

## Development of A System for Monitoring and Evaluating the Performance of Civil Servants in Traffic Law Enforcement Traffic and Road Transportation

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**Abstract.** Law enforcement of road transportation traffic is one of the important aspects in maintaining road safety and order. However, the effectiveness of monitoring and evaluating the performance of Civil Servant Investigators (PPNS) in law enforcement is often hampered by unstructured processes and lack of transparency in reporting. This research aims to analyze the role of information technology (IT)-based system development in improving transparency, efficiency, and accountability in monitoring and evaluating PPNS performance. This research uses a qualitative method with a case study approach, which involves analyzing the application of information systems in institutions that handle traffic law enforcement. The results showed that IT systems can improve transparency by providing clear and real-time data access, increase efficiency by speeding up data processing and analysis, and strengthen accountability through auditable digital records. The study concludes that the development and implementation of IT systems in the oversight of PPNS performance not only improves the effectiveness of traffic law enforcement, but also strengthens the integrity and public trust in the institutions that carry out these tasks. The implementation of IT systems is expected to be a strategic solution in improving the quality of public services in the field of traffic law.

**Keywords:** Development; Monitoring System; PPNS; Law Enforcement; LLAJ

### 1. INTRODUCTION

Monitoring and evaluating the performance of law enforcement officers in the traffic sector is one of the important aspects in ensuring effective and efficient law enforcement. In Indonesia, Civil Servant Investigators (PPNS) in the Transportation Agency have a strategic role in traffic law enforcement, both in the form of investigation and prosecution of violations of traffic regulations. The existence of PPNS in the Transportation Agency aims to ensure that traffic rules set by the government can be applied fairly and appropriately. However, the performance of PPNS in carrying out this task has not been fully optimized, especially in terms of supervision and evaluation of the tasks they perform.

The current performance monitoring and evaluation system still faces various challenges, including limited human resources, lack of supporting information technology, and not maximizing coordination between related institutions in traffic law enforcement. This condition causes a lack of accountability and transparency in the implementation of tasks, which in turn has an impact on the quality of law enforcement produced. Research by (Vidhiasi et al., 2024) shows that one of the factors causing weak supervision of PPNS

is the limited performance evaluation mechanism that can provide constructive and objective feedback for officers.

The application of better technology in the PPNS performance monitoring and evaluation system is considered very important to improve the effectiveness of traffic law enforcement. A technology-based system can facilitate the process of data collection, performance analysis, and more accurate and real-time reporting. Therefore, the development of an information technology-based performance monitoring and evaluation system is a strategic step that needs to be taken by the Transportation Agency. According to (Jumroh et al., 2024), the application of an integrated information system can have a positive impact on improving PPNS performance through more targeted and transparent monitoring.

In addition, good monitoring and evaluation will strengthen public accountability in traffic law enforcement. As the agency responsible for ensuring the safety and smooth running of traffic, the Transportation Agency needs to evaluate every step taken by the PPNS. This is important to ensure that every action taken is in accordance with applicable procedures and regulations. Performance evaluation also serves to identify areas that require improvement or renewal, both in terms of policies, procedures, and human resource capacity.

With a better system for monitoring and evaluating PPNS performance, it is hoped that more effective and efficient traffic law enforcement can be achieved. This research aims to develop a model of monitoring and evaluation system that can be implemented by the Transportation Agency to improve the quality of PPNS performance in traffic law enforcement. Through the development of this system, it is expected that the traffic law enforcement process can become more transparent, accountable and measurable.

Traffic law enforcement in Indonesia, especially those involving Civil Servant Investigators (PPNS) in the Transportation Agency, still faces various problems that hamper the effectiveness of its performance. One of the main problems is the weak monitoring and evaluation system of PPNS performance in carrying out its duties. This has a direct impact on the quality of traffic law enforcement carried out, and has the potential to reduce the level of public compliance with traffic rules. According to (Mas'udah et al., 2024), the low level of supervisory effectiveness can be caused by the lack of a transparent and integrated mechanism to monitor PPNS activities in the field, which leads to difficulties in assessing officer performance.

In addition, the current supervisory system is often inadequate to provide clear and timely feedback on PPNS performance. Performance evaluations are still based on manual reports that do not always reflect the reality on the ground, thus failing to provide an accurate picture of PPNS performance. This is exacerbated by the lack of use of information technology that can facilitate real-time supervision. The conventional system makes the supervision process tend to be slow and inefficient. For example, PPNS performance data collection and reporting that is not integrated with the central system causes difficulties in conducting comprehensive data analysis. (Jumroh et al., 2024) revealed that one of the main factors hindering the effectiveness of supervision is the reliance on manual administrative processes that are prone to human error.

In addition, the limited availability of human resources is another problem often faced by the Transportation Agency in managing PPNS performance. The number of tasks that PPNS must perform, ranging from investigation to prosecution of traffic violations, makes them limited in time and capacity to conduct in-depth evaluations. Most PPNS are often burdened with various administrative and procedural tasks that affect their focus on performing law enforcement tasks optimally. In some cases, this can lead to a decrease in the quality of actions taken in the field, including inaccuracies in case handling. According to (Yuliana, R., & Hidayat, 2020), excessive workload without the support of an adequate supervisory system can lead to decreased performance and even abuse of authority.

Another problem is the lack of coordination between institutions involved in traffic law enforcement, such as the Police, Transportation Agency, and other related agencies. In practice, there are often overlaps in duties and responsibilities, leading to a lack of synergy between various parties in traffic law enforcement. The lack of effective communication between agencies can affect the quality of law enforcement carried out by PPNS, as well as make it difficult to conduct a comprehensive evaluation of their performance. A report by (Sudrajat et al., 2024) states that these coordination barriers lead to duplication of tasks and disorganization in the law enforcement process, which can reduce the credibility of law enforcement agencies.

In addition, supervision of PPNS performance that is not accompanied by clear evaluation can also reduce the motivation and professionalism of officers in carrying out their duties. Without constructive feedback and rewards for good performance, PPNS may feel underappreciated, which can have an impact on reducing morale and the quality of law enforcement carried out. This was also expressed by (Vidhiyasi et al., 2024), who stated

that without continuous performance evaluation, it is difficult for PPNS to know whether they have carried out their duties in accordance with established standards.

Overall, the problems in the Transportation Agency's PPNS performance monitoring and evaluation system include the lack of transparent and effective mechanisms, limited human resources, lack of inter-agency coordination, and low levels of accountability in the traffic law enforcement process. All of these issues need to be addressed to improve the quality and effectiveness of law enforcement carried out by the PPNS.

In the context of developing a monitoring and performance evaluation system for the PPNS of the Transportation Agency, previous studies have identified a number of solutions related to improving the monitoring system that can increase the effectiveness of traffic law enforcement. These studies highlight the importance of implementing information technology-based systems that can optimize performance monitoring, as well as evaluations based on accurate and transparent data.

One solution proposed by (Vidhiasi et al., 2024), is the implementation of an integrated information system that allows real-time monitoring of PPNS activities in the field. The system can facilitate the reporting process, data collection, and more accurate performance analysis. With this system, the Transportation Agency can identify PPNS performance more transparently, thereby increasing accountability and accelerating responses to problems that arise in the law enforcement process. The application of this technology can also reduce reliance on manual reports that are prone to errors and omissions, and increase time efficiency in the evaluation process.

Research by (Jumroh et al., 2024) also emphasized the need for the use of technology-based surveillance systems to improve the effectiveness of traffic law enforcement. They proposed the use of a mobile-based application that can be accessed by officers to record and report traffic violations directly. This application allows PPNS to submit real-time violation data to a data center, which can then be automatically processed and analyzed for performance assessment. The system will also increase transparency and speed in the performance evaluation process, and help reduce data manipulation that often occurs in conventional surveillance systems. In addition, the application can be equipped with an automated reporting feature that provides immediate feedback to officers on their performance.

Another solution proposed by (Sudrajat et al., 2024) relates to the importance of inter-agency coordination in the PPNS performance monitoring and evaluation system. In traffic law enforcement, good coordination between the Police, Transportation Agency, and other related agencies is needed to create an efficient and effective system. They suggested the establishment of an integrated communication system that facilitates the exchange of data and information between agencies. This system aims to speed up the law enforcement process, reduce duplication of tasks, and ensure that every action taken by PPNS is in accordance with established procedures. With good coordination, every step taken can be evaluated more thoroughly and measurably, and improve the quality of public services in the traffic sector.

In addition, several studies emphasize the importance of supervision based on the principles of accountability and transparency. According to (Yuliana, R., & Hidayat, 2020), to improve the performance of PPNS, supervision needs to be carried out with an approach based on clear and measurable work results. In this case, performance evaluations that involve constructive feedback and rewards for good performance can increase officer motivation in carrying out their duties. They also suggested that performance evaluations be conducted on an ongoing basis using specific and measurable indicators, such as the number of violations followed up, the level of public satisfaction with law enforcement, and the rate of reduction in traffic accidents.

The application of results-based evaluation is also proposed by (Mas'udah et al., 2024), who suggest that the evaluation of PPNS performance should cover various aspects, ranging from the effectiveness of law enforcement, efficiency in the use of resources, to the quality of interaction between officers and the community. A comprehensive evaluation will assist in identifying areas that require improvement, as well as provide a basis for planning training and capacity building programs for PPNS. In this sense, performance evaluation serves not only as a tool to assess officer performance, but also as a mechanism to improve the overall quality of traffic law enforcement.

Overall, the various solutions proposed in the literature suggest that the development of a monitoring and performance evaluation system for the PPNS of the Transportation Agency can be achieved through the implementation of more advanced information technology, improved inter-agency coordination, and performance evaluation based on accountability and transparency. The use of better technology and a more integrated system can accelerate the monitoring and evaluation process, and improve the effectiveness and efficiency of traffic law enforcement. However, achieving this goal

requires support from various parties, both in terms of policies, human resources, and technological infrastructure.

The problems in this study are How is the current mechanism for monitoring and evaluating the performance of the PPNS Transportation Service in enforcing road transportation traffic laws and How can the development of information technology-based systems increase transparency, efficiency, and accountability in monitoring and evaluating PPNS performance in enforcing road transportation traffic laws.

## **2. RESEARCH METHODS**

The research approach is descriptive and exploratory, aiming to describe the current situation related to the supervision and evaluation of PPNS performance in road transportation traffic law enforcement, and explore technology-based solutions that can improve the effectiveness of such supervision. The research will also explore the potential impact of implementing the proposed system on improving the quality of law enforcement.

## **3. DISCUSSION**

### **Mechanism of Supervision and Evaluation of the Performance of PPNS of the Existing Transportation Agency in Enforcing Road Transportation Traffic Laws.**

The mechanism for monitoring and evaluating the performance of the PPNS of the Transportation Agency in enforcing road transportation traffic laws in Indonesia is currently still facing various challenges that affect its effectiveness. As officers who have the authority to investigate and prosecute traffic violations, PPNS Dinas Perhubungan plays an important role in maintaining the security, safety, and smoothness of traffic. However, supervision of PPNS performance is often limited to conventional administrative procedures, without a system that can provide transparent and real-time data-based evaluation.

The current supervision system relies more on manual reports and direct supervision by superiors that is limited to general observations, thus not always accurately reflecting performance. (Mas'udah et al., 2024), revealed that current PPNS performance supervision mechanisms are often inadequate to provide timely and comprehensive feedback on their performance. This is due to the limited use of technology in collecting and analyzing PPNS performance data, which in turn hinders efforts to conduct more objective and measurable evaluations.

PPNS performance evaluation is also still conducted using a fairly simple and fragmented method, for example through monthly or annual performance reports submitted by each unit. However, these reports are often descriptive and lack measurable performance indicators relevant to traffic law enforcement duties. As explained by (Vidhiasi et al., 2024), these traditional performance evaluations are not able to reflect the overall work of the PPNS, given the many factors that influence their performance assessment, such as the number of violations prosecuted, the accident rate, and the level of public satisfaction with the services provided.

In addition, existing oversight mechanisms are not always complemented by an integrated reporting system, so information often does not reach higher levels in an efficient manner. This limitation causes gaps in the performance evaluation process which can affect the effectiveness of decision making by leaders in the Transportation Agency. (Sudrajat et al., 2024), explained that without an integrated system, data obtained through reports cannot be analyzed holistically, and this can cause decisions to be made that are not based on strong enough evidence.

The lack of coordination between various parties involved in traffic law enforcement is also an obstacle in monitoring and evaluating PPNS performance. In its implementation, the PPNS of the Transportation Agency often cooperates with other agencies, such as the Police and the Courts, but the coordination mechanism between these agencies is still weak. (Yuliana, R., & Hidayat, 2020), revealed that poor coordination between the Transportation Agency, the Police, and other agencies can lead to overlapping duties and responsibilities, which ultimately hinders the evaluation process and increases the risk of inaccuracies in performance reports.

In addition, the existing supervision system is not sufficiently responsive to changing conditions in the field. Supervision of PPNS performance tends to be passive and based solely on incoming reports, without intensive direct supervision or mechanisms that can detect problems quickly. This is a major challenge, given the complexity and dynamics of traffic that continue to change along with the growth in the number of vehicles and the complexity of the transportation network. As pointed out by (Jumroh et al., 2024), more active and information technology-based surveillance can provide a solution to this problem, by providing a platform that allows real-time surveillance and can be accessed by various relevant parties.

Overall, although the supervision and performance evaluation mechanism of the PPNS of the Transportation Agency in enforcing road transportation traffic laws is already in place, there are still many shortcomings that need to be improved. Therefore, it is important to develop a more integrated and technology-based monitoring system, which can improve the effectiveness of performance evaluation, accelerate decision-making, and strengthen accountability and transparency in traffic law enforcement.

In addition to the challenges previously described, there are still several aspects that need to be discussed further related to the supervision mechanism and performance evaluation of the PPNS of the Transportation Agency in enforcing road transportation traffic laws. One of them is the limited human resources (HR) owned by the Transportation Agency. As stated by (Mas'udah et al., 2024), the limited number of PPNS with very many tasks is one of the main obstacles in monitoring and evaluating performance. The many administrative and operational tasks that PPNS must perform, such as investigating and prosecuting traffic violations, as well as ensuring smooth operations in the field, often result in them not being able to fully focus on evaluating and monitoring their own performance. This excessive workload has the potential to reduce the quality of performance and make it difficult to achieve optimal law enforcement objectives.

In addition, the aspect of technology capacity that has not been maximized is also a significant problem in the existing supervision system. Although information technology has begun to be used to support administrative processes at the Transportation Agency, the implementation of technology in PPNS performance supervision is still fairly limited. Most supervision processes are still carried out manually, resulting in delays in obtaining data and difficulties in comprehensively analyzing performance. The use of more sophisticated systems, such as cloud-based platforms or mobile-based applications for direct monitoring, can improve the efficiency of data collection and reporting, but are still little implemented. (Jumroh et al., 2024) noted that more sophisticated systems enable real-time monitoring and can provide authorities with access to direct oversight of actions taken by PPNS in the field.

The weak coordination between agencies also poses a significant problem in the supervision of PPNS (Civil Service Investigators) performance. In enforcing traffic laws, PPNS from the Department of Transportation do not work alone; they must collaborate with other agencies, such as the Police and the Courts. However, as explained by (Sudrajat et al., 2024) there are often discrepancies in procedures, overlapping tasks, and a lack of effective communication channels between institutions. This can potentially hinder



coordination in law enforcement, thereby not only reducing the quality of supervision but also complicating the process of evaluating PPNS performance. It is necessary to establish a more integrated communication system among these institutions so that evaluation and supervision can be carried out holistically.

Another significant issue is the lack of constructive feedback mechanisms for PPNS (Civil Service Investigators). The current evaluation is still administrative in nature, without providing concrete feedback on what is done well or what needs to be improved. Without clear feedback, it is difficult for PPNS to identify areas that need improvement, which can impact their work motivation. (Vidhiasi et al., 2024), emphasize the importance of providing feedback based on objective data and rewarding good performance to enhance the enthusiasm and professionalism of PPNS in carrying out their duties.

Additionally, it should be noted that difficulties in measuring the long-term impact of traffic law enforcement also pose challenges in evaluating PPNS performance. Quantitative evaluations based on the number of violations handled or the number of tickets issued, while important, do not fully reflect the broader impact of law enforcement. This includes aspects of road safety, accident reduction, and long-term changes in driver behavior. According to (Mas'udah et al., 2024), to assess PPNS performance more holistically, evaluations must include these aspects and not be limited to narrow quantitative indicators.

Overall, the supervision and performance evaluation mechanisms for PPNS (Civil Service Investigators) of the Department of Transportation in enforcing road traffic laws are currently facing various challenges that hinder their effectiveness. Therefore, it is necessary to develop a more integrated and technology-based supervision system to enhance transparency, accountability, and efficiency in performance evaluation. An objective data-based system, the use of clear SOPs (Standard Operating Procedures), and improved inter-agency coordination will help improve the quality of supervision and performance evaluation of PPNS in traffic law enforcement.

### **Development of Information Technology-Based Systems Can Enhance Transparency, Efficiency, and Accountability in the Supervision and Performance Evaluation of PPNS in Road Traffic Law Enforcement.**

The development of information technology (IT)-based systems in the supervision and performance evaluation of Civil Service Investigators (PPNS) in road traffic law enforcement plays a crucial role in enhancing transparency, efficiency, and accountability.

These systems can provide significant benefits, particularly in creating a more structured and accountable framework in law enforcement.

Transparency in the supervision and evaluation of PPNS (Civil Service Investigators) performance heavily relies on the ability to monitor and report activities in real-time. By using information technology, all data and processes related to traffic law enforcement, such as violation reporting, evidence, actions taken, and case status, can be integrated into a single system accessible to various stakeholders. This enables stakeholders, such as PPNS supervisors, oversight institutions, and even the public, to access information clearly and without hindrance. For example, in a study conducted by (Asmarani, D., Wulandari, T., & Kusnadi, 2012), the implementation of IT-based systems in local government showed significant improvements in the transparency of administrative and law enforcement processes.

Efficiency is also an important factor that can be achieved through the implementation of IT systems. In the context of traffic law enforcement, the use of information systems allows for faster and more accurate data management. Manual processes that previously took a long time can be replaced with automation processes that reduce the likelihood of human error and speed up decision-making. For example, in a study conducted by (Suryani, M., Adnyani, A., & Fitriani, 2020), the implementation of information systems in traffic supervision management was proven to reduce the time needed to process data and produce evaluation results. Additionally, IT systems allow for more detailed monitoring of PPNS performance, from response time to the quality of decisions made, all of which can be analyzed to improve operational efficiency.

Accountability is another aspect that is greatly strengthened by the implementation of IT-based systems. Every action taken by PPNS (Civil Service Investigators) can be tracked and documented properly, making it easier to audit and evaluate. With a system that has a digital audit trail, every decision made by PPNS in the process of traffic law enforcement can be accounted for. This reduces the potential for abuse of power and ensures that every action taken complies with the applicable regulations. As evidence, in a study by (Simarmata, A., Harahap, R., & Siregar, 2020), IT-based systems in the supervision of state institutions can enhance the accountability of agencies by providing complete and detailed records that can be accounted for to the public and authorities.

Overall, the development of IT-based systems in the supervision and performance evaluation of Civil Service Investigators (PPNS) not only improves the quality of road traffic law enforcement but also strengthens the integrity of the enforcing institutions.

These systems support the creation of more objective supervision, faster decision-making, and more transparent reporting. Therefore, investing in information technology becomes a very strategic step in enhancing the quality of public services, especially in the field of traffic law.

The development of information technology (IT)-based systems in the supervision and performance evaluation of Civil Service Investigators (PPNS) of the Department of Transportation in enforcing road traffic laws in Indonesia has great potential to enhance transparency, efficiency, and accountability in the tasks undertaken by PPNS. Alongside the rapid development of information technology, many government sectors are beginning to utilize technology to improve their management and supervision systems, including in traffic law enforcement. In this context, the implementation of IT-based systems is expected to address various issues that have been obstacles in the supervision and evaluation of PPNS performance.

a. Transparency in the Supervision of PPNS Performance

One of the main challenges in supervising the performance of the Civil Service Investigators (PPNS) of the Department of Transportation is the lack of transparency in the evaluation and monitoring processes of activities carried out by field officers. Most of the reports produced so far are manual and sometimes do not provide an accurate picture of PPNS performance. This can affect decision-making and reduce public trust in the traffic law enforcement process. As stated by (Vidhiyasi et al., 2024), without a transparent system, it is difficult for the public and stakeholders to access valid information about the implementation of PPNS duties.

The development of information technology (IT)-based systems, such as integrated monitoring platforms, can enhance transparency in every step of the law enforcement process. With this system, all data related to the duties of Civil Service Investigators (PPNS), from violation reports to actions taken, can be accessed in real-time by authorities and even the public. The data collected in this system can show how effective PPNS is in carrying out their duties and provide a clear picture of each officer's performance. For example, a mobile app-based reporting system can allow PPNS to directly input data related to violations or follow-up actions they take in the field, which will then be immediately integrated with the central system (Sudrajat et al., 2024).

Additionally, with a transparent system in place, it will be easier for the public and stakeholders to evaluate whether law enforcement is conducted fairly and without discrimination. For example, the public can access information regarding the most common types of violations, areas prone to violations, and the actions taken by PPNS against these violations. This can increase public trust in the Department of Transportation, as the evaluation and supervision processes can be conducted openly and accountably.

b. Efficiency in the Supervision and Evaluation of PPNS Performance

Information technology (IT)-based systems can bring significant improvements in terms of efficiency, both in data collection, performance monitoring, and the overall evaluation process. Until now, data collection and reporting by Civil Service Investigators (PPNS) have often been done manually, which not only takes time but also has the potential to cause errors in recording and analysis. This process also requires a lot of human resources to be involved in data processing, making supervision inefficient (Mas'udah, 2023).

By implementing technology-based systems, the process of data collection and processing can be done more quickly and accurately. For example, Civil Service Investigators (PPNS) can input reports directly through mobile applications or other devices, which will automatically integrate with the central system. The data collected is not only more accurate but also processed faster, allowing for more intensive and responsive supervision. Additionally, information technology allows for integration between various agencies involved in traffic law enforcement, such as the Police and the Courts, so that the necessary information can be accessed directly and more quickly (Jumroh et al., 2024).

This technology-based system can also facilitate more efficient data analysis. The use of big data analytics in the monitoring system can enable authorities to track traffic violation trends, identify accident-prone areas, and analyze the performance of Civil Service Investigators (PPNS) in handling traffic violations. Thus, the supervision and evaluation of PPNS performance can be more targeted, based on objective and measurable data, and reduce reliance on manual reports that are prone to errors (Yuliana, R., & Hidayat, 2020).

The implementation of this technology also allows for the automation of the evaluation process. For example, the system can automatically calculate and analyze the number of violations addressed, the time required to handle each case, and the

results of each follow-up action taken. These evaluation results can then be used to provide quicker feedback to PPNS (Civil Service Investigators) on their performance, thereby speeding up the improvement process. With efficiency in data collection and analysis, the Department of Transportation can focus more on strategic decision-making, such as determining more effective law enforcement policies in the future.

c. Accountability in Traffic Law Enforcement

Accountability is a crucial aspect of law enforcement, especially in the context of supervising the performance of Civil Service Investigators (PPNS) of the Department of Transportation. Without a system that can objectively monitor and evaluate PPNS performance, it is difficult for the public or stakeholders to assess whether PPNS are performing their duties in accordance with established procedures and standards. As stated by (Yuliana, R., & Hidayat, 2020), without a clear evaluation mechanism, PPNS performance cannot be properly accounted for, which can lead to abuse of authority or unfair decision-making.

With the development of information technology (IT)-based systems, accountability in traffic law enforcement can be significantly enhanced. Through this system, every action taken by Civil Service Investigators (PPNS) can be recorded in detail and monitored directly by authorities. For example, every traffic violation addressed by PPNS can be immediately recorded in the system and linked to the actions taken, such as the amount of fines issued, seizure actions, or further investigations. This not only facilitates supervision of PPNS performance but also provides greater transparency regarding the law enforcement process (Vidhiasi et al., 2024).

Furthermore, with an integrated system, all data related to traffic law enforcement can be accessed by various parties involved in the evaluation process, including officials in the Department of Transportation, the Police, and the public. This will enable authorities to assess whether the Civil Service Investigators (PPNS) have performed their duties according to established procedures, and whether the actions taken are in compliance with applicable laws. This system also allows for easier internal audits, as every step taken by PPNS is recorded in the integrated system, which can be periodically reviewed to ensure that there is no abuse of authority or deviation from established procedures (Sudrajat et al., 2024).

Additionally, technology-based systems can simplify the reporting and follow-up of public complaints related to traffic law enforcement. For example, the public can easily report suspected violations or injustices committed by Civil Service Investigators (PPNS) through an application provided by the Department of Transportation. Each received report can then be followed up more quickly and transparently, thereby increasing accountability to the public. Thus, the development of technology-based systems will strengthen the accountability system in traffic law enforcement and provide assurance to the public that the enforcement process is carried out fairly and in accordance with applicable regulations.

d. Challenges in Implementing Technology-Based Systems

Despite the numerous benefits offered by the development of information technology (IT)-based systems, there are several challenges that need to be addressed in their implementation. One of the main challenges is the limitation of existing technological infrastructure in some areas. Not all regions in Indonesia have adequate access to fast and stable internet networks, which can hinder the effective implementation of technology-based monitoring systems. This is particularly problematic in remote areas or regions with limited technological infrastructure.

Another challenge is human resource readiness. Although technology can improve efficiency, the success of this system's implementation heavily relies on the ability and preparedness of the Civil Service Investigators (PPNS) in using the technology. Therefore, training and capacity building for PPNS are crucial to ensure they can effectively utilize the system and avoid errors in technology use that could impact the quality of supervision and performance evaluation.

Additionally, data security is also an important aspect to consider in the development of technology-based systems. The management of personal data and data related to traffic violations must be conducted carefully and in accordance with applicable regulations to prevent information leaks that could harm individuals or institutions. Therefore, the system developed must be equipped with adequate security measures, such as data encryption and protection against unauthorized access.

#### 4. CONCLUSION

This study shows that the implementation of information technology (IT)-based systems in the supervision and performance evaluation of Civil Service Investigators (PPNS) can enhance transparency, efficiency, and accountability in the enforcement of road traffic laws. IT systems allow for more structured data management, speed up decision-making processes, and ensure that every action can be accounted for. Thus, the development and implementation of IT systems have the potential to improve the quality of supervision and strengthen the integrity and public trust in traffic law enforcement.

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