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Development of a Web-Based E-Administration System for the Indralaya Ogan Ilir Police Department Utilizing the System Development Life Cycle (SDLC) Approach

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Abstract: Information technology advancement has transformed administrative processes across government institutions, particularly within law enforcement agencies. This research examines the development of a web-based E-Administration application at the Indralaya Ogan Ilir Police Resort, designed to improve efficiency, accuracy, and accessibility in administrative services. The application development follows the System Development Life Cycle (SDLC) methodology, providing a structured approach through planning, analysis, design, implementation, testing, and maintenance phases. The study seeks to optimize administrative workflows, minimize paperwork dependency, and strengthen data security protocols. Results demonstrate that system implementation delivers more effective and efficient administrative processes, enhancing service quality and operational performance within the police department. Future research should focus on integrating advanced security measures and expanding functionality to accommodate broader administrative requirements.

Keywords: E-Administration; SDLC; Web-Based System; Police Administration; System Development.

1. Introduction

The digital revolution has fundamentally reshaped how organizations operate across various sectors, with public administration experiencing particularly profound changes in recent decades. Government institutions worldwide have recognized that embracing technological solutions is no longer optional but rather a necessity for survival in an increasingly connected world. Digital integration within administrative processes has emerged as a cornerstone for achieving enhanced efficiency and transparency, fundamentally altering the relationship between government agencies and the communities they serve. The Polres Indralaya Ogan Ilir, operating as a crucial law enforcement agency within the Indonesian police structure, finds itself at the forefront of this technological transformation, recognizing the urgent need to modernize its administrative capabilities to better serve both internal operations and public needs [1]. The complexity of modern police administration demands sophisticated solutions that can handle multiple concurrent processes while maintaining security and reliability. Traditional paper-based systems, which have long been the backbone of police administrative work,

increasingly prove inadequate in addressing the dynamic challenges faced by contemporary law enforcement agencies. Officers and administrative staff often struggle with time-consuming manual processes, redundant data entry, and limited access to critical information when needed most. These operational inefficiencies not only impact internal productivity but also affect the quality of services provided to the community. Consequently, the implementation of a comprehensive e-administration system has become paramount for streamlining operations, improving service delivery mechanisms, and fostering more effective communication channels both within the organization and with external stakeholders.

The System Development Life Cycle (SDLC) methodology offers a proven framework for addressing these complex technological challenges through its systematic and structured approach to software development. This methodology encompasses comprehensive processes for planning, analyzing, designing, implementing, testing, and maintaining information systems, providing developers with a roadmap that minimizes risks while maximizing project success rates. When applied to e-administration application development, SDLC methodology ensures that every aspect of the project receives thorough attention, from initial conception through final deployment and ongoing maintenance. The structured nature of this approach particularly benefits complex projects like police administration systems, where security, reliability, and user acceptance are critical success factors. Moreover, the iterative nature of SDLC allows for continuous refinement and improvement throughout the development process, ensuring that the final product aligns closely with organizational needs and user expectations [2].

Understanding the unique operational environment of Polres Indralaya Ogan Ilir represents a fundamental prerequisite for successful system development. Police departments operate under distinct pressures and requirements that differ significantly from other government agencies, including strict security protocols, 24/7 operational demands, and complex hierarchical structures. A primary objective of this research therefore focuses on conducting comprehensive analysis to identify specific needs and requirements of the police resort regarding its administrative processes. This investigative approach involves extensive consultation with various stakeholders, including administrative staff, field officers, supervisors, and management personnel, to ensure that all perspectives are considered in the system design process. Previous research in software development has consistently demonstrated that thorough requirements analysis serves as the foundation for successful implementations, as it creates alignment between system functionalities and actual user needs, thereby reducing the likelihood of costly modifications during later development phases [3].

The evolution toward web-based applications represents a significant paradigm shift in how organizations approach information system deployment and management. Unlike traditional desktop applications that require individual installation and maintenance on each workstation, web-based solutions offer unprecedented flexibility and accessibility that particularly benefits organizations with diverse user bases and varying technological capabilities. For Polres Indralaya Ogan Ilir, implementing a web-based e-administration application promises to substantially enhance both accessibility and usability for staff members and public users alike. Officers working in the field can access critical administrative functions through mobile devices, while administrative staff can work remotely when necessary, maintaining operational continuity even during challenging circumstances. The universal accessibility of web-based platforms eliminates many traditional barriers to system adoption, as users can access the system from virtually any device with internet connectivity. Contemporary research consistently supports the effectiveness of web-based solutions in increasing user satisfaction and engagement levels, factors that prove critical for the long-term success of any administrative system implementation [4].

The transformative potential of e-administration extends far beyond internal operational improvements, offering unprecedented opportunities for enhanced public engagement and community service delivery. Modern citizens increasingly expect government agencies to provide convenient, accessible, and transparent services that match the quality and convenience they experience in private sector interactions. By implementing comprehensive e-administration applications, police departments can provide citizens with streamlined access to various services and information, ranging from incident reporting and permit applications to community safety resources and crime prevention materials. This enhanced accessibility fosters greater transparency and accountability within police operations, as citizens gain better visibility into departmental processes and service offerings. Extensive research in e-government initiatives has consistently demonstrated that well-implemented e-administration systems significantly enhance public trust in government institutions by promoting openness, responsiveness, and accessibility. These improvements in public perception and engagement ultimately contribute to more effective community policing efforts and stronger police-community relationships [5].

Quality assurance through comprehensive testing represents one of the most critical phases in the development of any e-administration application, particularly for law enforcement systems where reliability and security cannot be compromised. The development process at Polres Indralaya Ogan Ilir will incorporate rigorous testing and evaluation phases as mandated by SDLC methodology, ensuring that every component of the system functions correctly under various operational conditions. This testing approach encompasses

multiple dimensions, including functional testing to verify that all features work as intended, security testing to identify and address potential vulnerabilities, performance testing to ensure system responsiveness under heavy loads, and user acceptance testing to confirm that the system meets end-user expectations and requirements. Contemporary software development research emphasizes that comprehensive testing strategies significantly reduce the occurrence of defects in production environments while improving overall software quality and user satisfaction. The investment in thorough testing during development phases ultimately proves cost-effective by preventing expensive fixes and system failures after deployment 0.

The comprehensive development of a web-based e-administration application at Polres Indralaya Ogan Ilir using established SDLC methodology represents more than just a technological upgrade; it embodies a strategic transformation that promises to enhance both the efficiency and effectiveness of administrative processes throughout the police department. This initiative addresses multiple organizational challenges simultaneously, from reducing paperwork and streamlining workflows to improving data accuracy and enhancing security protocols. By maintaining focus on addressing specific organizational needs while incorporating continuous user feedback throughout the development process, this research endeavors to create a solution that not only meets immediate operational requirements but also provides a foundation for future enhancements and expansions. The anticipated outcomes extend beyond mere operational improvements, potentially serving as a model for similar technological transformations across other law enforcement agencies throughout Indonesia [7]. The insights and recommendations generated through this study are expected to contribute valuable knowledge to the broader field of e-government implementation, particularly within the context of Indonesian public administration and law enforcement modernization efforts.

2. Related Work

The conceptualization and development of web-based e-administration systems for law enforcement agencies represents a complex intersection of multiple research domains, each contributing essential insights that inform both theoretical understanding and practical implementation strategies. The proposed e-administration system for Polres Indralaya Ogan Ilir draws upon a rich foundation of existing literature that spans various aspects of e-government implementation, system development methodologies, and technological frameworks. This comprehensive body of research provides crucial guidance for creating an effective and efficient administrative system that can meet the unique demands of modern police operations while serving the broader community effectively.

The fundamental principles underlying e-administration systems have been extensively explored by researchers who recognize the transformative potential of digital technologies in government operations. Mourad and Mahdaoui (2020) provide a comprehensive examination of e-administration frameworks, revealing that the primary objective of such systems extends far beyond simple digitization of existing processes. Their research demonstrates that effective e-administration fundamentally aims to enhance the quality of services provided to citizens through strategic implementation of information and communication technology (ICT), creating new paradigms for government-citizen interaction that were previously impossible with traditional administrative approaches. The researchers emphasize that e-administration represents one of the most promising areas for ICT application, with the continuous goal of improving service quality through technological integration. This foundational understanding directly aligns with the core objectives of the proposed e-administration system for Polres Indralaya Ogan Ilir, which seeks to revolutionize service delivery mechanisms while maintaining the security and reliability standards essential for law enforcement operations. Their emphasis on holonic systems and generic modeling approaches provides a theoretical framework that supports the iterative development approach proposed for this project, particularly in handling complex administrative scenarios such as emergency response coordination [11].

The practical implementation challenges associated with e-government systems have been thoroughly investigated by various scholars who recognize that technological solutions must address real-world operational complexities. Wibawa *et al.* (2023) conduct a detailed analysis of e-government information technology implementation, revealing critical insights into the administrative and judicial aspects of digital transformation within government institutions. Their research highlights the fundamental importance of data management protocols and expert engagement throughout the administrative process, factors that prove particularly crucial when developing systems for law enforcement agencies where data integrity and security cannot be compromised. The study's exploration of system error handling mechanisms, data upload procedures, and automated acceptance/rejection protocols provides valuable technical specifications that directly inform the development of robust e-administration systems. Their investigation into administrative judges' prudence in applying e-government technology reveals important considerations regarding system reliability, error prevention, and the critical nature of data accuracy in government operations. These insights

prove especially relevant for police departments, where administrative decisions often have significant legal and operational implications that require precise documentation and secure data handling procedures [12].

The architectural foundations of e-government systems have been systematically examined by researchers who understand that successful implementation requires careful consideration of technical frameworks and system design principles. Wu (2010) presents comprehensive research on e-government technical framework systems, introducing the concept of Service-Oriented Architecture (SOA) as a foundational approach for developing scalable and efficient e-government platforms. This architectural approach offers significant advantages for police administration systems, as it enables improved openness and operational efficiency while maintaining the modular design necessary for complex organizational structures. The SOA framework's emphasis on interoperability and service reusability aligns perfectly with the diverse operational requirements of police departments, where different units and personnel may require access to various system components while maintaining appropriate security boundaries. Wu's research demonstrates how proper architectural planning can significantly enhance system performance and maintainability, providing essential technical guidance for developing systems that can evolve and adapt to changing organizational needs without requiring complete system overhauls [13].

The broader applications of web-based technologies in various administrative contexts have been explored by researchers who recognize the universal potential of digital solutions across different sectors. Kleftodimos and Evangelidis (2013) provide a comprehensive overview of web mining applications, demonstrating the versatility of web-based technologies in supporting administrative functions across multiple domains, including e-commerce, e-services, public administration, medicine, and specialized professional fields. Their research reveals that web-based systems offer unique advantages in data collection, analysis, and decision-making processes that can significantly enhance administrative efficiency through intelligent data processing and pattern recognition capabilities. For police departments, these capabilities translate into improved incident tracking, resource allocation, and performance monitoring systems that can provide administrators with real-time insights into operational effectiveness. The researchers' emphasis on the educational and analytical potential of web-based systems suggests additional opportunities for training and professional development applications within the proposed e-administration system, enabling continuous learning and skill development for police personnel [10].

Advanced system architectures for web-based applications have been investigated by researchers who understand that modern administrative systems require sophisticated technical foundations to support complex operational requirements. El Ghouch *et al.* (2020) conduct a detailed examination of adaptive learning systems based on agents and web services, providing valuable insights into the development of intelligent, responsive administrative platforms. Their implementation using the JADE platform (Java Agent Development) demonstrates practical approaches for creating systems that can adapt to user behavior and organizational changes over time through intelligent agent-based interactions. This adaptive capability proves particularly valuable for police administration systems, where operational procedures and requirements may evolve in response to changing community needs, legal requirements, or technological advances. The researchers' focus on agent-based architectures and web services integration suggests opportunities for developing systems that can provide personalized user experiences while maintaining consistent administrative standards across the organization, enabling more efficient workflow management and improved user satisfaction [9].

The integration of decision support capabilities within web-based administrative systems has been thoroughly explored by researchers who recognize that modern government operations require sophisticated analytical tools to support effective decision-making processes. Ahmed and Layeb (2024) present a systematic review of web-based decision support systems, revealing the potential for incorporating advanced ontological frameworks and unified modeling approaches into administrative platforms. Their research demonstrates how combining Unified Modeling Language (UML) with Ontology Web Language (OWL) can create more intelligent and responsive administrative systems that can better support complex decision-making processes through enhanced semantic understanding and automated reasoning capabilities. For police administration, these capabilities could enable more sophisticated case management, resource allocation, and strategic planning functions that leverage both structured data and expert knowledge to support operational decisions. The researchers' emphasis on systematic approaches to system development and their focus on clinical applications provide methodological guidance that complements the SDLC framework proposed for this project, particularly in areas requiring high reliability and precision [8].

The practical implementation of classification and information management systems within e-government contexts has been investigated by researchers who understand that effective administrative systems must be capable of handling large volumes of diverse information efficiently. Xu *et al.* (2010) develop sophisticated web page classification algorithms specifically designed for e-government applications, demonstrating the importance of incorporating intelligent information processing capabilities into administrative systems. Their innovative hybrid approach, combining unsupervised clustering methods with Support Vector Machine techniques, provides a proven framework for developing systems that can automatically categorize and

process administrative information with high accuracy and efficiency. The algorithm's successful implementation and testing within actual e-government systems demonstrates its practical viability and effectiveness in real-world applications. This capability proves particularly valuable for police departments, where officers and administrators must manage diverse types of documentation, reports, and correspondence on a daily basis, requiring efficient categorization and retrieval mechanisms. The researchers' focus on standardizing job procedures through technological solutions aligns perfectly with the administrative modernization goals of police departments [14].

The convergence of these diverse research streams creates a comprehensive foundation for developing the proposed e-administration system for Polres Indralaya Ogan Ilir. Each study contributes unique insights and proven methodologies that, when integrated effectively, can support the creation of a robust, efficient, and user-friendly administrative platform. The collective wisdom embedded in this research literature provides both theoretical guidance and practical solutions that can address the complex challenges associated with modernizing police administrative operations while maintaining the security, reliability, and accountability standards essential for law enforcement agencies. This multidisciplinary approach ensures that the proposed system will benefit from established best practices across various domains while addressing the specific requirements of law enforcement administration.

3. Research Method

In this study, which focuses on the development of web-based e-administration applications in police departments using the System Development Life Cycle (SDLC) methodology, a mixed-methods research approach will be employed. This approach integrates both qualitative and quantitative research methods, enabling a comprehensive analysis of the technical and human factors involved in the system development and implementation process. The selection of this methodological framework recognizes that developing effective e-administration systems for law enforcement requires understanding both the technological requirements and the complex human dynamics that influence system adoption and success.

The qualitative component of this research will gather in-depth insights from various stakeholders through carefully designed data collection methods. Semi-structured interviews will be conducted with key personnel at Polres Indralaya Ogan Ilir, including police officers, administrative staff, and supervisory personnel. These interviews will explore participants' current experiences with administrative processes, their technological comfort levels, and their specific needs and expectations for an improved e-administration system. The interview approach allows for flexible exploration of topics that emerge during conversations, ensuring that important insights are not overlooked. Focus group discussions will complement individual interviews by bringing together different stakeholder groups to discuss system requirements and implementation concerns. These sessions will be particularly valuable for understanding how various roles within the police department might be affected by the new system and for identifying potential areas of consensus or conflict. Additionally, focus groups with community members who regularly interact with police administrative services will provide crucial external perspectives on service quality expectations and user experience requirements. Suharto (2019) demonstrates that successful implementation of digital technology in government services requires deep understanding of local administrative contexts and existing service delivery patterns. This insight guides the qualitative research design by ensuring that data collection captures not only technical requirements but also the cultural and organizational factors that influence system effectiveness [15].

The quantitative dimension will collect measurable data to validate qualitative findings and provide objective metrics for system evaluation. Comprehensive surveys will be administered to all relevant personnel within the police department to quantify user preferences, technology readiness, and baseline satisfaction levels with current administrative processes. These surveys will employ standardized instruments to ensure reliable measurement of key factors such as perceived usefulness of technology, ease of use expectations, and willingness to adopt new systems. Performance metrics will be systematically collected throughout the development process to provide objective measures of system effectiveness. These metrics will include measurable indicators such as task completion times, processing accuracy rates, user engagement levels, and service delivery efficiency. Pre- and post-implementation data collection will enable rigorous evaluation of the system's impact on operational performance and user satisfaction. Rahman and Sari (2020) emphasize the importance of measuring both technical performance and user acceptance when implementing information technology solutions in Indonesian police contexts. Their research provides valuable guidance for selecting appropriate metrics and evaluation criteria that reflect the specific challenges and opportunities within law enforcement environments [16].

The mixed-methods approach is strategically aligned with each phase of the SDLC methodology to ensure that research findings directly inform system development decisions. During the requirements analysis phase, qualitative insights from interviews and focus groups will be systematically translated into functional system

requirements, while quantitative survey data will help prioritize features and establish performance benchmarks. The system design phase will incorporate user experience insights from qualitative research alongside technical specifications derived from quantitative analysis. Throughout the implementation and testing phases, continuous feedback mechanisms will combine qualitative user experience evaluations with quantitative performance monitoring. This integrated approach ensures that the system development process remains responsive to user needs while maintaining objective standards for technical performance and reliability. Nugroho and Wibowo (2020) highlight the critical importance of capacity building and training considerations when introducing digital technologies to police personnel. Their research informs this methodology by ensuring that data collection includes adequate assessment of training needs and support requirements for successful system implementation [17]. The combination of qualitative and quantitative methodologies provides a holistic understanding of the challenges and opportunities associated with implementing the e-administration application. Qualitative methods will reveal the nuanced requirements and concerns that might not be captured through surveys alone, while quantitative data will provide the measurable evidence needed to validate design decisions and demonstrate system effectiveness. Creswell and Plano Clark (2018) provide the theoretical foundation for this mixed-methods approach, demonstrating how the integration of different research perspectives can yield more comprehensive and reliable findings than either method used independently. Their framework guides the systematic combination of qualitative and quantitative data to ensure that both technical specifications and human factors are adequately addressed in the system development process [18].

Data collection will follow established protocols that ensure both methodological rigor and ethical compliance. All participants will provide informed consent, and data will be collected and stored according to appropriate confidentiality standards. Qualitative data from interviews and focus groups will be transcribed and analyzed using thematic analysis techniques to identify key patterns and requirements. Quantitative data will be analyzed using appropriate statistical methods to identify significant relationships and trends. The triangulation of data from multiple sources and methods will enhance the validity and reliability of research findings. Regular analysis sessions will compare findings across different data collection methods to identify areas of convergence and divergence, ensuring that the final system design reflects a comprehensive understanding of user needs and technical requirements.

4. Result and Discussion

4.1 Results

The Indralaya Ogan Ilir Police Department, like many law enforcement agencies, faces significant challenges related to bureaucratic inefficiencies. These inefficiencies often result in slow response times and hinder effective communication within the department and with the public. According to Suharto (2019), traditional administrative processes can lead to delays in decision-making and a lack of transparency, which ultimately affects public trust in law enforcement. To address these challenges, the implementation of a web-based e-administration application can streamline administrative workflows, reduce paperwork, and facilitate quicker access to information, thereby enhancing overall operational efficiency. Another critical issue faced by the Indralaya Ogan Ilir Police Department is the management of data. Inefficient data handling can lead to errors, loss of information, and difficulties in retrieving necessary records. As highlighted by Rahman *et al.* (2020), many police departments struggle with outdated systems that do not support effective data management practices. The proposed e-administration application aims to centralize data storage and improve data accuracy through automated processes. By implementing a robust database system, the police department can ensure that all relevant information is easily accessible, thus improving decision-making and operational effectiveness. Community engagement is another area where the Indralaya Ogan Ilir Police Department can improve. Traditional methods of communication often fail to reach all segments of the community, leading to a disconnect between the police and the public. According to Setiawan *et al.* (2021), effective communication strategies are essential for building trust and cooperation between law enforcement and community members [5]. The e-administration application can incorporate features such as online reporting, feedback forms, and community forums, allowing citizens to engage with the police department more effectively. This two-way communication can foster a sense of partnership and enhance public safety initiatives. The successful implementation of the e-administration application also hinges on the training and capacity building of police personnel. Many officers may lack the necessary skills to effectively use new technologies, which can hinder the adoption of the system. As noted by Nugroho and Wibowo (2020), training programs are essential for ensuring that staff are equipped to utilize digital tools effectively [17]. The proposed solution involves developing comprehensive training modules that cover not only the technical aspects of the application but also best practices for data management and community engagement. By investing in training, the police department can enhance the overall effectiveness of the e-administration system. Finally, the

research emphasizes the importance of continuous feedback and iterative improvements in the implementation process. Engaging stakeholders throughout the development and post-implementation phases is crucial for ensuring that the e-administration application meets the evolving needs of the police department and the community it serves. As highlighted by Creswell and Plano Clark (2018), involving stakeholders such as police personnel, community members, and IT experts can provide valuable insights that inform ongoing enhancements to the system. This collaborative approach not only improves the application but also fosters a sense of ownership among stakeholders, leading to greater acceptance and utilization of the new system.

The Indralaya Ogan Ilir Police Department, similar to many other law enforcement agencies, encounters significant challenges stemming from bureaucratic inefficiencies and slow response times. These issues not only hinder operational effectiveness but also negatively impact public trust and satisfaction. As highlighted by Suharto (2019), the traditional administrative processes often lead to delays in service delivery, which can compromise the department's ability to respond promptly to community needs [15]. Addressing these inefficiencies is crucial for enhancing the overall performance of the police department and ensuring that it meets the expectations of the public it serves. The implementation of a web-based e-administration application presents a viable solution to these challenges. By streamlining administrative processes, this application can significantly improve data management and facilitate better communication both internally among staff and externally with the community. As Suharto (2019) suggests, such technological advancements can lead to more efficient workflows, enabling police officers and administrative personnel to focus on their core responsibilities rather than being bogged down by outdated procedures [15]. Ultimately, the adoption of an e-administration system can enhance the department's responsiveness and effectiveness, fostering a stronger relationship with the community and improving overall service quality.

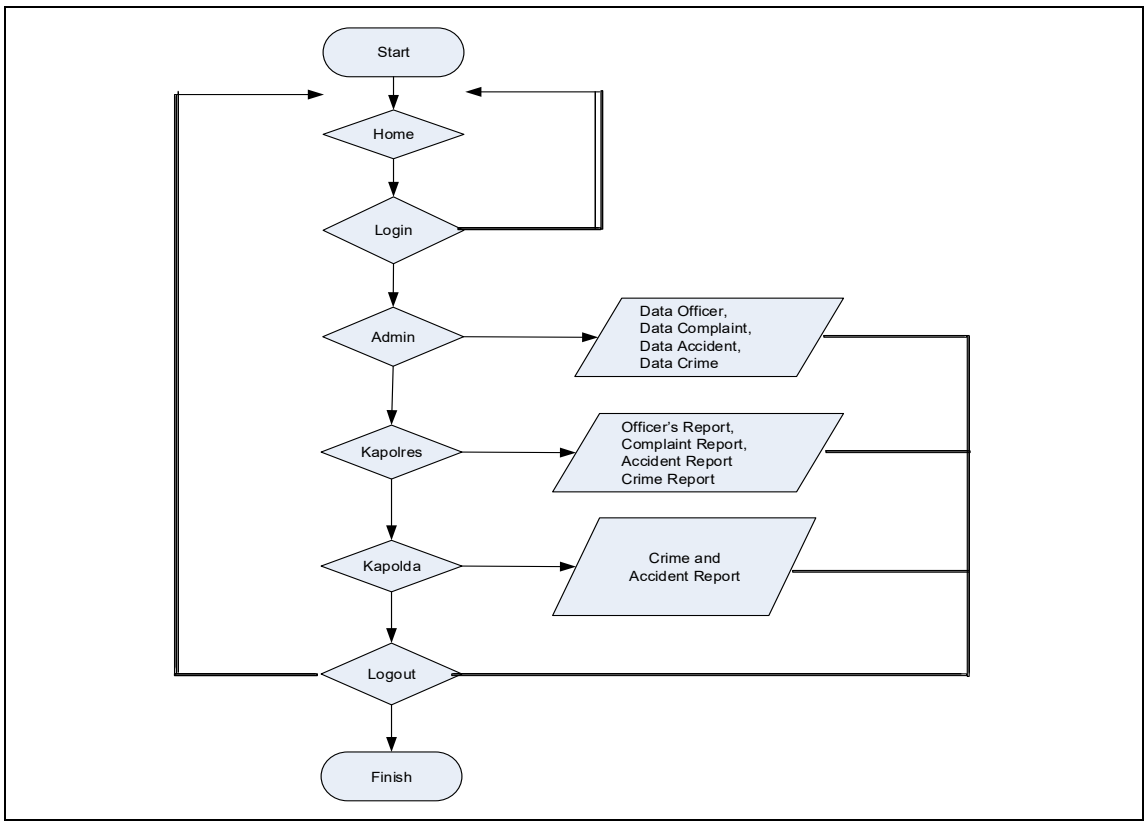

Figure 1. Flow Chart System

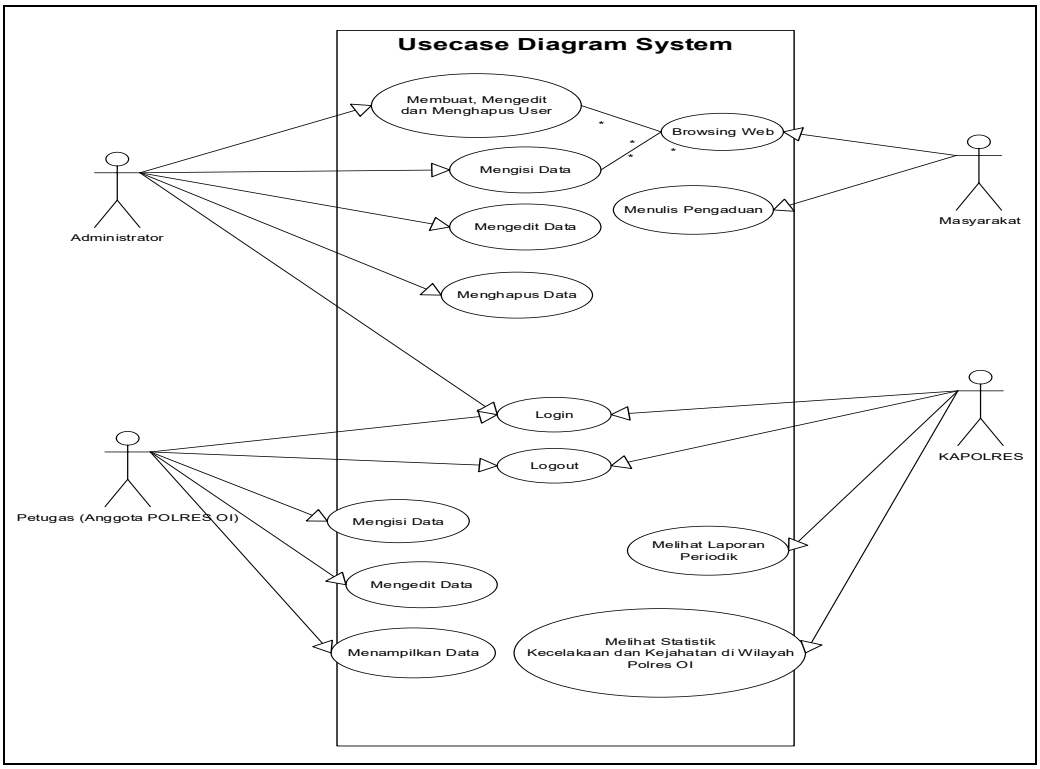

Figure 2. Use Case Diagram System

The following is an explanation of the use case diagram in Figure 2 of interactions between various users (actors) and the system for a web-based e-administration application at the Indralaya Ogan Ilir Regional Police. The following is a detailed explanation of the functions associated with each user in the diagram.

1) Actors and Their Functions
The e-administration system incorporates four distinct user categories, each with specific roles and responsibilities. The Administrator serves as the primary system manager with comprehensive authority to create, manage, and handle user accounts while maintaining control over user permissions to ensure that only authorized personnel can access the system and perform designated tasks. Additionally, administrators oversee all data within the system, maintaining its accuracy and integrity through adding, updating, or deleting records as necessary, and possess the capability to generate various reports based on collected data for analysis and decision-making purposes. The Community represents external users who interact with the system through web browsing functionality, allowing them to access the web application and view information and services provided by the police department. Community members also have access to manual guidance features, including user manuals and comprehensive guides that help them understand how to effectively utilize the application's various features and capabilities, promoting transparency and public engagement with law enforcement services. Police Staff constitute the operational users of the system who must complete a secure login process to access sensitive information and maintain data security. Similar to administrators, police staff can manage data relevant to their specific duties, including entering new information and updating existing records, while also possessing the ability to retrieve and display data as needed for their operational tasks, ensuring that necessary information remains readily available when required for law enforcement activities. The Police Chief represents the senior management level with strategic oversight responsibilities, including the ability to securely logout of the system to maintain security protocols when finished using the application. The police chief can view periodic reports generated by the system that provide valuable insights into various operational metrics and performance indicators, and access statistical data related to crime rates and other relevant metrics within their jurisdiction, supporting strategic planning and resource allocation decisions.

2) Summary of Use Case Functions
The use case diagram effectively illustrates the comprehensive interactions between different user categories and the system, highlighting several critical functional areas that ensure efficient police department operations. User management functions enable administrators to maintain complete control over user accounts and permissions while ensuring secure access protocols are maintained throughout the system. Data management capabilities allow both administrators and police staff to effectively manage

and manipulate information, ensuring that all data remains current, accurate, and accessible for operational needs. Community access features provide citizens with the ability to browse the application and access instructional materials, promoting transparency and fostering meaningful engagement between law enforcement and the public. Finally, reporting and analytics functions enable the police chief to access comprehensive reports and statistical data, facilitating informed decision-making processes and supporting strategic planning initiatives that enhance overall departmental effectiveness and community service delivery.

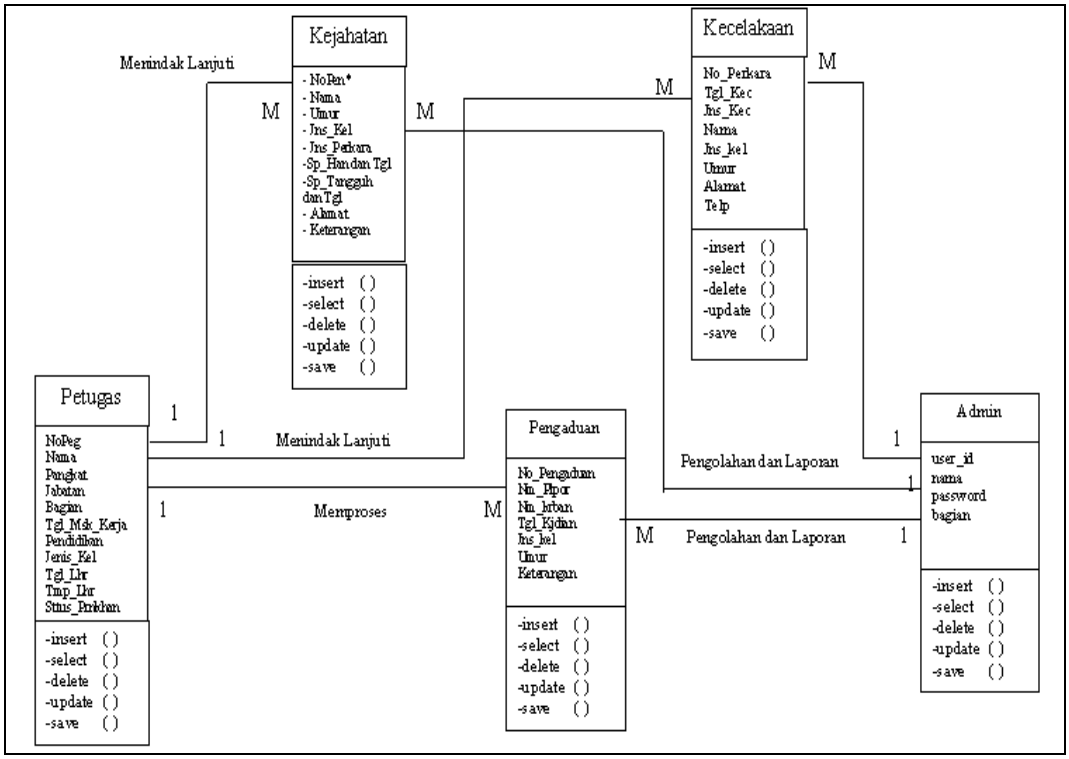

Figure 3. Class Diagram System

The class diagram presented in Figure 3 provides a comprehensive illustration of the relationships and interactions between various classes within a system specifically designed to manage the complex operations of a police department. This diagram serves as a blueprint for understanding how different components of the system work together to facilitate efficient data management, case tracking, and administrative oversight within the law enforcement environment.

3) Classes and Their Functions

The system architecture consists of five main classes that work together to manage police department operations effectively. The Petugas (Officer) class serves as the central entity in the system, containing comprehensive information about police personnel including their employee number (NoPeg), name (Nama), rank (Pangkat), position (Jabatan), department (Bagian), date of joining (Tgl_Msk_Kerja), education level (Pendidikan), date of birth (Tgl_Lhr), place of birth (Tmp_Lhr), and marital status (Status_Perkawinan). This class implements standard database operations through methods such as insert(), select(), delete(), update(), and save(), allowing for complete management of officer records. The Petugas class maintains one-to-many relationships with both crime and accident cases, as well as complaint records, reflecting the reality that a single officer can handle multiple cases across different categories. The Kejahatan (Crime) class manages all crime-related data within the system, storing essential information such as case number (NoPer), suspect or victim name (Nama), age (Umur), gender (Jns_Kel), type of crime (Jns_Pidana), crime scene location (Sp_Pidana), date of occurrence (Sp_Tanggal), address (Alamat), and detailed description (Keterangan). Like other classes in the system, it implements comprehensive CRUD operations through insert(), select(), delete(), update(), and save() methods. The class maintains a many-to-one relationship with the Petugas class, ensuring that each crime case is assigned to a specific officer for investigation and follow-up, while allowing officers to manage multiple cases simultaneously. The Kecelakaan (Accident) class handles accident-related records, containing attributes such as case number (No_Petkara), type of accident (Jns_Kec), involved person's name (Nama), gender (Jns_Kel), age (Umur), address (Alamat), and contact phone number (Tlp). This class also implements the standard set of database operations and maintains a many-to-one relationship

with the Petugas class, ensuring proper assignment and tracking of accident cases. The structure allows for efficient management of traffic accidents and other incidents that fall under police jurisdiction, providing a systematic approach to record keeping and case management. The Pengaduan (Complaint) class manages citizen complaints and reports, storing critical information including complaint number (No_Pengaduan), complainant name (Nm_Pelpr), name of the reported party (Nm_Terlapor), gender (Jns_Kel), age (Umur), and detailed description of the complaint (Keterangan). This class supports the same database operations as other system classes and maintains relationships with both the Petugas and Admin classes. The many-to-one relationship with Petugas ensures that complaints are properly assigned to officers for investigation, while the relationship with Admin allows for administrative oversight and management of the complaint process. The Admin class provides system administration capabilities, containing user identification (user_id), administrator name (nama), password for security, and department affiliation (bagian). This class implements all standard database operations and maintains a one-to-many relationship with the Pengaduan class, allowing administrators to oversee complaint processing and generate reports. The Admin class serves as the backbone for system security and management, ensuring that proper access controls are maintained while facilitating efficient administration of all system functions. Together, these five classes create a comprehensive framework for managing police department operations, from personnel management to case tracking and community engagement.

4.2 Discussion

Following the presentation of the information system results that have been developed, this discussion section will elaborate on the operational processes within the information system framework. The primary objective of this system is to facilitate administrative tasks for Ogan Ilir Police personnel in managing crime and accident data processing. Furthermore, the implementation of this innovative system aims to enhance operational time efficiency significantly. The information system architecture comprises multiple interface pages: the main homepage, administrative pages for leadership personnel, and dedicated pages for police station staff members. The homepage serves as the primary login gateway, while the administrative interface provides leadership with access control management and comprehensive reporting capabilities. Meanwhile, the police station staff interface enables complete data management operations across all system modules.

Figure 4. Interface System

The homepage represents a comprehensive flowchart illustrating the data circulation patterns within the proposed system design framework. This flowchart encompasses various operational processes that demonstrate the interconnected relationships between the entire system architecture and external organizational units. The functional capabilities of each navigation link include the following components: The HOME section displays the primary website navigation menu for user accessibility. The "GETTING TO KNOW OI POLICE" module presents historical information and background details about the Ogan Ilir Police organization. The "VARIOUS MANAGEMENT PROCEDURES" section provides comprehensive information regarding different administrative processes available through the Ogan Ilir Police services. The "PUBLIC SERVICE" portal displays community service forms encompassing complaint submissions, case reporting mechanisms, incident documentation, guest registration systems, and official Ogan Ilir Police contact information. The LOGIN interface presents authentication forms containing user identification credentials and password verification systems.

Figure 5. List of Public Complaints

The administrative interface for "Public Complaints List" within the Ogan Ilir Police system delivers essential functionality for managing and processing community complaints effectively. The administrative page functions encompass several critical operational areas. The complaint display system presents comprehensive complaint listings including detailed information such as complaint reference numbers, complainant identification, incident dates and classifications, plus timestamp records for complaint updates. The navigation system incorporates browsing options including First, Previous, Next, and Last buttons enabling administrators to efficiently navigate through multiple complaint pages. Interactive action buttons allow administrative personnel to take appropriate measures regarding specific complaints, while deletion capabilities enable complaint removal from the system database when necessary. User information displays current operator details and administrative group classifications, ensuring authorized personnel maintain exclusive access to complaint management functions. The menu system offers sidebar navigation with additional administrative capabilities including profile editing, password modification, and access to supplementary system features. This interface plays a crucial role in efficient complaint management operations, ensuring prompt and appropriate response to community issues by police department personnel.

Figure 6. List of Case Reports

The administrative interface for "Case Reports List" within the Ogan Ilir Police system serves multiple important functions for case report management and oversight operations. The administrative page functionality includes comprehensive case report displays presenting detailed case information such as unique case identification numbers, reporter names identifying individuals who submitted cases, case reporting dates, case type classifications including theft or assault categories, and update timestamps indicating the most recent information modifications. Navigation controls feature browsing buttons including "First," "Previous," "Next," and "Last" options, allowing administrators to efficiently navigate through extensive case report databases containing multiple entries. Search and filtering capabilities, while not explicitly visible in the interface, typically include search functionality enabling administrators to quickly locate specific cases based on various criteria such as case numbers or incident types. Case management operations potentially provide administrators with additional functionality for managing individual cases, including editing case details, updating case statuses, or adding supplementary notes and documentation. User information displays current

operator credentials in the header section, indicating active personnel managing case reports, which maintains essential accountability and tracking protocols. Status indicators may include visual markers such as "CAPTURED" or "DELETE" options showing current case states, helping administrators prioritize actions based on urgency levels or case importance. Overall, the "Case Reports List" interface represents a vital component of the administrative system, enabling efficient case report management, facilitating navigation through multiple database entries, and ensuring administrators can effectively oversee law enforcement activities within their jurisdictional boundaries.

Figure 7. List of Cases

The administrative interface for "Incident List" within the Ogan Ilir Police system provides several key operational functions for managing and overseeing incident report documentation. The administrative page functionality encompasses multiple essential areas of operation. The incident report display system presents comprehensive incident listings including critical details such as unique incident identification numbers, reporter names identifying individuals who documented incidents, incident occurrence dates, incident type classifications such as fire or theft categories, and update timestamps showing the most recent report modifications. Navigation controls include browsing buttons such as "First," "Previous," "Next," and "Last" options, enabling administrators to efficiently navigate through multiple incident report pages within the database system. Edit functionality provides "Edit" buttons for individual incidents, allowing administrators to modify incident report details as required, which maintains crucial accuracy and ensures up-to-date information management. Data management capabilities enable administrators to handle incident data effectively, ensuring all reported incidents receive proper documentation, regular updates, and remain accessible for subsequent action or analytical purposes. User interaction design prioritizes ease of operation, allowing administrative personnel to quickly access and manage incident reports, which proves essential for timely emergency responses and effective law enforcement operations throughout the jurisdictional area.

The creation of a web-based e-administration application for the Indralaya Ogan Ilir Police Department represents a necessary evolution in law enforcement administrative operations. Such technological advancement offers potential improvements in operational effectiveness, service quality, and organizational transparency within police functions. The System Development Life Cycle (SDLC) methodology provides a structured approach that guides systematic development and deployment of the e-administration platform while addressing stakeholder requirements and operational expectations. Research evidence supports the transformative potential of e-administration systems in law enforcement agencies. Oladimeji and Abdulkareem's investigation reveals that electronic police platforms substantially improve essential operational capabilities, particularly crime documentation and complaint management systems, leading to better public service delivery [21]. Their work shows how e-police platforms streamline crime reporting processes and strengthen police-community interactions through digital interfaces. Linos and Riesch's field research provides valuable evidence that reducing administrative complexities within police operations produces measurable improvements in organizational efficiency [19]. Their study on administrative burden reduction in police recruitment demonstrates how technological solutions can eliminate bureaucratic obstacles that traditionally delay critical police functions. These findings address procedural inefficiencies common in conventional police administrative systems, which often result in delayed response times and compromised service delivery. The research by Wibawa, Sudarsono, Istislam, and Hadiyantina supports the implementation of e-government technologies in administrative contexts, emphasizing careful application of information technology systems in judicial and administrative settings [22]. Their work stresses the importance of thoughtful system design and

implementation to maintain data integrity and operational reliability. Linos, Reinhard, and Ruda's experimental research on police recruitment illustrates how technological interventions can create more equitable and efficient processes within law enforcement organizations [20]. Their findings indicate that well-designed digital systems can improve organizational performance across various operational areas while promoting fairness. The collective research evidence supports the development of the Indralaya Ogan Ilir Police Department's e-administration application by providing a theoretical foundation for expected benefits of digital transformation in law enforcement administrative processes. The evidence suggests that such systems improve operational efficiency while enhancing service quality and promoting organizational transparency and accountability. Successful implementation requires careful attention to user training, system maintenance, and ongoing evaluation to ensure the application meets its intended objectives. The transition from traditional administrative methods to digital systems demands adequate preparation and support for personnel who will operate the new platform.

5. Conclusion and Recommendations

The development of a web-based e-administration application at the Indralaya Ogan Ilir Police Department represents a significant advancement in modernizing administrative processes within law enforcement. The research demonstrates the critical role of e-administration in enhancing operational efficiency, improving service delivery, and fostering greater transparency and accountability in police operations. Through the application of the System Development Life Cycle (SDLC) methodology, the project ensures a structured and systematic approach to the development and implementation of the e-administration application. By integrating both qualitative and quantitative research methods, the study provides a thorough understanding of the needs and expectations of stakeholders, as well as the technical requirements for successful implementation. The findings indicate that the adoption of a web-based e-administration system can address the challenges faced by traditional administrative processes, such as bureaucratic inefficiencies and slow response times. By streamlining workflows, improving data management, and enhancing communication, the new system is expected to significantly improve the overall effectiveness of the Indralaya Ogan Ilir Police Department.

The research underscores the importance of continuous feedback and iterative improvements throughout the implementation process of the e-administration application. Engaging a diverse group of stakeholders is crucial to ensure that the application effectively meets the evolving needs of both the police department and the community it serves. Key stakeholders include:

1) Police Officers and Administrative Staff
   These individuals are the primary users of the e-administration application. Their perspectives and experiences are invaluable for identifying practical challenges and areas for improvement in the system.
2) Community Members
   Engaging with the local community is essential to understand their expectations and needs regarding police services. Feedback from community members can help tailor the application to enhance public service delivery and foster trust between the police and the community.
3) IT Professionals and System Developers
   These stakeholders are responsible for the technical aspects of the application. Their expertise is vital for implementing necessary updates and ensuring the system remains functional and secure.
4) Local Government Officials
   Collaboration with local government representatives can facilitate resource allocation and support for the project, ensuring that it aligns with broader public service goals and policies.
5) Legal and Compliance Experts
   Involving legal advisors ensures that the application adheres to relevant laws and regulations, particularly concerning data privacy and security.

By actively involving these stakeholders throughout both the development and post-implementation phases, the police department can create a more effective and responsive e-administration application that not only enhances operational efficiency but also strengthens community relations. The research contributes to the existing body of knowledge on e-administration in law enforcement while providing practical guidance and recommendations for future initiatives aimed at leveraging technology to enhance public service delivery. The successful implementation of the e-administration application at the Indralaya Ogan Ilir Police Department can serve as a model for other police departments seeking to modernize their administrative functions and improve their overall service quality.

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