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Analysis and Design of the Archiving Information System for the Special Crime Unit Case Study: Criminal Investigation Unit (Satreskrim) of Palembang City Police

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Abstract

This study aims to design and develop an information system for digital archiving to optimize and streamline access to archival records using a centralized database. The final outcome is a fully functional archiving system constructed with PHP and MySQL, applying the Total Architecture Synthesis (TAS) method. Data collection involved interviews, literature reviews, observation, and system testing. The analysis identified several major constraints: the high volume of incoming case files, lack of documentation on file custodians, limited accessibility of data, and difficulty for leadership to monitor case files in the Special Crime Unit of the Palembang City Police. In addition, vulnerability to file loss and prolonged data searches were common. The proposed solution, designed using object-oriented methods and the TAS framework, produced a web-based information system capable of online operation. This system enhances performance within the Special Crime Unit by enabling secure, efficient, and accessible digital archiving.

Keywords

Archiving System, Information System, Total Architecture Synthesis, Web-Based Application, Special Crime Unit

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Introduction

The rapid advancement of computer and information technology has brought transformative changes to the operational mechanisms of both public and private institutions. In the era of digital transformation, organizations are increasingly required to manage information efficiently, accurately, and securely to maintain competitiveness and support informed decision-making. One of the key components of effective organizational management is the development of data and archive management systems that enable quick retrieval and proper storage of critical records. Archives play a vital role as authentic, permanent, and legally valid documentation that reflects the institution's memory and accountability. For long-standing organizations with continuous data accumulation, the presence of a reliable archiving system becomes an indispensable necessity rather than a convenience.

The management of archives is not merely a matter of storage but also an essential element in administrative control and institutional governance. In many government organizations, particularly in sectors involving legal and security functions, archives serve as evidence of official actions, investigations, and decisions. Conventional archiving methods, which rely on paper-based systems and manual filing, are no longer sufficient to handle the growing volume and complexity of modern institutional data. Manual processes tend to be time-consuming, space-consuming, and prone to human error. Consequently, the adoption of digital archiving systems has become a fundamental strategy for ensuring accuracy, transparency, and accountability in public sector information management.

The development of information technology, particularly database management systems, has revolutionized how data are stored, retrieved, and maintained. Modern digital systems offer various advantages such as real-time access, structured categorization, and centralized control of information. Through the use of relational databases and cloud-based storage, institutions can achieve higher efficiency in managing archives. However, the benefits of digitalization can only be fully realized if supported by a well-integrated and centralized system. In the absence of such integration, data fragmentation and redundancy may occur, leading to inefficiencies in retrieval and monitoring processes. Thus, a carefully designed information system architecture is crucial to ensure the optimal functionality of digital archiving systems.

Within the context of law enforcement agencies, particularly the Special Crime Unit (Unit Pidana Khusus) under the Criminal Investigation Unit (Satreskrim) of the Palembang City Police, effective data management holds even greater significance. The unit handles a large number of cases each month—approximately 200 cases, accumulating to around 1,200 within six months. These cases encompass diverse categories of special crimes that require systematic documentation, ongoing tracking, and secure storage. Despite the availability of computers for administrative operations, case files are still organized manually in local folders without standardized database management. This method not only limits accessibility but also complicates coordination among officers and supervisors, resulting in delays in case monitoring and decision-making.

The main issues identified in the current system include several critical weaknesses: (1) limited data accessibility, where officers must physically access office computers to obtain case information; (2) difficulty for leaders in tracking the progress of ongoing cases; (3) vulnerability

to data duplication, misplacement, and loss; and (4) prolonged search times due to decentralized and unstructured storage. These challenges highlight the urgent need for a comprehensive technological solution that can address both administrative and operational inefficiencies. Without such an improvement, the performance and responsiveness of the Special Crime Unit will remain suboptimal, affecting the quality of law enforcement services and public trust.

In response to these challenges, this research proposes the design and development of a centralized, web-based archiving information system specifically tailored to the operational context of the Special Crime Unit. The proposed system is designed to streamline the management of case archives by enabling authorized personnel to access, update, and monitor records through a secure online platform. Features such as data encryption, role-based authentication, and automated logging are implemented to ensure confidentiality, integrity, and accountability. This innovation aims not only to improve workflow efficiency but also to strengthen data security and institutional transparency.

By implementing an integrated digital archiving system, the Special Crime Unit of Palembang City Police can achieve significant improvements in operational performance and service quality. The system will support real-time supervision by unit leaders, reduce administrative redundancy, and minimize risks related to file duplication or data loss. Furthermore, it will provide a scalable foundation for future technological developments within the police institution, aligning with Indonesia's broader agenda for digital governance and e-policing. Therefore, this study is expected to contribute both practically and theoretically to the development of efficient information systems for public institutions that manage sensitive and high-volume data.

Methodology

This study adopts a descriptive research method, which aims to systematically describe factual conditions, ongoing processes, and organizational phenomena as they exist within the operational environment of the Special Crime Unit (Unit Pidana Khusus) at the Criminal Investigation Unit (Satreskrim) of Palembang City Police. According to Sangadji and Sopiah (2010), descriptive research is particularly suitable for identifying and analyzing real-world situations without manipulating variables, allowing researchers to interpret conditions objectively. In this study, the descriptive method was applied to examine the current manual archiving system, identify user needs, and design a digital solution that aligns with the unit's administrative workflow. The methodology emphasizes understanding institutional contexts and user behaviors to ensure that the resulting system is both technically effective and operationally relevant.

Data collection was conducted using four complementary techniques: interviews, literature review, observation, and system testing. The interviews involved structured discussions with the Head and members of the Special Crime Unit to identify operational challenges, user expectations, and workflow requirements related to the management of case archives. The literature review focused on gathering theoretical and technical insights from books, academic journals, and authoritative online sources concerning information systems, database management, and digital archiving. This phase provided the conceptual foundation for system design and ensured that the model followed established best practices. Meanwhile, observation was carried out directly within the Special Crime Unit to analyze existing manual

documentation and filing procedures. Through this approach, researchers were able to identify inefficiencies in storage, accessibility, and data retrieval that informed the functional specifications of the proposed digital system.

To validate the feasibility and effectiveness of the designed system, system testing was conducted using a prototype that was deployed and evaluated by officers and supervisors within the unit. The testing process employed a black-box testing approach, focusing on functionality, interface usability, and system reliability. Feedback from users was collected to assess ease of use, response time, accuracy, and the security of stored data. This feedback was then analyzed and used to refine the system's features and improve overall performance. The integration of user-centered testing ensures that the final design aligns with practical operational needs and enhances efficiency in managing criminal case archives. Overall, the combination of descriptive analysis and iterative testing guarantees that the developed archiving information system is both contextually grounded and empirically validated for real-world law enforcement applications.

Results and Discussion

The results of the needs analysis revealed the following essential requirements for the proposed archiving system:

1. Identification of file custodians: The system must record which officer is responsible for each case file.
2. Online accessibility: The system should be accessible remotely via the internet.
3. Leadership access: Supervisors must be able to monitor case progress and file ownership.
4. User authentication: Each user must log in using a username and password to ensure data security.
5. Categorized data retrieval: Search functionality must allow filtering by legal article, month, and year.

SystemModeling

The system design employed the Total Architecture Synthesis (TAS) approach, incorporating object-oriented modeling techniques. The analysis produced use-case diagrams, activity diagrams, class diagrams, and database designs to represent system processes and relationships.

Database Structure

The database was developed using phpMyAdmin and consists of five main tables:

Tabel	Description
User	Contains user ID, name, password, and access level (admin, officer, leader).
Article	Stores article codes and descriptions of criminal statutes.
Archive	Contains detailed information on each case, including file number, suspect name, legal article, status, and digital attachments.
Region	Lists areas of crime scenes (Tempat Kejadian Perkara – TKP).

Suspect	Records personal information about suspects (name, date of birth, address, and type of crime).

The web-based system was implemented using PHP and MySQL, hosted on the domain www.satreskrim-polrestapalembang.com

Interface Overview

The system provides multiple interfaces and functionalities:

1. Login Page: For secure authentication of users.
2. Admin Dashboard: Allows administrators to manage users, archives, and system settings.
3. User Menu: Enables officers to access, input, and search for case archives.
4. Articles and Regions Modules: Facilitate management of statutory articles and crime locations.
5. Data Input Forms: For entering suspect and case information.
6. Analytics Dashboard: Provides visual graphs and reports to support decision-making.

These modules collectively support an integrated and efficient digital archiving process tailored to law enforcement operations.

The implementation of this system provides substantial improvements in the management of case files within the Special Crime Unit. By centralizing data storage, the system ensures all case archives are consolidated within a single database, accessible through a secure online network. The system offers several advantages:

1. Efficiency: Retrieval of case files is faster and more accurate through categorized search capabilities.
2. Security: Authentication and role-based access control minimize risks of unauthorized access or data loss.
3. Transparency: Supervisors can remotely monitor file progress and performance indicators.
4. Data Integrity: Reduces duplication and loss through structured and encrypted storage.

The adoption of web technologies such as PHP and MySQL provides a scalable and cost-effective solution that can be expanded across other police units. Furthermore, the TAS method ensures modular design and maintainability, allowing future integration with other digital platforms used within the Palembang City Police. This study demonstrates the importance of applying information technology to enhance the efficiency and accountability of public institutions. A well-designed information system not only optimizes operational performance but also strengthens organizational governance through reliable data management.

Conclusion and Recommendations

This research successfully developed a web-based archiving information system for the Special Crime Unit of the Palembang City Police. The system consolidates all case archives within a centralized database that can be accessed securely through the internet. By integrating

object-oriented design and the Total Architecture Synthesis method, the system achieves flexibility, security, and operational efficiency.

The application is expected to improve the overall performance of the Special Crime Unit and serve as a model for other divisions to implement similar digital solutions. The adoption of this system highlights the strategic role of information technology in supporting law enforcement activities and enhancing public service quality.

Disclosure Statement

The author declares no potential conflict of interest regarding the research, authorship, or publication of this article.

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