the system slow down occasionally when many users access the system, limited case category options, and some enhancements for the user interface. A system with both positive and negative feedback integrates two opposite means, but it can enhance the system's stability, adaptability, and responsiveness [31]. Despite these challenges, users found the system intuitive, easy to adopt, and essential to modernizing their operational workflow.

These mixed yet constructive insights help explain the overall perception of the system's value. While the core functionalities meet operational expectations, the comments suggest a strong need for practical refinements in offline support, case classification, and visual presentation of data.

According to Rewatkar et al. using this kind of technology for crime reporting promotes active participation of the community in public safety initiatives [32] it also enhances the relationship and cooperation between the citizens and authorities. It also made the retrieval of the community's trust in the law enforcer successful. It has also been proven that the collaborative effort between the Police and the community facilitates information gathering, solves problems more easily, and allows the Police to respond more quickly.

5. Conclusion and Recommendations

Based on the significant finding, this study confirms that developing the Digital Crime Informatics and Community Relationship Management System with Decision Support for Police Provincial Offices significantly enhances crime data management, facilitates informed decision-making, and strengthens collaboration between the Police and the community. Using a computerized system to handle and monitor records can make the work more efficient. Findings also show that the system effectively supports crime reporting and inter-unit coordination within the police organization.

It was developed successfully following the stages of the Agile SDLC. Quantitative results revealed high ratings based on a structured questionnaire aligned with ISO 25010 Software Product Quality Standards across key dimensions such as functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. Upon implementation, it was recognized that the system was easy to use, it is responsive, and has the ability to handle tasks accurately under varying loads. In addition, qualitative feedback provides deeper insights into user experiences. They highlight some significant enhancements in the workflow. While more are satisfied, users also offered constructive suggestions for enhancement.

Due to its high level of reviews, support, and technical capabilities, the developed system can be utilized across different provinces, ensuring efficient transactions, enhanced community service and security, and, most especially, proper training with the involved end-users. The system meets the ISO criteria that make the system ready to use. Platform testing confirmed that the system is compatible with various operating systems, hardware, and software environments. It also proves that the system was protected against several vulnerabilities, such as SQL injection attacks.

Overall, the study attests that the developed system meets its intended objectives and is highly supported by end-users. Responses from participants proved its potential for broader implementation, with minor enhancements to optimize user experience and system performance.

Based on the results of this study, the following recommendations are proposed:

The developed system could be used in different police provincial offices because of the advantages stated and the high level of acceptance and functionality received from the evaluators. In terms of future research, this study opens several avenues for further exploration. Additionally, gathering user feedback and incorporating user suggestions can contribute to ongoing improvements.

Future research could examine the system's effectiveness across regional police offices to assess its scalability and adaptability in varying operational contexts. Additionally, conducting a comparative analysis between the system and other e-governance platforms in law enforcement could yield insights into best practices and system design improvements. Future studies could also explore the correlation between system usage and improvements in investigative outcomes or case resolution efficiency, offering data-driven evidence of its impact on public safety.

Moreover, research focusing on user training, digital readiness, and system literacy—particularly in rural or low-resource areas—could contribute to developing more inclusive and accessible IT solutions for government use. Expanding the evaluation using ISO/IEC 25010 standards across individual system modules may provide a more detailed technical assessment to inform future system enhancements and policy decisions.

References

[1] L. Leikuma-Rimicane, R. F. Ceballos, and M. N. Medina, "Location and type of crimes in the philippines: Insights for crime prevention and management," *International Journal of Criminal Justice Sciences,* vol. 17, no. 1, 2023. https://doi.org/10.48550/arXiv.2302.04572

[2] O. F. Uchenna, U. I. Kelechi, D. A. Kelechi, and K. M. Okorie, "Integrated unified crime information management system," *International Journal of Innovative Technology and Exploring Engineering,* vol. 11, no. 8, pp. 87–92, 2022.

[3] Republic Act No. 6975, "An act establishing the philippine national police under a reorganized department of the interior and local government," Republic Act No. 6975, 1990. https://www.officialgazette.gov.ph/1990/12/13/republic-act-no-6975/

[4] Philippine News Agency, "PNP vows prompt action on citizens' complaints thru 'E-Sumbong," Philippine News Agency, 2021. https://www.pna.gov.ph/articles/1140495

[5] C. L. Caliwan, "PNP vows prompt action on citizens' complaints thru 'E-Sumbong," Philippine News Agency, 2021. https://www.pna.gov.ph/articles/1140495

[6] S. Kale, "Online crime reporting system," *Gurukul International Multidisciplinary Research Journal,* vol. 12, no. 6, pp. 102–107, 2024. https://doi.org/10.69758/gimrj2406i8v12p102

[7] A. F. Ghazali, A. Suhaimi, N. M. M. Noor, and A. Retnowardhani, "A framework of spatial decision support system (SDSS) for crime investigations," *International Journal of Business and Technology Management,* vol. 5, no. 2, pp. 1-7, 2023.

[8] P. Hertweck *et al.*, "The backbone of decision support systems," *International Journal of Information Systems for Crisis Response and Management,* vol. 10, no. 4, pp. 65–87, 2018. https://doi.org/10.4018/IJISCRAM.2018100104

[9] M. V. Villarica, F. F. Balahadia, J. R. Asor, and G. M. B. Catedrilla, "Development of a crime reporting system to identify patterns of crime in Laguna," *International Journal of Computing Sciences Research,* vol. 7, pp. 1444-1467, 2023. https://doi.org/10.25147/ijcsr.2017.001.1.110

[10] N. Hafiz and F. Sabrina, "Impact of globalization on human rights in developing countries: Connecting the dots towards the SDGs," *Society & Sustainability,* vol. 5, no. 1, pp. 54-68, 2023.

[11] S. V. Zuev and A. I. Zazulin, "Digital criminal procedural code: New concept of law development," *Pravoporâdok: Istoriâ, Teoriâ, Praktika,* vol. 40, no. 1, pp. 67–77, 2024. https://doi.org/10.47475/2311-696x-2024-40-1-67-77

[12] M. Dolgieva, "Digital crime object," *Bulletin of Tomsk State University,* vol. 483, pp. 253–260, 2022. https://doi.org/10.17223/15617793/483/27

[13] D. C. Jurado and Q. R. Quinto, "Level of implementation of e-policing system on police investigation units in the province of Bataan," *Proceedings of the International Interdisciplinary Conference on Sustainable Development Goals,* vol. 6, no. 1, pp. 20–31, 2024.

[14] S. I. A. Abidi, A. A. Almeida, L. G. Soares, and A. Pansare, "Interactive map application for real-time crime reporting," presented at the International Conference on Advances in Computing, Communication, and Control (ICAC3), 2021.

[15] Tabassum K et al, "E-cops: An online crime reporting and management system for Riyadh city," presented at the 1st International Conference on Computer Applications & Information Security (ICCAIS), Riyadh, Saudi Arabia, 2018.

[16] K. Jayasinghe and M. Perera, "Impact of crime reporting system to enhance effectiveness of Police service," *International Journal of Computer Trends and Technology,* vol. 69, no. 5, pp. 1-5, 2021.

[17] Schreck C. et al, "Crime reporting and the role of the community: An analysis of crime reporting systems in the United States," *Journal of Crime and Justice,* vol. 41, no. 4, pp. 1–20, 2018.

[18] J. Zhang, "Construction and application of public security visual command and dispatch system," presented at the International Conference on Big Data Analytics for Cyber-Physical-Systems, 2020.

[19] L. Hu, "A decision support system for type determination and catalog inclusion of police equipment based on system state characteristics," presented at the 2023 6th International Conference on Software Engineering and Computer Science (CSECS), 2023.

[20] G. Chen, W. Qiu, Z. Shen, G. Chen, L. Zhang, and Q. Liu, *A proposed three-dimensional public security prevention and control system based on big-data*. Cham: Springer, 2020. https://doi.org/10.1007/978-3-030-62743-0_46

[21] A. P. H. d. Gusmão, R. M. A. Pereira, M. M. Silva, and B. F. d. C. Borba, *The use of a decision support system to aid a location problem regarding a public security facility*. Cham: Springer, 2019. https://doi.org/10.1007/978-3-030-18819-1_2

[22] T. Hariguna and A. Ruangkanjanases, "Adaptive decision-support system model for automated analysis and classification of crime reports for e-government," *Journal of Applied Data Sciences,* vol. 4, no. 3, pp. 303-316, 2023. https://doi.org/10.47738/jads.v4i3.127

[23] C. S. Maharao, "A study on impact of agile and devops practices on software project management success," *ShodhKosh: Journal of Visual and Performing Arts,* vol. 3, no. 1, pp. 757–767, 2022. https://doi.org/10.29121/shodhkosh.v3.i1.2022.3397

[24] V. Kate, S. Bhalerao, and V. Sharma, "Exploring agile methodologies in educational software development-A comparative analysis and project management insights," presented at the 2023 IEEE International Conference on ICT in Business Industry & Government (ICTBIG), 2023.

[25] S. Lagan, L. Sandler, and J. Torous, "Evaluating evaluation frameworks: A scoping review of frameworks for assessing health apps," *BMJ Open,* vol. 11, no. 3, p. e047001, 2021. https://doi.org/10.1136/bmjopen-2020-047001

[26] G. V. Pedrosa, A. Judice, M. Judice, L. Araújo, F. Fleury, and R. Figueiredo, "Applying user-centered design on digital transformation of public services: A case study in brazil," presented at the Proceedings of the 23rd Annual International Conference on Digital Government Research, 2022.

[27] N. Aminudin, T. H. Andika, Z. Zulkifli, F. Rizki, and A. A. Bastian, "Improving digital communication skills for members of pringsewu police resort," *DIKDIMAS: Jurnal Pengabdian Kepada Masyarakat,* vol. 3, no. 1, pp. 1-6, 2024. https://doi.org/10.58723/dikdimas.v3i1.251

[28] G. Yuyang *et al.*, "Managing tasks in a content management system," *Journal of Information Technology Management,* vol. 29, no. 2, pp. 45–58, 2018.

[29] K. Mkhwanazi, P. A. Owolawi, T. Mapayi, and G. Aiyetoro, "An automatic crime reporting and immediate response system," International Conference on Artificial Intelligence, 2020. https://doi.org/10.1109/ICABCD49160.2020.9183837

[30] S. Li, Z. Wang, and W. Zhang, "Automatically expanding user-management system for massive users in the cloud platform," *Applied Sciences,* vol. 14, no. 6, p. 2549, 2024. https://doi.org/10.3390/app14062549

[31] W. Huang *et al.*, "Double-loop PID-type neural network sliding mode control of an uncertain autonomous underwater vehicle model based on a nonlinear high-order observer with unknown disturbance," *Mathematics,* vol. 10, no. 18, p. 3332, 2022.

[32] B. Rewatkar *et al.*, "Enhancing public safety with online crime reporting system," *International Journal of Advanced Research in Science, Communication and Technology,* 2024. https://doi.org/10.48175/ijarsct-16992