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Legal Study On The Application Of Biometric Technology In The Identification Of Criminal Offenders At The Langsa Police Department

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ABSTRACT: This study discusses the application of biometric technology in the identification of criminal offenders at the Langsa Police Department, including the types of technology used, identification procedures, as well as case study implementations. The research method used is a normative juridical approach supported by empirical data, with primary sources as well as secondary data from legal documents and related regulations. The focus of this study is to analyze the effectiveness, advantages, risks of privacy violations, and regulatory challenges in using biometric technology to support the criminal justice system in Indonesia. The research results show that biometric technology, especially fingerprints and facial recognition, successfully accelerates the identification process of offenders with a high degree of accuracy and strengthens evidence in the courtroom. However, there are still regulatory obstacles and personal data protection issues that need to be addressed to avoid the risk of misuse and human rights violations. This study emphasizes the importance of strengthening harmonious regulation and increasing the capacity of law enforcement officers so that biometric technology can be utilized optimally and fairly.

KEYWORDS: Biometric Technology, Identification, Criminal Offender, Langsa Police Department

I. INTRODUCTION

Biometric technology is an identification tool that relies on unique human characteristics, such as fingerprints and facial features. The legal context views this technology as an effective tool used to ensure the validity and reliability of criminal offender identification.(Prayatna, 2025) The utilization of such technology, which is expected to assist the law enforcement process, is certainly protected by the State. This is explicitly regulated in Article 26 paragraph (1) of Law Number 11 of 2008 concerning Electronic Information and Transactions (hereinafter referred to as the ITE Law), which essentially provides that every personal data owner has the right to obtain protection for their personal data, including biometric data used as a means of identity verification. This provision aims to ensure that the identification process becomes more accurate, efficient, and less prone to errors that could potentially disrupt the criminal justice process.(Rohman et al., 2024).

The use of biometric technology in law enforcement represents a technological revolution that enables the

collection and verification of data digitally, which can be legally accountable. (Hilma, 2020). The technology accelerates the investigation process and ensures that the identification of criminal offenders is not susceptible to manipulation, thereby supporting the principles of justice and legal certainty in creating a legally certain process.

The Langsa Resort Police (Polres Langsa), as part of the law enforcement agency, faces challenges in applying biometric technology, such as limitations in modern technological devices and a lack of trained human resources in using biometric tools. This condition results in identification processes of criminal perpetrators that are not yet optimal and still rely on conventional methods. This strategy is further reinforced in Article 33 of Law Number 2 of 2002 on the Indonesian National Police, which stipulates that professional development must be supported through studies, research, and the advancement of science and technology. This provision implies that the Indonesian National Police (Polri) must possess adequate technological capabilities to effectively support their law enforcement duties.(Arifin, 2025).

The realization of this technology at the regional level, such as in Polres Langsa, is still limited and requires serious attention. Coordination challenges between units and budget constraints also hinder the optimization of biometric technology. To improve the effectiveness of criminal identification, the police institution should strengthen competencies, enhance technological infrastructure, and foster cross-agency synergy so that biometric technology can be optimally integrated into regional police operations.(Darmawan, 2024).

The legal provisions governing the use of biometric technology do not comprehensively regulate all technical and ethical aspects. To ensure security in its implementation, Article 26 paragraph (3) of the Electronic Information and Transactions Law (UU ITE) emphasizes the obligation of electronic system providers to safeguard the confidentiality, integrity, and protection of personal data.

Another obstacle is the lack of strict oversight mechanisms and transparent audit procedures for biometric technology. The use of biometrics in the security sector must be balanced with rules guaranteeing human rights. The implementation of biometric technology at Polres Langsa is highly relevant considering the real needs on the ground to enhance the effectiveness of criminal identification processes. This study is based on the fact that Polres Langsa still faces challenges that hinder the maximal implementation of biometric technology, thus requiring scientific study to open legal-based solutions.

II. RESEARCH METHOD

The research method used in this study is the normative juridical method supported by empirical data. This qualitative and descriptive-analytical

research aims to describe and analyze the application of biometric technology in the identification of criminal offenders at Polres Langsa in depth.

Data sources consist of primary and secondary data. Primary data are obtained from interviews with Polres Langsa officers related to the application of biometric technology, as well as direct observations of the identification process. Secondary data come from legal documents such as laws, government regulations, ministerial regulations, and legal doctrines relevant to the research topic.

Data collection techniques are conducted through literature studies to examine regulations and legal theories, in-depth interviews with police officers to gain an empirical picture of biometric technology application, and observations of the identification practices at Polres Langsa. Data analysis uses normative juridical analysis to review legal materials and related provisions as well as analysis of observations. This approach enables the researcher to align legal aspects with factual conditions in the field, thereby providing a comprehensive description and recommendations.

With this method, the research not only examines legal rules governing biometric technology but also tests how these rules are implemented and encountered by police officers at Polres Langsa, making the research results applicable and practical.

III. RESULT & DISCUSSION

A. The Application of Biometric Technology at Langsa Resort Police

Polres Langsa currently uses primary biometric technologies such as fingerprint and face recognition as tools for identifying criminal offenders. Fingerprints are a classical method already integrated into the Automated Fingerprint Identification System (AFIS), which facilitates quick and accurate fingerprint matching with the national database. Face recognition technology has begun to be implemented to strengthen the identification process, especially in public areas or during field inspections. These biometric technologies are based on standards recognized nationally and internationally to ensure data accuracy and security.(Gautama et al., 2025).

Polres Langsa currently uses primary biometric technology consisting of fingerprints (fingerprint) and face recognition as tools to identify criminal offenders. Fingerprints are a classical method that has been integrated into the Automated Fingerprint Identification System (AFIS), which allows fast and accurate matching of fingerprints with the national database.

Face recognition technology has started to be applied to strengthen the identification process, especially in public areas or during field inspections. The biometric technology is based on standards recognized nationally and internationally to ensure accuracy and data security.(Nasakti, 2021). Biometric

verification is used to accurately confirm the identity of a perpetrator and to prevent misidentification, which frequently occurs with conventional identity checks. The resulting data then functions as robust evidence in both investigative and judicial processes, while upholding human rights protections as clearly regulated in Article 5 of the Electronic Information and Transactions Law (UU ITE). Through this mechanism, Polres Langsa ensures that investigative procedures comply with the principles of legality and justice, and that the integrity of the data is rigorously maintained.

A concrete example is in handling a motor vehicle theft case in 2024, where Polres Langsa successfully identified the perpetrator in a short time using fingerprint technology directly matched with the national database. This matching expedited the arrest and identity validation, making the legal process effective. This success highlights the strategic role of biometric technology in improving the quality of law enforcement at the regional level.

The implementation of biometric-based technology in Langsa City also reveals some obstacles, such as a limited number of devices and the need for further training for officers handling biometric technology. Therefore, although the technology has proven effective, efforts to enhance technical capacity and human resource management at Polres Langsa remain necessary to ensure optimal legal certainty in technology utilization.

B. Legal Study on the Application of Biometric Technology

Referring to the constitutional foundation, the provisions of Article 28G paragraph (1) of the 1945 Constitution of the Republic of Indonesia guarantee the right to personal data protection as part of human rights. This foundation serves as the primary basis for the lawful and equitable implementation of biometric technology within the criminal law system. The use of biometric technology in the Indonesian criminal justice system is grounded in strong legal provisions, namely Law Number 11 of 2008 on Electronic Information and Transactions (the EIT Law). Article 12 of the EIT Law explicitly regulates the use of electronic data as admissible evidence in judicial proceedings, including biometric data acquired electronically.

More explicitly, the utilization of biometric technology is regulated under the Regulation of the Minister of Law and Human Rights Number 37 of 2016 concerning Procedures for the Collection, Formulation, and Identification of Fingerprint Impressions. Essentially, this regulation provides technical guidelines for the use of biometric technologies, such as fingerprints, in identification processes within correctional institutions and law enforcement. Accordingly, legality and human rights protection are required as one of the philosophical foundations

governing the use of biometric technology in criminal justice. This principle establishes legal boundaries to prevent misuse of biometric technology while ensuring that justice and transparency are upheld. Therefore, the implementation of biometrics must be harmonized with national legal norms related to human rights to ensure that the technology is used with full respect for individual dignity and rights.(Huda et al., 2024).

Biometric data fall within the category of sensitive personal data, which is specifically regulated under Law Number 27 of 2022 concerning Personal Data Protection (the PDP Law). Article 4 of the PDP Law states that biometric data require heightened legal protection due to their unique and immutable nature, which poses a high risk in the event of leakage or misuse. Therefore, the collection, storage, and processing of biometric data must be carried out using strict security mechanisms and with the explicit consent of the data subject.

As a firm measure to protect personal data in the use of biometric technology, there are legal consequences for the misuse of electronic data, including biometric data. Article 67 of the PDP Law stipulates criminal penalties of up to five years of imprisonment and fines for individuals who access or use biometric data without authorization. These provisions create a deterrent effect and encourage compliance among security sector actors. In this regard, the Langsa Police Resort (Polres Langsa) is required to remain transparent and adhere to regulations to ensure data security during case examinations.

The main obstacle in the utilization of biometric technology is the lack of specific regulations governing biometric operations at the regional police level, which creates risks of non-compliance with national standards and insufficient operational guidelines for data protection. Furthermore, limited outreach and training for relevant officers result in suboptimal understanding of biometric regulations. Constraints in human resources and technological infrastructure at Polres Langsa present additional challenges in the use of biometric technology. Insufficient secure storage facilities for biometric data and other supporting technologies may lead to vulnerabilities in the personal data of criminal offenders, exposing them to risks of leakage or misuse. The lack of fully implementable regulations also contributes to challenges in monitoring and ensuring accountability in the use of biometric data in practice

C. Impact and Effectiveness of Biometric Technology Implementation

Biometric technology offers significant advantages in law enforcement by accelerating the process of accurately and efficiently identifying

criminal offenders. The application of biometrics such as fingerprint analysis and facial recognition reduces identification errors that frequently occur with conventional methods, thereby enhancing public trust in the criminal justice system. In addition, this technology enables real-time data matching with national databases, allowing investigations and arrests to be conducted more swiftly and effectively.(A. Wibowo et al., 2023).

Another important benefit is the use of biometric data as legitimate digital evidence in court, which strengthens the position of law enforcement in proving a perpetrator's involvement in a crime. An integrated biometric database, along with inter-agency coordination among law enforcement bodies, further supports efforts to enhance the effectiveness of criminal justice enforcement.(Wibowo & Munawar, 2024) These measures contribute to the development of a more just and efficient judicial system while reducing the potential for offenders to evade law enforcement.

To anticipate the misuse of biometric data, it is necessary to strengthen a comprehensive legal protection framework in accordance with the Personal Data Protection Law. It must be emphasized that the protected data encompass the rights of data subjects, the obligations of data controllers, and the enforcement mechanisms for violations involving biometric data. In addition, technical regulations at the police level—such as those issued by the Chief of the Indonesian National Police—must be updated to become more adaptive to advances in biometric technology and to uphold the principles of human rights protection.(Hasibuan et al., n.d.).

Enhancing the capacity of law enforcement personnel in the use, management, and protection of biometric data therefore requires special attention in order to ensure legal certainty in its implementation. (Prasetyo & Nugraha, 2025) Systematic training must be conducted to prevent technical errors and rights violations, as well as to build awareness of the importance of data security. Independent monitoring and audits should be integrated into governance mechanisms to ensure transparency and accountability in the use of biometric technology within the Langsa Police Resort (Polres Langsa)

IV. CONCLUSION

The study found that the implementation of biometric technology, particularly fingerprint and facial recognition systems, at the Langsa Police Resort (Polres Langsa) has significantly improved the effectiveness of criminal offender identification. This technology accelerates the investigation process, minimizes identification errors, and simultaneously strengthens the use of biometric data as evidence within the criminal justice system. Moreover, despite these significant advancements, technical and regulatory challenges remain, affecting the optimal

implementation of biometric technology at the regional level.

The role of biometrics in law enforcement also highlights the specific characteristics of its application in Polres Langsa as a research context that is rarely examined empirically. This study contributes to the literature by integrating a normative juridical approach with empirical data related to implementation and regulatory obstacles, thereby providing a comprehensive overview that can serve as a foundation for the development of more responsive policies and legal frameworks.

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