



SIGn Jurnal Hukum

E-ISSN: 2685 – 8606 || P-ISSN: 2685 – 8614

<https://jurnal.penerbitsign.com/index.php/sjh/article/view/v6n2-3>

Vol. 6 No. 2: October 2024 - March 2025

Published Online: December 1, 2024

Article Title

Investigative Effectiveness in the Digital Era: A Case Study of Technological Innovation at the Rokan Hilir Police Resort

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How to cite:

Sihombing, R. P., Kusno, K., & Siregar, A. A. (2024). Investigative Effectiveness in the Digital Era: A Case Study of Technological Innovation at the Rokan Hilir Police Resort. *SIGn Jurnal Hukum*, 6(2), 52-67. <https://doi.org/10.37276/sjh.v6i2.368>



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ABSTRACT

This study aims to analyze the extent to which implemented technological innovations enhance investigative effectiveness and identify the supporting factors and obstacles to technology adoption at the Rokan Hilir Police Resort. To achieve these objectives, this study employs a mixed-methods approach combining field research and normative legal analysis, where the collected data is analyzed qualitatively to describe the issues and address the research objectives. The findings indicate that technology implementation at the Rokan Hilir Police Resort positively impacts investigative effectiveness, particularly in terms of speed and efficiency, accountability and transparency, and inter-unit coordination. Furthermore, technology plays a crucial role in evidence management, improving data accuracy, and handling complex cases, as demonstrated in the digital theft case study. The application of investigative technology at the Rokan Hilir Police Resort aligns with the relevant legal framework in Indonesia. However, technology implementation still faces challenges such as budget limitations, lack of technological skills, and resistance to change. Nevertheless, this study finds that technological innovation at the Rokan Hilir Police Resort has contributed to increasing public trust in the police institution, suggesting that the modernization of investigations through technology adoption is a strategic step that needs continuous support and optimization.

Keywords: *Criminal Procedure Law; Electronic Evidence; Investigation; Police; Technological Innovation.*

INTRODUCTION

The digital era is marked by rapid and massive technological developments, transforming various aspects of human life, including the dynamics of law enforcement (Laia, 2024). Advances in information and communication technology have given rise to new *modi operandi* of crime that are increasingly complex, transnational, and difficult to uncover. This phenomenon demands law enforcement agencies, especially the police, to continuously adapt and innovate by integrating technology into investigative strategies and practices (Alosani et al., 2020).

In Indonesia, the police, as the frontline in maintaining security and public order, face increasingly formidable challenges. The rising rate of cybercrime, the rampant spread of hoaxes and hate speech, and increasingly sophisticated conventional crimes require the police to improve the effectiveness of investigations. Innovation and utilization of technology in investigations are no longer an option but a necessity for the realization of fair and effective law enforcement (Simmler et al., 2023).

Investigative effectiveness is a determinant factor in ensuring legal certainty and realizing justice. Swift, precise, and accurate investigations will accelerate the criminal justice process and minimize the occurrence of human rights violations (Martono, 2020). Technology plays a vital role in increasing investigative effectiveness, from accelerating evidence gathering, increasing the accuracy of data analysis, and facilitating inter-unit coordination to producing more comprehensive investigative reports.

One form of technology implementation in investigations is a digital case management system (Willis et al., 2020). This system allows for the recording, management, and analysis of case data digitally, making the investigation process more efficient, transparent, and easily monitored. In addition, technology also facilitates the use of digital monitoring and tracking tools, as well as forensic analysis software, to support more in-depth investigations (Latifansyah et al., 2024).

Based on this urgency, the Rokan Hilir Police Resort becomes the focus of this study because it demonstrates a high commitment to the application of technology to improve investigative effectiveness. The Rokan Hilir Police Resort has implemented various technological innovations, such as a case management information system to facilitate the recording and tracking of evidence, digital monitoring and tracking tools, and forensic analysis software to support more in-depth investigations.

However, the implementation of technology at the Rokan Hilir Police Resort is not without its challenges. Budget limitations, lack of technological skills among personnel, and the need for periodic technological updates are inhibiting factors that need to be addressed. This study seeks to examine the effectiveness of the implementation of such technology in supporting investigations at the Rokan Hilir Police Resort and to identify the obstacles faced.

Based on the description above, this study aims to analyze the extent to which the implemented technological innovations are able to increase investigative effectiveness and identify the supporting factors and obstacles to the application of technology at the Rokan Hilir Police Resort. Furthermore, this study aims to provide recommendations for the development of technological innovation strategies in the future and provide insights regarding the important role of technology in investigations and the steps needed to maximize its benefits for the Rokan Hilir Police Resort and other police institutions.

METHOD

This research employs a mixed methods approach, combining field research and normative legal analysis, to examine the implementation of technology in criminal investigations at the Rokan Hilir Police Resort. A qualitative approach with a field research method is applied to identify the challenges encountered in the implementation of such technology (Irwansyah, 2021). The selection of this location is based on indications of a strong commitment to the application of technology to enhance investigative effectiveness at the Rokan Hilir Police Resort. Meanwhile, the normative research method is used to analyze several laws related to the use of technology in investigations (Qamar & Rezah, 2020). The types and sources of data used in this study are primary and secondary. Primary data collection is conducted

through in-depth interviews with police officers at the Rokan Hilir Police Resort, particularly those directly involved in investigations and the application of technology. Secondary data is obtained through a literature review of internal documents from the Rokan Hilir Police Resort, such as annual reports, internal policies related to the use of technology, and statistical data on case resolution before and after the implementation of technology. Subsequently, the collected data is analyzed qualitatively to describe the issues and address the research objectives (Sampara & Husen, 2016).

RESULTS AND DISCUSSION

A. Legal Framework for the Use of Technology in Investigations

In the ever-evolving digital landscape, the use of technology in investigations at the Rokan Hilir Police Resort, particularly concerning cybercrime, necessitates a clear and comprehensive legal foundation. The implementation of technology in the investigation process must always be based on the applicable laws and regulations in Indonesia. This chapter will provide an in-depth analysis of the legal framework relevant to the application of technology in investigations, with an emphasis on cases handled by the police, specifically within the jurisdiction of the Rokan Hilir Police Resort.

1. Law Number 8 of 1981 and the Implementation of Technology in Investigations

Law Number 8 of 1981 serves as the fundamental basis for the criminal justice system in Indonesia, including the investigation process. This law regulates the procedures for conducting investigations, from evidence collection to the submission of case files to the prosecution (Prasetya et al., 2023). In the current digital era, characterized by rapid technological advancements, Law Number 8 of 1981 must be interpreted dynamically to remain relevant.

One crucial aspect of investigations is evidence collection. Article 183 of Law Number 8 of 1981 stipulates that admissible evidence must be used to prove the occurrence of a crime. In this regard, digital forensic technology can be utilized to obtain electronic evidence that is valid and admissible in court. Electronic evidence possesses unique characteristics and is susceptible to manipulation, necessitating specialized handling to maintain its authenticity and integrity. The best evidence rule in the law of evidence emphasizes the importance of presenting original evidence in court (Oktana et al., 2023). However, in the context of electronic evidence, the best evidence rule can be satisfied by submitting a digital copy that has been verified for authenticity through proper procedures.

Article 1 point 9 of [Law Number 8 of 1981](#) defines investigation as a series of actions taken by investigators to search for and gather evidence to clarify a criminal event. The utilization of technology in investigations enables investigators to work more efficiently and effectively. Digital case management systems, digital monitoring and tracking tools, and forensic analysis software are examples of technological innovations that can support the investigation process. The theory of investigative power provides a legal basis for investigators to take necessary actions in uncovering the material truth ([Fitrah et al., 2021](#)). However, such authority must be exercised in accordance with applicable legal procedures and with respect for human rights.

2. Law Number 2 of 2002 and the Mandate for Technology Utilization in Investigations

[Law Number 2 of 2002](#) serves as the legal foundation for the State Police of the Republic of Indonesia in carrying out their duties and authorities, including the task of conducting criminal investigations. As a legal instrument, [Law Number 2 of 2002](#) not only grants authority but also regulates the principles that must be upheld by the police in executing their duties. In the context of dynamic technological advancements, [Law Number 2 of 2002](#) provides the police with the opportunity to adopt and utilize technology to enhance the effectiveness of their performance.

One of the primary duties of the police, as mandated by Article 13 of [Law Number 2 of 2002](#), is to conduct criminal investigations. An investigation is a series of methodical and systematic actions to search for and gather evidence, identify perpetrators, and uncover the material truth of a criminal event. In carrying out investigative duties, the police are granted the authority by law to employ all lawful means and efforts. In the current digital era, this authority can be implemented by utilizing various technological innovations, such as digital forensic tools, criminal information systems, and biometric identification technology ([Jansen et al., 2021](#)). The utilization of technology in investigations is not only permissible but also encouraged to increase the efficiency and effectiveness of investigations, thereby optimizing the law enforcement process.

Furthermore, Article 15 section (1) point e of [Law Number 2 of 2002](#) explicitly states that in carrying out investigative duties, the police can utilize advancements in science and technology. This provision provides a strong legal basis for the police to integrate technology into the investigation process. The utilization of information technology in investigations is highly relevant to the dynamics of crime in the digital era, which is becoming increasingly

complex. Cybercrime, online illegal transactions, and various other forms of crime that utilize information technology require the police to continuously adapt and develop their capacity in the field of technology (Winanda et al., 2024). The use of criminal databases, digital forensic data analysis, and online collaboration with other law enforcement agencies are concrete examples of the application of information technology in investigations.

3. Law Number 11 of 2008 and its Relevance in Investigations in the Digital Era

Law Number 11 of 2008 serves as an essential legal foundation for combating cybercrime in Indonesia. This law not only regulates the civil aspects of electronic transactions but also encompasses criminal aspects related to the use of information technology (Gadjong, 2023). The enactment of Law Number 11 of 2008 demonstrates the government's commitment to providing legal protection for the public in the increasingly dynamic cyberspace.

One of the crucial issues addressed in Law Number 11 of 2008 is the dissemination of illegal content through the Internet. Article 27 section (1) of Law Number 1 of 2024 explicitly prohibits the dissemination of electronic information and/or electronic documents containing negative content, such as those violating morality, gambling, insults, defamation, threats, and extortion. This prohibition is based on the need to maintain morality, order, and public safety in cyberspace (Rivanie et al., 2021). In its enforcement, law enforcement officials are equipped with legal instruments to take action against perpetrators who disseminate such illegal content.

However, the application of Article 27 section (1) of Law Number 1 of 2024 often sparks controversy due to its perceived ambiguity and potential to threaten freedom of expression. Therefore, wisdom and caution are required in its implementation. The balancing of interest theory in law emphasizes the importance of balancing different interests, in this case, the interest of law enforcement with the interest of protecting human rights. In addition to regulating illegal content, Article 31 section (3) of Law Number 19 of 2016 also grants special authority to police investigators to conduct investigations into criminal offenses in the field of information technology and electronic transactions. This special authority is a form of legislative recognition of the unique characteristics of cybercrime, which differs from conventional crime.

A significant change introduced by Law Number 11 of 2008 is the enhancement of penalties for perpetrators of cybercrime. This is reflected in Article 45 of Law Number 1 of 2024, which stipulates a more severe

punishment of imprisonment and fines than the previous provisions. This increase in penalties is a response to the rise of cybercrime that has caused public concern. From the perspective of criminal law theory, increasing penalties aims to enhance the deterrence effect and prevent the occurrence of cybercrime (preventive effect) (Nasrullah, 2023). Furthermore, the increase in penalties also reflects the government's seriousness in addressing cybercrime, which is becoming increasingly sophisticated and detrimental.

In addition to strengthening criminal norms, Article 43 section (3) of [Law Number 1 of 2024](#) grants investigators the authority to take specific actions against perpetrators of criminal offenses using information technology, such as temporarily suspending access to electronic systems, conducting searches, and seizing assets. This authority is necessary considering the distinct characteristics of cybercrime compared to conventional crime. Cybercrime often involves perpetrators located in different locations, using pseudonyms, and leaving complex digital trails. Therefore, investigators require adequate legal instruments to conduct investigations effectively. The theory of cybercrime investigation emphasizes the importance of mastering digital forensic techniques and tools in uncovering cybercrime (Alastal & Shaqfa, 2023).

B. Unveiling Effectiveness: Technology in Investigations at the Rokan Hilir Police Resort

The Rokan Hilir Police Resort has implemented technology in its investigation processes to enhance effectiveness. The following discussion will provide an in-depth analysis of the benefits, challenges, and impact of technology on investigative effectiveness at the Rokan Hilir Police Resort.

1. Benefits of Technology Implementation and Investigative Effectiveness

The application of technology at the Rokan Hilir Police Resort has initiated a significant transformation in the investigation process. One of the primary benefits identified is the improvement in speed and efficiency. Digital case management systems, for instance, allow for real-time data access and processing, resulting in faster evidence collection and analysis. Workflows that were previously manual are now aided by specialized applications or software, which significantly accelerate case resolution. This efficiency aligns with the principle of swift justice mandated by [Law Number 8 of 1981](#), which stipulates that criminal justice processes, including the investigation stage, must be completed within a reasonable timeframe (Sitepu & Hasnda, 2024).

Furthermore, technology also significantly contributes to improving accountability and transparency in investigations. Each stage of the investigation is well-documented and easily traceable, minimizing the occurrence of errors or deviations. This aligns with the principle of good governance in law enforcement, which emphasizes the importance of transparency and accountability (Setyadi et al., 2021). This improvement in accountability and transparency not only enhances public trust in the police institution but also reduces the risk of human rights violations during the investigation process.

In addition to these two benefits, technology also enhances inter-unit coordination. Integrated communication technology and information systems enable smoother information exchange, both between internal units within the Resort Police and with external agencies such as the prosecutor's office and forensic laboratories. This improved collaboration not only increases efficiency but also enhances the overall effectiveness of investigations. The theory of the integrated criminal justice system emphasizes the importance of coordination and integration among law enforcement agencies in achieving effective law enforcement (Husin, 2024).

2. The Digital Revolution and the Impact of Technology on Investigations

The implementation of technology at the Rokan Hilir Police Resort has initiated a significant transformation in the investigation process, particularly in the aspect of evidence management. With the aid of technology, evidence can be stored and tracked more systematically, minimizing the risk of loss or damage, which has often been a problem in conventional investigation processes. Digital systems make it easier for the police to monitor the status of evidence, including the chain of custody, processing, and tracking of evidence up to the trial stage. It aligns with the principle of chain of custody, which emphasizes the importance of maintaining the integrity and authenticity of evidence from the time it is discovered until it is presented in court (Patil et al., 2024). The implementation of a strict chain of custody is crucial to ensure accountability and prevent evidence tampering that could harm the pursuit of justice.

In addition to improving the effectiveness of evidence management, technology also contributes to increasing data accuracy and validity (Manangin et al., 2022). The digital systems used in investigations allow for more systematic and structured storage and processing of data, thereby minimizing the risk of errors due to manual recording. Data is stored in a secure system, and important information related to the case can be accessed more quickly and accurately by authorized parties. Data accuracy and validity are essential

elements in the investigation process, as accurate and valid data will produce accurate analysis, which will ultimately support the uncovering of the material truth of a case (Simamora et al., 2024).

Furthermore, technology also equips the police with the ability to enhance their response to more complex cases, such as cybercrime and organized crime. Forensic analysis technology and digital monitoring enable the police to uncover perpetrator networks, identify crime patterns, and obtain legally admissible electronic evidence. This capability is crucial in facing the development of increasingly sophisticated *modi operandi* of crimes in the digital era (Rossy & Ribaux, 2020). Cybercrime, with its transnational and anonymous characteristics, demands a more modern and adaptive investigative approach.

Overall, the implementation of technology at the Rokan Hilir Police Resort has had a significant positive impact on investigative effectiveness. Improvements in evidence management, data accuracy, and the ability to handle complex cases are some of the important indicators of this success. However, it is important to remember that technology is merely a tool. Human factors, such as the competence of investigators, integrity in carrying out duties, and a deep understanding of criminal procedure law, remain the key to realizing effective, efficient, and just investigations.

3. Modernization of Investigations and its Implications for Public Trust

The implementation of technology at the Rokan Hilir Police Resort is not solely focused on enhancing investigative effectiveness but also has significant implications for building public trust. The transparency fostered by the use of technology allows the public to monitor the investigative process more transparently. Access to information regarding case developments, evidence status, and investigative stages can be obtained more easily by the public. This transparency fosters trust and mitigates the potential for misconduct or abuse of authority during the investigative process. The principle of transparency in law enforcement necessitates open access to information and public scrutiny of law enforcement procedures, enabling the public to exercise social control and ensure the accountability of law enforcement officials (Molnar & Warren, 2020).

Moreover, the public also experiences enhanced quality of police services through the implementation of technology. Online complaint services, integrated information systems, and rapid access to information are examples of service innovations that provide convenience and ease of use for the public. This ease of access and service efficiency not only increases public satisfaction

but also cultivates a positive image for the Rokan Hilir Police Resort. Public service motivation theory posits that public officials possess an intrinsic motivation to serve the public and enhance public welfare (Abdi & Hashi, 2024). The implementation of technology in public services is a tangible manifestation of this motivation.

Furthermore, the utilization of advanced technology in investigations also contributes to enhancing public trust in the law enforcement system. The public, observing the Rokan Hilir Police Resort employing cutting-edge technology, tends to have greater confidence that investigative processes are conducted fairly, professionally, and with a modern approach. This aligns with the theory of the legitimacy of the police, which emphasizes the importance of public trust as the foundation for the police in carrying out their duties and functions (Bradford et al., 2020). High public trust facilitates the police in executing law enforcement tasks and fostering a conducive environment for public security and order.

4. Dynamics of Technology Implementation and its Challenges

The implementation of technology at the Rokan Hilir Police Resort, despite promising various advancements, is not without its challenges. Budget limitations are a significant hindering factor. The procurement of advanced technology, such as forensic analysis tools or digital monitoring systems, requires a considerable allocation of funds. This budget constraint has implications for the difficulty in maintaining and updating equipment periodically, while such updates are crucial for preserving the performance and relevance of technology in an ever-evolving era. This situation necessitates a prudent budget management strategy, considering the principles of efficiency and effectiveness in the use of public funds (Samanta et al., 2022).

In addition to budget limitations, personnel's lack of technological skills also poses a challenge. Mastering new technology requires adequate technical knowledge and skills. In reality, most personnel at the Rokan Hilir Police Resort do not yet possess such skills. This situation calls for structured and continuous training and capacity-building programs so that personnel can operate the technology optimally. Investing in human resource development is a form of implementing the human capital theory, which emphasizes the importance of knowledge and skills as the primary capital in increasing productivity (Supriyanto et al., 2021).

Apart from these technical factors, there are also non-technical challenges in the form of resistance to change. Some personnel, especially those

who have long been accustomed to manual procedures, tend to experience difficulties in adapting to new, fully digital methods. This resistance can be understood as a natural form of resistance to change that commonly occurs in any transformation process (Ernst et al., 2021). However, if not managed properly, this resistance can hinder the smooth and effective implementation of technology. Therefore, efforts need to be made to reduce such resistance through intensive socialization, communication, and mentoring.

C. Case Study: Effectiveness of Digital Theft Investigations at the Rokan Hilir Police Resort

The advancement of information and communication technology has significantly changed the modus operandi of crimes. Cybercrimes, such as theft through phishing, are increasingly prevalent. Phishing is a technique of stealing personal data by sending messages or displaying fake websites that resemble legitimate ones. This phenomenon demands that law enforcement officers continuously adapt and develop more modern investigative methods.

In its efforts to combat cybercrime, the Rokan Hilir Police Resort has established a specialized unit that handles cybercrimes (cybercrime unit). This unit is equipped with advanced investigative technology to identify and track perpetrators' digital footprints. A case study of digital theft handled by the Rokan Hilir Police Resort's cybercrime unit demonstrates the effectiveness of technology implementation in investigations.

In this case, the victim reported the theft of funds from their bank account through phishing. The cybercrime unit's investigative team then employed a series of digital investigative methods to uncover the case. *First*, they utilized digital forensic analysis software to trace the perpetrator's IP address. The IP address revealed the specific location and device used by the perpetrator to access the victim's account. *Second*, data analysis technology enabled the collection of crucial information from the perpetrator's device, such as activity logs, digital messages, and transaction history. This digital evidence was stored in a secure and verified format for submission as evidence in court.

Third, an integrated information system facilitated coordination between Rokan Hilir Police Resort investigators and the bank and Internet Service Provider (ISP) to obtain transaction data and network access logs relevant to the case. This swift and efficient coordination was vital to prevent the loss of evidence and facilitate the investigation process. *Finally*, each piece of electronic evidence found was meticulously recorded and organized using a digital evidence management system to ensure its integrity and authenticity.

This case study demonstrates that technology plays a vital role in enhancing the effectiveness of cybercrime investigations, particularly in fulfilling the principle of swift justice. The principle of swift justice is a fundamental tenet in criminal procedure law that requires every judicial process to be completed within a relatively short and timely manner. With technology, investigators can trace digital footprints, identify electronic evidence, coordinate with relevant parties, and manage evidence more efficiently and accurately, thereby expediting the investigation process.

CONCLUSIONS AND SUGGESTIONS

Based on the results and discussion, it can be concluded that the implementation of technology at the Rokan Hilir Police Resort has had a positive impact on investigative effectiveness, particularly in terms of speed and efficiency, accountability and transparency, and inter-unit coordination. Moreover, technology has proven highly beneficial in facilitating more structured evidence management, enhancing data accuracy and validity, and streamlining the handling of complex cases. These benefits are supported by an adequate legal framework, including [Law Number 8 of 1981](#), [Law Number 2 of 2002](#), and [Law Number 11 of 2008](#), which provide the foundation for utilizing technology in investigations. The case study of digital theft at the Rokan Hilir Police Resort demonstrates that technology facilitates the tracing of digital footprints, identification of electronic evidence, inter-agency coordination, and management of digital evidence. However, technology implementation also faces challenges such as budget limitations, lack of technological skills among personnel, and resistance to change. Nonetheless, the implementation of technology at the Rokan Hilir Police Resort has contributed to increasing public trust in the police institution.

Based on the above conclusions, it is recommended that investigative effectiveness at the Rokan Hilir Police Resort be enhanced by optimizing the utilization of technology. The Head of the Cybercrime Unit should prioritize training programs and capacity building for personnel to ensure proficiency in forensic analysis software, digital evidence management systems, and data analysis technology. Furthermore, adequate budgeting should be pursued for the maintenance and updating of investigative technology equipment to ensure its performance and relevance. Additionally, investigators at the Rokan Hilir Police Resort need to continuously enhance their competence in information technology and cyber law and proactively keep abreast of the latest developments in digital investigations. The application of investigative technology must always be grounded in integrity and professionalism, upholding professional ethics and human rights. Enhancing transparency and service quality should also be a focus in technology implementation at the Rokan Hilir Police Resort. It can be achieved by optimizing public information systems, providing

responsive online complaint services, and ensuring information accessibility for the public. By doing so, the Rokan Hilir Police Resort can enhance public trust and solidify its legitimacy in carrying out law enforcement duties in the digital era.

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