

## IMPLEMENTATION OF THE ELECTRONIC TRAFFIC LAW ENFORCEMENT (ETLE) SYSTEM THROUGH TRAFFIC CCTV SURVEILLANCE AS AN EFFORT TO CRACK DOWN ON VIOLATORS

Widya Maylin Sinurat<sup>1a\*</sup>, Rizkan Zulyadi<sup>2b</sup>, Serimin Pinem<sup>3c</sup>

<sup>123</sup> Magister Ilmu Hukum, Universitas Medan Area, Medan, Indonesia

<sup>a</sup> [widiasinuratmay@gmail.com](mailto:widiasinuratmay@gmail.com)

<sup>b</sup> [rizkan@staff.uma.ac.id](mailto:rizkan@staff.uma.ac.id)

<sup>c</sup> [seriminpinem@staff.uma.ac.id](mailto:seriminpinem@staff.uma.ac.id)

(\* Corresponding Author  
widiasinuratmay@gmail.com

### ARTICLE HISTORY

Received : 20-11-2025

Revised : 07-12-2025

Accepted : 10-02-2026

### KEYWORDS

Electronic Traffic Law Enforcement (ETLE); Traffic Law Enforcement; CCTV Surveillance; Traffic Violations; Legal Certainty

### ABSTRACT

This study analyzes the implementation of the Electronic Traffic Law Enforcement (ETLE) system through traffic CCTV surveillance as an effort to enforce traffic violations in Medan City. The objectives of this research are to examine the legal basis of the ETLE system, analyze its implementation by the Traffic Directorate of the North Sumatra Regional Police, and identify obstacles encountered in its application. This research employs a normative juridical method with a descriptive-analytical approach, utilizing primary legal materials in the form of statutory regulations and secondary legal materials from legal literature and scholarly works. The results indicate that the legal foundation of the ETLE system is established under Law Number 22 of 2009, Government Regulation Number 80 of 2012, and Police Regulation Number 8 of 2023, which collectively provide legal certainty for electronic-based traffic law enforcement. The implementation of ETLE in Medan City has been conducted through public socialization and CCTV-based monitoring to enhance efficiency and objectivity in traffic law enforcement. However, several obstacles remain, including technical limitations of CCTV facilities, weather conditions, low public awareness, inaccurate vehicle data, and the use of fake license plates. These challenges affect the effectiveness of ETLE implementation and require improved infrastructure and inter-agency coordination.

*This is an open access article under the CC-BY-SA license.*



### INTRODUCTIONS

The implementation of electronic tickets (E-Tickets) by Satlantas does not arbitrarily only fine drivers who commit traffic violations, but can be an action in enforcing traffic laws and its function for supervision and minimizing traffic violations. These efforts are in the form of enforcement of violations, guarding, escorting and patrolling. And from the repressive efforts, drivers who violate traffic will of course be sanctioned or fined. The enactment of this action is certainly to provide firm action in following up on traffic violators and the act of violation is no longer called

a very easy thing to do. In the future, there will be deterrence and of course when in traffic there will be no more violations. (Latifa et al., 2024; Rahmanizar & Rusdi, 2022)

There are various types of legal cases to take strict action against perpetrators who violate traffic that are still in place and contrary to the rules that of course apply. There are still some traffic violations that are not processed in accordance with the applicable legal provisions, the case process is often resolved by the offender giving bribes to individuals or officers and violating the police code of ethics. In addition, violations of the police code of ethics that often occur include illegal levies, non-transparent ticket fines and police officers who are still looking for opportunities to unilaterally deal with violators even though the ticket money should be intended to be included in Non-Tax State Revenue (PNBP). Of course, this is part of the violation of Article 209 of the Criminal Code where it is determined that criminal sanctions, namely imprisonment for 2 years and eight months, are given to parties who have elements of intentional bribes to the traffic police. (Rasyimah & Sari, 2022; Wanda et al., 2025)

With the discovery of cases of bribery and bribery by traffic police, law enforcement officials began to think about the ticketing process that applies new technology aimed at cracking down on traffic problems that always occur. Article 1 of Perma No.12 of 2016 which regulates the Procedures for Solving Traffic Violation Cases stipulates the judicial process in resolving cases in an integrated manner using technology supported by information systems that have been created by the government for the realization of law enforcement in traffic. (Kadri et al., 2025)

Electronic Traffic Law Enforcement abbreviated as ETLE is a law enforcement system in the field of traffic based on information technology using electronic devices in the form of cameras. This system detects various types of traffic violations and automatically presents motor vehicle data based on Automatic Number Plate Recognition (ANPR). ETLE among the wider community is known as e-ticketing or electronic ticketing. It was officially launched on November 25, 2018 by the Directorate of Metro Jaya Police at an inauguration ceremony which at that time was attended by the Deputy Chief of Police Komjen Pol. Ari Dono Sukmanto and the Minister of RB Komjen Pol (Pur) Syafruddin at the HI Roundabout about two years ago. (Basri et al., 2025)

The presence of ETLE in Indonesia originated from ideas and ideas and was initiated by the National Police Chief General Idham Azis who at that time served as the Metro Jaya Police Chief and the Director of the Metro Jaya Regional Police Kombes Pol Yusuf. This initiative arose because of traffic problems and the still high number of traffic violations and accidents. At that time, the Metro Jaya Regional Police only had two cameras with an e-police type that could detect violations of markings and traffic lights only and the two cameras were placed at the intersection of the Statue of the Horse Roundabout and Sarinah Thamrin. From the results of the evaluation at that time, the enforcement of violations with ETLE could reduce the number of traffic violations by 44.2 percent. Therefore, the PMJ Directorate considers ETLE to be very effective and efficient in traffic law enforcement so it needs to be further developed. Then in July 2019, ETLE's capacity began to be developed again by increasing the capacity of cameras to detect several other violations such as the use of seat belts, the use of mobile phones while driving and odd-even violations using a new type of camera, namely check points. (Aldizar et al., 2025)

On December 5, 2019, the ETLE development program began to be introduced with the addition of a traffic arming system feature to detect motorcycle theft. This was done with the addition of 45 cameras which were camera grants from the DKI Jakarta Provincial Government. Starting February 1, 2020, the Metro Jaya Regional Police will implement ETLE to detect motorcyclists who violate the markings and do not use helmets. With the ETLE journey process to date, it can be known that the history of the birth of ETLE in Indonesia has been recorded since its inauguration on November 25, 2018. Although the travel process is said to be not easy, ETLE is believed to provide many benefits. Until now, ETLE has begun to be developed in several areas such as Surabaya, Semarang and a number of other areas. (Rosadi et al., 2024)

The ETLE system was created to increase efficiency and openness in the process of enforcing illegal driver's tickets. There are several kinds of points that need to be addressed in taking action against traffic violators, namely:

- a. Not wearing a helmet;
- b. For four-wheelers do not wear seat belts
- c. Exceeding speed capacity
- d. Play cellphones while driving or driving

- e. Walking in the opposite direction
- f. Over Capacity
- g. Breaking through the red light
- h. Do not bring a driver's license and vehicle registration as well as vehicle completeness. (Basoeki et al., 2023)

The implementation of the electronic ticketing system (ETLE) is to facilitate speed and convenience, openness in the implementation of the ticketing process or as a substitute for the on-site ticketing process. Some of the benefits for traffic violators with the ETLE system are transparency of the actions of public officials in government implementation activities and community empowerment in the hope of transmitting traffic order after knowing the existing regulations to the people around them so as not to violate existing regulations. It is no secret that the practice of bribery during traffic operations often occurs. (Ananda et al., 2025)

The implementation of the first phase of ETLE, there are 12 Regional Police with 244 electronic ticketing cameras that are ready to be used. And the implementation of the second phase of the electronic ticketing system is set to be carried out in 2023, of course, it will also be carried out at 14 Regional Police with 38 static cameras and two running cameras. The implementation of this electronic ticket has been implemented in all Police Departments throughout Indonesia, including the North Sumatra Police. The North Sumatra Regional Police institution has just implemented an electronic ticketing system, which is a ticketing system that is carried out electronically using a tool called the "Vehicle Surveillance Tool" (APK). This system is carried out to increase the efficiency and transparency of the ticketing process for drivers who violate traffic regulations.

The city of Medan is the largest city with a very large population of people who use motorized vehicles, so that it is none other than that the city of Medan is a city with a very high number of violators of road crime, accidents, pungli and other street crimes. (Scott, 2025)

Therefore, it is necessary to make a rule that will be applied to the community in minimizing the rate of traffic accidents and not bringing completeness in carrying vehicles that have been made by the Directorate of Traffic. This ETLE is also very capable of monitoring because this ETLE is equipped with sophisticated CCTV cameras, so that drivers who violate traffic rules can be seen and this is an effort for traffic law enforcement to sanction traffic violators.

In explaining the background of the problem above, the author wants to make a thesis research in which this thesis research is a requirement that must be met for the completion of the Master of Law study at the University of Medan Area. Therefore, the author raised the title of the thesis, namely "The Implementation of the Electronic Traffic Law Enforcement (ETLE) System Through Traffic CCTV Supervision as an Effort to Crack Down on Violators".

## METHOD

This research was carried out at the Directorate of Traffic of the North Sumatra Regional Police which is located at Jalan Putri Hijau No. 14, Kesawan, Medan City, North Sumatra Province. The type of research used is normative juridical research with a descriptive-analytical nature, which focuses on the study of legal norms, legal principles, legal systems, and the synchronization of laws and regulations related to the implementation of the Electronic Traffic Law Enforcement System (ETLE) through traffic CCTV surveillance. This research aims to obtain a systematic and in-depth picture of the legal basis and implementation of ETLE as an instrument of traffic law enforcement, by relying on the doctrine and provisions of relevant laws and regulations. (Sukmawan & Damayanti, 2025)

Data collection was carried out through literature studies using secondary data consisting of primary, secondary, and tertiary legal materials. In addition, to strengthen understanding of policy implementation, this study involved informants from employees of the North Sumatra Regional Police Traffic Directorate who have competence, experience, and willingness to provide information related to the implementation of ETLE. The data obtained is analyzed qualitatively by emphasizing the process of interpretation and meaning of the legal facts found. All data collected are systematically compiled and analyzed using the deductive reasoning method, which is to draw conclusions from general legal provisions to the specific problem being studied.

## RESULT AND DISCUSSIONS

### Normative and Conceptual Foundations of ETLE Application

The implementation of Electronic Traffic Law Enforcement (ETLE) is a concrete manifestation of the development of modern administrative law that utilizes information technology as an instrument of law enforcement. In the context of traffic law in Indonesia, ETLE is not only understood as a technical innovation, but also as a legal policy rooted in the principles of legal certainty, utility, and justice. These three principles are the main basis for assessing the legitimacy and social acceptance of the electronic-based law enforcement system. (Yoku & Zien, 2025)

Normatively, the existence of ETLE has obtained strong legitimacy from Law Number 22 of 2009 concerning Road Traffic and Transportation. Article 272 of this law explicitly opens up the space for the use of electronic equipment in support of enforcement activities for traffic violations, while recognizing the results of electronic recordings as valid evidence in court. This provision marks an important shift in the traffic law evidentiary system that previously relied heavily on the direct testimony of officers. (Tetuko & Harjiyatni, 2022)

The normative strengthening of the use of technology is continued through Government Regulation Number 80 of 2012 which regulates procedures for checking motor vehicles on the road and the mechanism for enforcement of traffic violations. This regulation places electronic equipment recordings on a par with officers' direct findings and community reports as the basis for law enforcement. Thus, ETLE does not stand outside the existing legal system, but is structurally integrated in national law enforcement mechanisms. (Putra & Madjid, 2024)

Police Regulation Number 8 of 2023 then comes as a technical-operational instrument that regulates the implementation of traffic based on electronic systems comprehensively. This regulation describes in detail the types of services, implementers, stages, and supporting facilities and infrastructure of ETLE. The presence of this Perpol shows the consistency of the National Police's institutional policies in encouraging digital transformation in the field of services and traffic law enforcement. (Baihaqi et al., 2024)

From a conceptual perspective, ETLE can be understood as part of an administrative criminal law policy that emphasizes efficiency, certainty, and prevention. Traffic violations that are light, massive, and easily proven are very relevant to be handled through technology-based administrative mechanisms. This approach is in line with the principles of simple, fast, and low-cost justice, while reducing the burden on the judiciary. (Bagasatwika, 2020)

Another relevant conceptual foundation is the principle of good governance in public services. ETLE is designed to minimize direct contact between officers and the public, thereby reducing the potential for abuse of authority and illegal collection practices. Transparency in the enforcement process and accountability in fine management are added values that strengthen public trust in law enforcement officials.

Thus, normatively and conceptually, ETLE has a solid foundation as a modern traffic law enforcement instrument. The main challenge lies not in the legitimacy of the law, but in how this policy is implemented consistently and adaptively to the social conditions of the community. (Airlangga & Suryokencono, 2024; Pardede et al., 2022)

### Implementation of ETLE and the Dynamics of Traffic Law Enforcement in Medan City

The implementation of ETLE by the Traffic Directorate of the North Sumatra Police, especially in the city of Medan, shows the dynamics of traffic law enforcement that are increasingly complex. The city of Medan as the center of economic activity and community mobility has a relatively high rate of traffic violations, so it is a strategic location in the implementation of the electronic ticketing system. (Narullita, 2024; Saragih et al., 2024)

Empirical data for 2023–2024 shows a significant increase in the number of violations detected through ETLE cameras compared to manual tickets. This indicates that ETLE has more consistent and sustainable surveillance capabilities than conventional systems that rely on the presence of officers in the field. ETLE cameras are capable of recording violations for 24 hours without being affected by limited human resources. (Putri & Dewi, 2024)

In addition to increasing the quantity of prosecution, ETLE also contributes to improving the quality of evidence. Each violation is supported by verifiable visual evidence, thereby strengthening the legal position of the authorities in the enforcement process. This evidence also provides certainty for violators regarding the legal basis of the sanctions imposed, thereby reducing the potential for disputes. (Sakti & Haniyah, 2024)



The implementation of ETLE also has an impact on changing the work pattern of police officers. The role of officers shifted from direct enforcement implementers to system operators, data analysts, and violation verifiers. This change requires increasing the capacity of human resources, especially in mastering information technology and data management.

However, the implementation of ETLE has not completely replaced the role of manual ticketing. The limited number of cameras and surveillance range have led to areas that rely on conventional enforcement. This condition creates a dualism of the law enforcement system that requires coordination and standardization of procedures so as not to cause inequality in law enforcement.

Technical factors such as weather disturbances, network quality, and device maintenance also affect the effectiveness of ETLE. Heavy rain and lightning have the potential to degrade the quality of the footage or even damage the device. These challenges underscore the importance of sustainable investment in infrastructure and supporting technologies.

On the other hand, the level of administrative compliance of the community with the ETLE mechanism is still relatively variable. Some violators do not understand the procedure for electronic confirmation and payment of fines. This shows that digital transformation in law enforcement must be balanced with increasing legal and digital literacy of the community.

Overall, the implementation of ETLE in Medan City shows great potential in increasing the effectiveness of traffic law enforcement. However, its success depends heavily on infrastructure readiness, institutional capacity, and Community support. (Ferdyandaru et al., 2025)

**Electronic Ticket Data in 2024**

Location	Caught on Camera	Valid	Delivered	Confirmed	Confirmed Website	Confirmed Offline	Billable	Pays off
1	2	3	4	5	6	7	8	9
Town Hall	95621	35673	25765	3787	1251	1512	5125	2229
Spg Brigadier General Katamso	75212	32721	17651	2531	2331	975	6721	3412
Gosigap Ditlantas Polda	15212	25211	21243	3456	1235	841	7521	4212
Jl.Hm.Yamin-Perintis (Tugu Juang 45)	1681	2131	256	1243	1026	875	6751	3442
City Boundary Section – Gatot Subroto (Direction From City)	1851	751	452	1351	1156	825	3521	2356
Ruas Jl.Amir Hamzah (Simpang Karya)	5211	541	351	365	421	756	4211	2387
Jl.Kapten Muslim (In Front of Plaza Milenium)	5321	185	234	257	1211	821	2875	2421
Segment Jl. Raden Saleh (House of Representatives Office)	4521	272	261	252	1231	756	1982	2341

Jl. Sm. Raja (Front Ramayana)	1122	351	212	231	1311	871	1212	1331
Ruas Jl. Yossudarso (Sp. Cilincing)	1111	411	231	321	1221	775	1321	1212
Main Market Section – Jamin Ginting	551	312	222	651	2212	675	2341	1575
Quantity	206.303	98.559	66.878	14.445	14.606	9.682	43.881	26.918

### Obstacles, Implications, and Directions for Strengthening ETLE Policy

Although ETLE offers a variety of advantages, its implementation is inseparable from a number of structural, technical, and sociological constraints. The first obstacle is related to the limited facilities and infrastructure, especially the uneven number of ETLE cameras throughout the Medan City area. This limitation causes many violations to escape electronic supervision. (Zubaidah & Mansyur, 2019)

Another technical obstacle is environmental factors, especially extreme weather that can interfere with the performance of the device. The risk of damage due to lightning and network disruption is a serious challenge in maintaining the sustainability of the ETLE system. Therefore, technical standards that are more adaptive to local environmental conditions are needed. (Indarsih, 2021)

From the administrative side, the problem of incompatibility of vehicle data with the identity of the owner is a significant obstacle. Changes of domicile that are not followed by data updates and the use of fake license plates make it difficult to send an electronic ticket confirmation letter. This shows the need for stronger data integration between the police, Samsat, and population agencies.

Sociological constraints cannot be ignored either. The low public understanding of the ETLE mechanism reflects the limited socialization and public education. Without adequate understanding, ETLE has the potential to be perceived as a mere repressive tool, not as an instrument of public safety. (Antari & Situmorang, 2024)

The implication of these various obstacles is the need for a more holistic policy approach. Strengthening ETLE is not enough to be done through the addition of devices, but also through increasing the capacity of human resources, cross-sector data integration, and effective public communication strategies. (Samsiah et al., 2024)

The direction of strengthening ETLE policies needs to be focused on three main aspects, namely strengthening technological infrastructure, institutional optimization through RTMC as a data control center, and increasing community participation. The synergy of these three aspects will determine the sustainability and effectiveness of ETLE as an instrument of law enforcement.

With an integrated and sustainable approach, ETLE has the potential to become a modern, transparent, and equitable model of traffic law enforcement. The success of this policy will ultimately contribute to the establishment of a culture of orderly traffic and the improvement of public safety in general.

### CONCLUSION

Based on the results of the research, it can be concluded that the implementation of the Electronic Traffic Law Enforcement (ETLE) system has a strong and clear legal basis in laws and regulations in Indonesia. The normative basis is contained in Law Number 22 of 2009 concerning Road Traffic and Transportation which recognizes the use of electronic equipment as an aid to enforcement and legal evidence, strengthened by Government Regulation Number 80 of 2012 which regulates procedures for checking motor vehicles and prosecuting traffic violations based on electronic recordings, as well as Police Regulation Number 8 of 2023 which specifically regulates the implementation of traffic based on electronic systems. The existence of this regulation shows that the implementation of ETLE is not only a technical policy, but an integral part of a legitimate and structured national traffic law enforcement system.

The findings of the study also show that the implementation of ETLE by the Traffic Directorate of the North Sumatra Police in Medan City has made a positive contribution in supporting the effectiveness of traffic law enforcement, especially through socialization activities to the community and the use of technology to detect violations objectively. The ETLE system assists traffic officials in providing strict, transparent, and measurable sanctions, but its implementation still faces a number of obstacles. These obstacles include the limited number of ETLE cameras that have not reached all areas prone to violations, technical disturbances due to weather factors that affect the performance of electronic devices, low levels of public understanding of the electronic ticketing mechanism due to lack of socialization and complexity of procedures, as well as administrative problems in the form of changes in the domicile of vehicle owners and the use of fake license plates that make it difficult to take action and send letters Tickets. These obstacles show that ETLE optimization still requires strengthening infrastructure, data integration, and improving community legal literacy.

## REFERENCES

- Airlangga, U. A. W., & Suryokencono, P. (2024). Sinkronisasi Hukum Pengaturan Electronic Traffic Law Enforcement (Etle) Menurut Undang- Undang No. 22 Tahun 2009 tentang Lalu Lintas dan Angkutan Jalan. *Indonesian Journal of Law and Justice*, 1(4), 9. <https://doi.org/10.47134/ijlj.v1i4.2278>
- Aldizar, K., Umam, K., Nursahidin, & Sutarjo, Moh. (2025). Effectiveness of Electronic Traffic Law Enforcement in Enforcing Traffic Rules. *Jurnal Multidisiplin Indonesia*, 4(6), 395–404. <https://doi.org/10.58344/JMI.V4I6.2334>
- Ananda, R. R., Oktavian, D., Sartika, P., & Apriyanto, Mohd. R. (2025). Persepsi Masyarakat terhadap Implementasi Electronic Traffic Law Enforcement (ETLE) di Pekanbaru. *Router : Jurnal Teknik Informatika Dan Terapan*, 3(2), 139–148. <https://doi.org/10.62951/router.v3i2.571>
- Antari, P. E. D., & Situmorang, V. A. Y. (2024). Efektivitas Penerapan Electronic Traffic Law Enforcement (E-TLE) dalam Penegakan Aturan Lalu Lintas di Kota Denpasar. *Jurnal Hukum To-Ra : Hukum Untuk Mengatur Dan Melindungi Masyarakat*, 10(2), 310–326. <https://doi.org/10.55809/tora.v10i2.357>
- Bagasatwika, A. (2020). Electronic Traffic Law Enforcement: Is it Able to Reduce Traffic Violations? *Unnes Law Journal*, 6(1), 73–96. <https://doi.org/10.15294/ulj.v5i1.28642>
- Baihaqi, K. A., Fauzi, A., & Indra, J. (2024). Sosialisasi Alur Kerja Sistem Electronic Traffic Law Enforcement (ETLE) dari Segi Ilmu Komputer Vision pada Masyarakat. *Jurnal Igakerta*, 1(3), 11–14. <https://doi.org/10.70234/1km1j504>
- Basoeki, H. H., Sediati, D. S. R., Junaidi, M., & Arifin, Z. (2023). Efektifitas Peran Polisi Lalu Lintas dalam Menerapkan Elektronik Traffic Law Enforcement Electronic (ETLE). *Journal Juridisch*, 1(3), 192–204. <https://doi.org/10.26623/jj.v1i3.8123>
- Basri, M., Qamar, N., & Badaru, B. (2025). Effectiveness of Electronic Law Enforcement in Reducing Traffic Violations : Empirical Evidence from Gowa Regency, Indonesia. *Golden Ratio of Law and Social Policy Review*, 4(2), 182–194. <https://doi.org/10.52970/GRLSPR.V4I2.1880>
- Ferdyandaru, D., Pratama, A., & Gultom, P. (2025). Pelaksanaan Electronic Traffic Law Enforcement (ETLE) pada Ditlantas Polda Metro Jaya. *LEX LAGUENS: Jurnal Kajian Hukum Dan Keadilan*, 3(1), 72–85. <https://doi.org/10.08221/LEXLAGUENS.V3I1.98>
- Indarsih, Y. (2021). Application of Electronic Traffic Law Enforcement (E-TLE) Ticketing System Management at Polda West Java. *Enrichment : Journal of Management*, 11(2), 402–406. <https://doi.org/10.35335/ENRICHMENT.V11I2.112>
- Kadri, M., Nur, R., & Insani, N. (2025). Penegakan Hukum Electronic Traffic Law Enforcement bagi Masyarakat di Wilayah Provinsi Gorontalo. *Law & Social Justice Journal*, 3(III), 165–173. <https://doi.org/10.61121/WS9D0815>
- Latifa, A., Frinaldi, A., & Roberia, R. (2024). Penerapan Hukum Administrasi Negara dalam Membangun Pemerintahan yang Baik. *Polyscopia*, 1(3), 120–126. <https://doi.org/10.57251/polyscopia.v1i3.1376>

- Narullita, E. S. (2024). Penerapan Sistem Electronic Traffic Law Enforcement (ETLE) dalam Penindakan Pelanggaran Lalu Lintas di Wilayah Hukum Polda Jatim. *Jurnal Ilmiah Wahana Pendidikan*, 10(22), 435–445. <https://doi.org/10.5281/ZENODO.14565903>
- Pardede, C. R. V., Nita, S., & Setyabudi, C. M. (2022). Analisis Program Electronic Traffic Law Enforcement (ETLE) dalam Rangka Menciptakan Kamseltibcarlantas (Studi Kasus Kota Serang). *Journal of Innovation Research and Knowledge*, 1(8), 533–542. <https://doi.org/10.53625/JIRK.V1I8.1078>
- Putra, M. H., & Madjid, N. V. (2024). Pelaksanaan Electronic Traffic Law Enforcement (ETLE) Terhadap Pelanggaran Lalu Lintas di Kota Padang. *Unes Journal of Swara Justisia*, 7(4), 1351–1363. <https://doi.org/10.31933/ujsj.v7i4.448>
- Putri, Z. A., & Dewi, R. (2024). Implementasi Electronic Traffic Law Enforcement (ETLE) di Wilayah Hukum DITLANTAS Polda Riau. *Al-Manar Journal of Public Administration and Management*, 1(1), 50–60. <https://journal.al-manarpublisher.com/index.php/AJPAM/article/view/49>
- Rahmanizar, C. S., & Rusdi. (2022). Penerapan Metode Antrian pada Layanan Kepengurusan Paspor di Kantor Imigrasi Kelas I TPI Banda Aceh. *Regress: Journal of Economics & Management*, 2(2), 223–228. <https://doi.org/10.57251/reg.v2i2.673>
- Rasyimah, & Sari, D. K. (2022). Peningkatan Membaca Pemahaman Siswa pada Teks Deskripsi melalui Problem Based Learning : Penelitian Tindakan Kelas Kolaboratif pada Siswa SMP Negeri 3 Lhokseumawe. *Sintaks: Jurnal Bahasa & Sastra Indonesia*, 2(1), 21–27. <https://doi.org/10.57251/sin.v2i1.197>
- Rosadi, I., Kusuma, J. D., & Mauludin, N. A. (2024). Pelaksanaan Sistem Elektronik Traffic Law Enforcement ( E-TLE) dalam Upaya Pencegahan Pelanggaran Lalu Lintas di Wilayah Hukum Polres Lombok Timur. *Unizar Recht Journal (URJ)*, 3(1), 64–74. <https://doi.org/10.36679/urj.v3i1.163>
- Sagala, L. D. A. (2025). Implementation of Electronic Traffic Law Enforcement to Improve Traffic Safety in the Special Region of Yogyakarta. *Eduvest - Journal of Universal Studies*, 5(11), 13920–13932. <https://doi.org/10.59188/eduvest.v5i11.52210>
- Sakti, H. A. A., & Haniyah, H. (2024). Pelaksanaan Sistem Electronic Traffic Law Enforcement (E-TLE) Menggunakan Pengawasan CCTV Lalu Lintas dalam Upaya Penertiban Pengguna Jalan di Kota Surabaya Pusat. *Socius: Jurnal Penelitian Ilmu-Ilmu Sosial*, 1(7), 1–11. <https://doi.org/10.5281/ZENODO.10728930>
- Samsiah, T., Iryani, D., & Aji Hari Setiawan, P. (2024). Kepastian Hukum Penerapan Tilang Elektronik Berbasis Teknologi (Electronic Traffic Law Enforcement) yang Mempengaruhi Efektivitas Penegakan Hukum Lalu Lintas. *Blantika: Multidisciplinary Journal*, 3(2), 1–11. <https://doi.org/10.57096/blantika.v3i2.288>
- Saragih, J. M. K., Sari, P. I., & Jamal, A. (2024). Analisis Program Electronic Traffic Law Enforcement (E-TLE) pada Pengendalian Lalu Lintas di Kota Surabaya. *Indonesian Journal of Public Administration Review*, 1(2), 10. <https://doi.org/10.47134/par.v1i2.2466>
- Sukmawan, Y. A., & Damayanti, D. (2025). Metode Penelitian Hukum Normatif dan Empiris sebagai Strategi Penguatan Perspektif Kajian Ilmu Hukum. *Notary Law Journal*, 4(3), 114–128. <https://doi.org/10.32801/NOLAJ.V4I3.116>
- Tetuko, M., & Harjiyatni, F. R. (2022). Penerapan Electronic Traffic Law Enforcement (ETLE) dalam Penindakan Pelanggaran Lalu Lintas (Studi di Wilayah Hukum Polda DIY). *Kajian Hasil Penelitian Hukum*, 4(2), 884. <https://doi.org/10.37159/jmih.v4i2.1743>
- Wanda, Hidayat, S., & Rahmania, N. (2025). Penerapan Electronic Traffic Law Enforcement dalam Rangka Mengurangi Pelanggaran Lalu Lintas (Studi di Kota Mataram). *IURIS NOTITIA : JURNAL ILMU HUKUM*, 3(2), 71–80. <https://doi.org/10.69916/iuris.v3i2.372>
- Yoku, S., & Zien, S. (2025). Strategi Penggunaan Tilang Elektronik atau Electronic Traffic Law Enforcement (ETLE) dalam Lalu Lintas Supaya Berlaku Optimal di Seluruh Indonesia. *PESHUM : Jurnal Pendidikan, Sosial Dan Humaniora*, 4(3), 4037–4047. <https://doi.org/10.56799/peshum.v4i3.8515>
- Zubaidah, S., & Mansyur, N. (2019). Analisis Pelaksanaan Electronic Traffic Law Enforcement dalam Upaya Penegakan Hukum Lalu Lintas (Studi Kasus Polrestabes Makassar). *Al-Amwal : Journal of Islamic Economic Law*, 4(2), 166–174. <https://doi.org/10.24256/alw.v4i2.1772>