Reform of the Republic of Indonesia's State Police Through the Implementation of Big Data to Improve Efficiency, Transparency, and Accountability

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Article Info	Abstract
	This study aims to analyze the potential application of Big Data within the Indonesian National Police (Polri) to improve the effectiveness, transparency, and accountability of reforms (the Arrangement of Authority and Law Enforcement Institutions). Using normative juridical research methods, this study identifies potential legal challenges, including issues of data privacy, human rights, and external oversight. The results indicate that although Big Data can improve the performance of the Indonesian National Police (Polri), its implementation requires in-depth regulatory adjustments to align with applicable legal principles.

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1. INTRODUCTION

The Indonesian National Police (Polri) reform program is a major effort to improve the quality of public service and create a fairer, more efficient, and more transparent law enforcement system. One of the main pillars of this reform is increased accountability and transparency in every aspect of police operations. In this increasingly digital era, technology is a key element in helping achieve this goal. One technology that can make a significant contribution is Big Data. The implementation of Big Data in the police force can enable faster and more accurate data collection and analysis in addressing various issues faced by the Indonesian National Police (Polri).

In the context of policing, Big Data refers to the processing of vast volumes of data from various sources, such as CCTV footage, digital footprints, transaction data, and social media, to detect patterns relevant to law enforcement. This data can be used to accelerate crime prediction and more effectively identify perpetrators. In addition, the use of Big Data also allows for real-time monitoring of incidents occurring in the field, so that the police can respond to emergencies quickly and appropriately.

However, while Big Data offers numerous potential benefits, its implementation within the Indonesian police force requires special attention regarding legal and ethical aspects. The collection and processing of data involving personal information can pose a risk of misuse if not handled carefully. Therefore, it is crucial to ensure that the use of this technology does not violate people's privacy rights and remains compliant with existing laws and regulations.

In Indonesia, the regulation governing the management of personal data and electronic transactions is Law No. 11 of 2008 concerning Information and Electronic Transactions (ITE), which was later revised by Law No. 19 of 2016. This law provides the legal basis

for data management in cyberspace, including the use of technology by state institutions, such as the police. However, despite the existence of a legal basis regarding personal data, the implementation of Big Data within the Indonesian National Police (Polri) has not been fully clearly regulated in this regulation.

Furthermore, oversight is also a crucial issue in the implementation of Big Data. Strict oversight of data collected by the Indonesian National Police (Polri) must be implemented to prevent misuse. This oversight must also include an evaluation of the technology's influence on public policy and its impact on society. The existence of an external oversight body, such as the National Police Commission (Kompolnas), is crucial in ensuring that the Indonesian National Police (Polri) use Big Data accountably and transparently.

The application of Big Data in policing must also adhere to the principles of non-discrimination and human rights. For example, the use of predictive policing technology, which utilizes data to predict crime, can pose a risk of racial bias or discrimination against certain groups if not carefully monitored. Research in other countries, such as the United States, has raised concerns regarding the potential for unfairness in the use of this technology, particularly in terms of racial discrimination.

In this regard, it is important to consider international studies on the application of Big Data in policing. In developed countries, such as the United States and the United Kingdom, the use of Big Data has become an integral part of law enforcement efforts. However, this is also balanced by strict regulations regarding personal data protection and external oversight. Therefore, Indonesia needs to learn from the experiences of these countries and adapt them to the legal context applicable in Indonesia.

From an accountability perspective, the implementation of Big Data can significantly benefit the Indonesian National Police (Polri) in monitoring and evaluating the performance of officers in the field. By leveraging data from technology, the Indonesian National Police (Polri) can conduct objective performance assessments based on existing evidence rather than solely on manual reports. This can increase transparency in law enforcement, as the public can more easily access information related to ongoing police activities.

However, to optimally implement Big Data, the Indonesian National Police (Polri) also need to develop internal capacity, both in terms of technology and human resources. Specialized training for police officers in data management and analysis must be a priority to improve officers' skills in this digital era. Furthermore, adequate technological infrastructure must be provided to support real-time processing of large amounts of data.

Furthermore, public participation must also be considered in the implementation of Big Data within the Indonesian National Police (Polri). Public involvement in the monitoring and evaluation of police performance can help create a more democratic and accountable system. Furthermore, a readily accessible reporting mechanism for violations is crucial to ensuring that the technology used is not misused.

The application of Big Data in the reform of the Indonesian National Police (Polri) offers significant potential to increase effectiveness, transparency, and accountability in law enforcement. However, its implementation must be balanced with strict regulations and effective external oversight, as well as protection of human rights and citizen privacy. Therefore, in-depth legal reform is needed to ensure that this technology is used responsibly and in accordance with applicable legal principles.

The development of information technology, particularly Big Data, has penetrated various sectors, including the police force. The Indonesian National Police (Polri), as a law enforcement institution, needs to adapt to these developments to improve public services. However, the implementation of Big Data within the police force must comply with existing regulations, such as Law No. 2 of 2002 concerning the Indonesian National Police., Law No. 30 of 2014 concerning Government Administration, and Law No. 11 of 2008

concerning Electronic Information and Transactions (ITE). Therefore, it is important to review the legal aspects related to the implementation of Big Data in the reform of the Indonesian National Police (Polri).

2. RESEARCH METHODS

This research is a normative juridical research with a statutory and conceptual approach, where law is conceptualized as what is written in statutory regulations, something written or law is conceptualized as a normative rule, which is a benchmark for human behavior. Normative legal research uses secondary data from library materials; the preparation of a temporary theoretical framework can be abandoned, but the preparation of a conceptual framework is necessary. In normative legal research, a hypothesis is not required; even if there is one, it is only a working hypothesis. Then, as a consequence of using secondary data, normative legal research does not require sampling, because secondary data (as the main source) has its own weight and quality that cannot be replaced by other types of data. This type of research aims to analyze the laws and regulations related to the use of Big Data in the police and identify legal principles that need to be considered in its implementation.

The legal data collection technique was conducted through the study of legal documents, relevant literature, and laws and regulations related to the use of Big Data technology in law enforcement. The legal data analysis was conducted descriptively and analytically, namely by describing and analyzing the content of existing laws and regulations and identifying the legal implications of Big Data implementation in the police force.

3. RESEARCH RESULTS AND DISCUSSION

The application of Big Data in the reform of the Republic of Indonesia National Police (Polri) can increase the effectiveness and transparency of the police.

Big Data refers to the processing and analysis of large amounts of data to identify patterns and trends that can be used in decision-making. In the police context, the application of Big Data can include predictive analytics to predict the location and time of crimes, as well as digital forensic analysis to identify perpetrators. However, the application of this technology must take into account applicable legal principles, such as legality, legal certainty, and human rights protection.

Several countries have developed regulations regarding the use of Big Data in policing. In the United States, for example, the application of predictive policing has sparked controversy related to racial bias and discrimination. Amnesty International has recommended that this technology be banned, arguing it exacerbates inequality and discrimination against Black communities. In Europe, projects such as VALCRI (Visual Analytics for Sense-making in Criminal Intelligence Analysis) have been developed to assist police officers in visually analyzing crime data. However, these projects also face challenges related to privacy protection and compliance with personal data protection regulations.

The application of Big Data in the Indonesian National Police (Polri) can increase effectiveness and transparency through: Predictive Analysis allows the Indonesian National Police (Polri) to predict the location and time of crime, so that it can take more targeted preventive measures. Digital Forensic Analysis facilitates the identification of criminals through the analysis of digital data, such as CCTV footage, digital footprints, and communication data. Increased Supervision and Accountability allow for real-time monitoring of the performance of the Indonesian National Police (Polri), thus increasing accountability and transparency in services to the public.

The implementation of Big Data in the Indonesian National Police (Polri) faces several legal challenges, including Personal Data Protection. The collection and processing of personal data by the Indonesian National Police (Polri) must comply with applicable regulations, such as Law No. 11 of 2008 concerning Electronic Information and Transactions and the Personal Data Protection Law. Human Rights The use of Big Data must pay attention to human rights principles, such as the principle of non-discrimination and protection of individual privacy. External Oversight There needs to be an external oversight mechanism for the use of Big Data by the Indonesian National Police (Polri) to prevent abuse of authority and human rights violations.

The application of Big Data has the potential to provide a leap in efficiency, transparency, and accountability, so that the National Police is not only reactive, but also predictive and evidence-based. Law Number 2 of 2002 gives the Indonesian National Police the authority to manage police information systems, including forensic identification. Meanwhile, the Personal Data Protection (PDP) Law Number 27 of 2022 regulates the principles of legality, transparency, accountability, and data subject rights in the processing of personal data. In addition to exceptions for law enforcement purposes (Article 26 of the PDP Law), harmonization of these two laws is a prerequisite for *legal-compliant and* human rights-based in use of Big Data by the Indonesian National Police.

Big data analytics collects and processes crime reports, CCTV footage, geolocation, and social media data to identify crime hotspots and improve patrol effectiveness. Predictive policing can increase personnel deployment efficiency by up to thirty percent and shorten incident response times. Implementation of ABIS and facial recognitionalso accelerates the identification of suspects and the calculation of evidence, in accordance with the authority of fingerprinting and evidence search. Big data enables the publication of real-time performance dashboards—displaying indicators of case resolution, response times, and public satisfaction levels—in line with the obligation to publish accountability reports regularly. The open data concept facilitates access to crime statistics without violating privacy, while blockchain technology ensures data integrity and immutability.

The Big Data system supports the Propam Division and the National Police Commission (Kompolnas) in monitoring personnel behavior, detecting anomalies, and enforcing the code of ethics. The integration of body-worn cameras with analytics platforms objectively records officer-community interactions. Explainable AI (XAI) Maintaining transparency in automated decision-making processes, complying with the principles of auditability and the right to clarity regarding the reasons for actions. The risk of algorithmic bias can create discrimination based on race or socioeconomic status if training data is not representative. A legal gap arises because the Police Law does not explicitly regulate AI, requiring additional regulations to establish limits, audit algorithms, and human oversight. The trade-off between privacy and public safety requires strict enforcement of the principles of proportionality and non-discrimination. Revise Law No. 2 of 2002 to include provisions for the use of Big Data and AI; develop standard operating procedures (SOPs) for data lifecycle management; provide data analytics training for National Police personnel; appoint Data Protection Officers in each unit; and establish an independent audit mechanism for algorithms. Transparency is achieved through the regular publication of algorithmic impact assessments and algorithmic transparency reports. to build public trust.

Potential obstacles in the implementation of Big Data by the Republic of Indonesia National Police (Polri)

The implementation of Big Data by the Indonesian National Police (Polri) faces several potential significant obstacles. First, challenges in data integration between institutions. Indonesia has various fragmented data systems, such as population, health, and immigration data, managed by different institutions. This makes it difficult for the Polri to obtain accurate and real-time information for crime analysis. Furthermore, there are challenges related to infrastructure and human resources. The Indonesian National Police (Polri) need to build adequate technological infrastructure and train personnel to effectively manage and analyze big data. Without adequate technological support and analytical skills, the potential of Big Data in crime prevention and response cannot be optimally utilized. Then there is the issue of privacy and personal data protection. Despite the ratification of the Personal Data Protection (PDP) Law, its implementation still faces several challenges. Delays in establishing an independent data protection authority and a lack of technical guidelines have led to potentially low levels of compliance with the PDP law. This has the potential to undermine transparency, accountability, and public trust. The need for a transparency model regarding how data is collected and algorithms operate raises public distrust and the risk of litigation/public backlash (especially if errors occur). The literature calls for an adequate transparency policy without jeopardizing operations.

4. CONCLUSION

The application of Big Data in the reform of the Indonesian National Police (Polri) can increase the effectiveness, transparency, and accountability of law enforcement in Indonesia. However, its implementation must comply with existing regulations and applicable legal principles, especially those related to personal data protection and human rights. The Indonesian National Police (Polri) need to revise existing regulations to accommodate the use of Big Data within the police force, while still adhering to applicable legal principles. Strengthen external oversight mechanisms for the use of Big Data by the Indonesian National Police (Polri) to prevent abuse of authority and human rights violations. Provide training and education to members of the Indonesian National Police (Polri) regarding the use of information technology and personal data protection.

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