

Evaluation of Electronic Traffic Law Enforcement (ETLE) in Improving Traffic Compliance in Makassar City

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ABSTRACT

The implementation of Electronic Traffic Law Enforcement (ETLE) in Indonesia, particularly in Makassar City, represents a significant digital innovation in traffic law enforcement designed to enhance compliance and promote legal transparency. Nevertheless, statistical records reveal that traffic violations captured by ETLE cameras remain remarkably high, exceeding 3.6 million cases in 2025, with only a minor fraction confirmed and settled. This discrepancy underscores the gap between policy objectives and implementation outcomes, highlighting the necessity for comprehensive evaluation. This study aims to assess the effectiveness of ETLE in Makassar City using the CIPP model (Context, Input, Process, Product), with particular emphasis on legality, administrative efficiency, and its implications for legal compliance and regional tax revenue. A qualitative research approach was employed, incorporating in-depth interviews with police officers and road users, analysis of policy documents, and field observations. Data analysis was conducted using NVivo 12 software, enabling thematic coding, mapping of inter-theme relationships, and exploration of both inhibiting and supporting factors affecting policy implementation. The findings demonstrate that ETLE has strengthened the legitimacy of law enforcement by employing electronic recordings as valid evidence and reducing opportunities for unlawful levies. However, policy effectiveness is hindered by limited camera coverage, insufficient public outreach, and weaknesses in the vehicle registration blocking mechanism (STNK). Importantly, the study identifies fiscal implications: ineffective enforcement of STNK blocking has constrained the potential growth of motor vehicle tax revenue. These results suggest that ETLE's success depends not only on technological advancement, but also on legal legitimacy, procedural fairness, and consistent public communication to cultivate compliance grounded in awareness.

Keywords: Electronic Traffic Law Enforcement, ETLE, Policy Evaluation, CIPP, Vehicle Tax.

INTRODUCTION

The development of digital technology has impacted many aspects of life, including the transport sector and traffic policy (Chinoracký & Čorejová, 2019; Line et al., 2011; Tsakalidis et al., 2020). One of the innovations developed to increase the effectiveness of traffic law enforcement is Electronic Traffic Law Enforcement (ETLE) (Narendroputro & Rusfian, 2023). This system integrates traffic technology that conducts surveillance using surveillance cameras, Artificial Intelligence to record and detect any traffic offences automatically.

In various countries, traffic violations are one of the main reasons that cause road accidents. As happened in the country of Qatar, one of the causes of the increasing cases of traffic accidents is the lack of public awareness in driving by exceeding the maximum speed limit (Shaaban et al., 2021). Meanwhile, other research conducted in the United Kingdom, Germany, Italy, Egypt, Qatar, United Arab Emirates, China, Japan, and Canada highlighted the need for government policies to improve road safety strategies (Toriumi et al., 2022). In Western Europe, one

of the reasons for the increase in traffic accidents is the increase in the number of transports, so there is a need to reduce the number of transports on the road (Chernykh et al., 2023). This shows that the problem of traffic violations is one of the causes of frequent accidents. So there really needs to be innovation and policies from the government that are then able to reduce cases of traffic violations by integrating digital technology and transportation.

The implementation of ETLE comes as a solution to increase public compliance in traffic with a more transparent and accountable system (Widayanti et al., 2025). This technology can identify offences in real-time and automatically, and send notifications directly to offenders through a digital-based system (Adhithia et al., 2025; Rusliadi et al., 2024). With this system, interaction between the officer and the driver can be minimised, thus reducing the possibility of abuse of authority or extortion in the ticketing process (Ulo, 2024). From a transport perspective, the implementation of ETLE is also in line with the concept of Smart City (Dahlan & Jalil, 2023), where technology integration is used to improve efficiency and safety in traffic management.

However, the presence of ETLE is not directly proportional to the number of cases of traffic violations on the road, especially in Makassar City. Based on data on traffic violators in 2023, there were 737,677 cases recorded by CCTV ETLE. However, in early 2024, cases of violations increased to 1,745,121 cases of violations (Irfan, 2024). The adverse impact is the occurrence of death cases as many as 102 people due to traffic accidents in Makassar city (Emba, 2023). This shows that the initial goal of the presence of ETLE in order to reduce cases of traffic violations is not in line. Therefore, it is necessary to formulate problems in this study to see how far the policy is running.

Even though research related to ETLE has been carried out both in Indonesia and in Makassar City. Such as research conducted in North Sumatra which specifically discusses the legal aspects of ETLE policies that can increase efficiency and weak public awareness that hinders policy objectives (Genda et al., 2025). Then other research related to ETLE examines the importance of placing sensor points to anticipate traffic violations (Prihandini et al., 2024). Then, further research related to the importance of legal certainty in the implementation of the ETLE system in Indonesia using a normative approach to legislation (Muhammad Dahlan et al., 2023).

Research related to ETLE in the Scopus database from the search results conducted is still very little, namely only 13 documents. Researchers conducted a search using the keyword 'Electronic Traffic Law Enforcement'. This proves that research related to ETLE is very important to do as a strategic step in reducing and suppressing cases of traffic violations if carried out properly. The researchers conducted visualisation using the bibliometric application 'Biblioshiny' (Abafe et al., 2022) which can be seen in figure 1.



Figure 1: Visualisation of WordCloud. Source: processed by researchers from Biblioshiny, 2025.

From the visualisation of Figure 1, it shows that research trends related to ETLE are closely related to traffic laws, Crime, Artificial Intelligence, Camera Sensors, Government Sectors. While in various countries ETLE has its own naming, such as Automated Traffic Enforcement (ATE) in the United States (Rankin et al., 1920). Then the Philippines with the concept of Automated Traffic Violation Detection System (Torres et al., 2023). Then the state of Qatar has a traffic offence enforcement system called Red Light Camera Enforcement (Shaaban & Pande, 2018). Therefore, although research related to ETLE has been carried out by other researchers, this research has differences with previous research. The novelty in this study lies in the concept of CIPP evaluation used to evaluate the extent of the implementation of the ETLE Policy in Makassar City during the policy. Then, the difference in this research also lies in the process carried out by integrating the interview process while providing socialisation and education to drivers in Makassar City. In addition, another novelty is that this research uses several analysis applications to sharpen the results of the research in order to have a real impact on society and government as policy makers. So that this research not only evaluates the ETLE policy but will also reveal what are the obstacles and challenges in implementing ETLE in Makassar City.

The CIPP (Context, Input, Process, Product) model is one of the policy and programme evaluation models developed by Stufflebeam (2000) in the 1960s. This model is designed to provide a comprehensive picture of a policy, starting from the reasons why the policy was born to the resulting impact. Unlike other evaluation models that only focus on the end result, CIPP assesses policies more comprehensively by considering the background, resources, implementation process, and results achieved. Therefore, the CIPP model is often used in public policy research because it is able to show not only the success of a programme, but also the inhibiting factors that can be the basis for future improvements.

The first component is Context, which is an aspect related to the background, needs, and problems behind the birth of a policy. Context evaluation helps answer the question of why the policy needs to be implemented and what its main objectives are. For example, in the ETLE policy, the high number of traffic violations and the increase in road accidents are the main reasons for its implementation. The second component is Input, which focuses on the readiness of resources used to implement policies, such as regulations, human resources, funds, and technology. Input evaluation helps find out whether the policy has sufficient support to run well.

The next component is Process, which evaluates how policies are implemented in the field. This aspect includes the implementation mechanism, inter-agency coordination, as well as socialisation and education strategies for the community. Process evaluation is important to see the extent to which policy implementation is in accordance with the plan, as well as whether there are obstacles in its implementation. The last is Product, which is an assessment of the output and outcome of the policy. Product evaluation answers the question of what has been achieved, both in the form of immediate results such as the number of offences detected, as well as long-term impacts such as increased public awareness, reduced accidents, and the creation of an orderly traffic culture.

With these four components, the CIPP model has the advantage of being able to provide a comprehensive and improvement-orientated evaluation. The model not only assesses the success of the policy from the end result, but also pays attention to how the policy is designed and implemented. Therefore, the use of the CIPP model in evaluating the ETLE policy is very relevant, because it can help identify the extent to which this policy is effective in reducing traffic violations, what factors are obstacles, and what strategies need to be done so that policy objectives can be achieved more optimally.

The research questions in this study are 1) What is the background and urgency of implementing the ETLE policy in Makassar City in suppressing traffic violations? 2) Do the resources (technology, regulation, budget, and human resources) available already support the implementation of ETLE optimally? 3) How is the process of implementing ETLE in Makassar City, including aspects of implementation, socialisation, and education to the public? 4) To what extent are the results of ETLE implementation able to increase community compliance, reduce traffic violations in Makassar City?

The purpose of this study is to analyse the background and urgency of implementing the ETLE policy in Makassar City in order to reduce traffic violations and road accidents. This study also aims to assess the readiness of resources that support the implementation of ETLE, including regulations, technology, budget, and available human resources. Furthermore, this research focuses on evaluating the ETLE implementation process in Makassar City, including the implementation mechanism, socialisation, and education provided to the community. In addition, this research seeks to measure the results of ETLE implementation on the level of community compliance, reducing the number of violations. Finally, this research aims to identify obstacles and challenges faced in the implementation of ETLE and formulate improvement strategies that can be recommendations for the government and the police.

RESEARCH METHODS

The selection of Makassar City as a research locus in the ETLE policy evaluation is based on several important considerations. First, Makassar City is one of the largest metropolitan cities in Eastern Indonesia with a high level of community mobility, so the potential for traffic violations is relatively large. Second, although ETLE has been implemented in Makassar, Makassar City is the first area to implement the ETLE system in South Sulawesi Province. Then, the data shows an interesting phenomenon to study. Third, academically, research on ETLE in Makassar City is still very limited compared to other regions in Indonesia, even though as a large city with an increasing number of vehicles, Makassar has different characteristics from other regions. This opens up research opportunities that can make new contributions, especially in the study of technology-based public policy evaluation.

Then this research uses quantitative and qualitative research approaches Sugiyono, (2018) in evaluating related impacts, obstacles, challenges and recommendations for policy improvements in the implementation of ETLE in Makassar City. This type of research uses a policy evaluation method with a descriptive-analytical approach to analyse how the implementation and effectiveness of ETLE.

The research procedure is carried out through several stages: 1) Observation: Observations are carried out systematically by recording road user interactions with the ETLE system, patterns of violations that often occur, as well as the speed of the system in detecting and prosecuting violations. In addition, observations also include an evaluation of the quality of images produced by ETLE cameras, the level of identification errors, and road user responses to the presence of this system in various locations in Makassar City. 2) Interview: At this stage in-depth interviews were conducted with stakeholders such as the South Sulawesi Police Traffic Police Directorate to obtain violation data and insights related to the ETLE policy in Makassar City. In addition, interviews will also be conducted with road users to further deepen the analysis related to their understanding of the ETLE system in Makassar City. 3) Document Study: Document studies are conducted by examining various written sources, such as laws and regulations, evaluation reports from related agencies, academic journals, and data from previous research (Agusta, 2003). This analysis aims to understand the legal basis, implementation effectiveness, and challenges that arise in implementing ETLE in Makassar City. By comparing ETLE policies with similar practices in other areas, this research is expected to identify aspects that need to be improved and develop evidence-based recommendations for policy improvement.

At this stage the researcher then describes the data from observations, interviews and document studies in finding the main themes related to ETLE implementation in Makassar City. In this process researchers will evaluate the ETLE policy and analyse the factors that hinder the implementation of ETLE. Then, the qualitative data obtained will then be analysed using the Nvivo 12 Pro application which comes from the results of interviews, observations and document studies. (Woolf & Silver, 2018).

RESULTS AND DISCUSSION

Context

The implementation of Electronic Traffic Law Enforcement (ETLE) in Indonesia has a stronger legal basis after the enactment of the Regulation of the National Police of the Republic of Indonesia Number 2 of 2025 concerning Enforcement of Traffic and Road Transport Violations based on Electronic Recording Evidence. This regulation is an important milestone in the transformation of traffic law enforcement, because it confirms that electronic recordings from both static, portable and mobile ETLE cameras can be used as legal evidence in the process of prosecuting violations. Thus, Polri no longer fully relies on manual tickets, but moves towards a more transparent and accountable technology-based law enforcement system.

Furthermore, PerPolri Number 2 Year 2025 regulates in detail the mechanism of identification, verification, and issuance of confirmation letters to vehicle owners who are recorded as committing violations. This process not only emphasises the legality aspect, but also ensures legal certainty for the community. This electronic recording-based enforcement is expected to close the gap on abusive practices, such as illegal levies, which have often undermined the integrity of law enforcement on the road (Triono, 2021). The ETLE implementation mechanism can be seen in Figure 2.

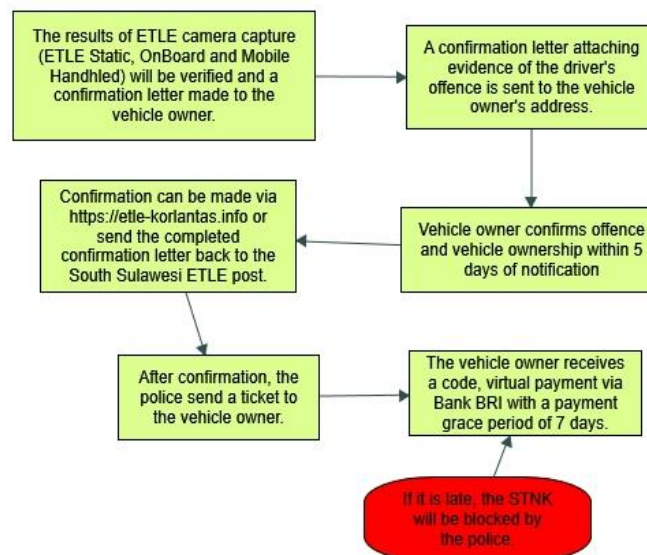


Figure 2. ETLE mechanism 'Concept Map Nvivo 12 Pro'. Source: Processed by researchers, 2025.

The process of prosecuting traffic violations through the Electronic Traffic Law Enforcement (ETLE) system begins with the results of ETLE camera captures (Intan, 2023), both static, onboard, and mobile handheld. The recorded violation data will be verified by officers to ensure the validity of the information, then a confirmation letter is issued addressed to the vehicle owner. This confirmation letter contains evidence of the violation in the form of a photo or video recording sent to the vehicle owner's address. After receiving the confirmation letter, the vehicle owner is given 5 days to provide a response, either in the form of acknowledgement or clarification of vehicle ownership. Confirmation can be done online through the official ETLE website <https://etle-korlantas.info> or by sending the confirmation form back to the local ETLE post, in this case ETLE South Sulawesi Police. This stage is important to ensure that the connection between the violation and the vehicle owner is valid.

If confirmation has been made, the police then issue an official ticket to the vehicle owner. This ticket letter is equipped with a ticket payment code through the BRI Bank virtual account system, with a payment period given for 7 days. This non-cash payment mechanism is designed to minimise direct interaction between violators and officers, thereby reducing the potential for illegal levies. However, if the vehicle owner does not make payment within the specified deadline, administrative consequences will be applied. One form of sanction is the blocking of the Vehicle Registration Certificate (STNK) by the police. Thus, the vehicle cannot be extended its STNK validity period before the offence is resolved.

This flow shows that the ETLE system not only emphasises the enforcement aspect, but also on transparency, accountability and efficiency in legal mechanisms. The integration of technology through cameras, websites, and banking systems shows the digital transformation in traffic law enforcement in Indonesia. The implementation of ETLE in Makassar City has a strong contextual basis because of the high number of traffic violations that have implications for traffic law enforcement in Indonesia.

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The implementation of ETLE in Makassar City has a strong contextual basis due to the high number of traffic violations which has implications for increasing accidents. According to the theory of public problem identification (Dye, 1995), Public policy is born when social problems reach a crisis point that demands an immediate response from the government. Violation data in Makassar shows that traffic problems have become a public issue that cannot be ignored. In addition, the implementation of ETLE is in line with what is conveyed by Jiménez & Ziesemer, (2024), where technology adoption is used to improve policy effectiveness.

However, the gap between policy objectives and community behaviour shows a cultural lag (Degli Esposti & Ritzer, 2020), There is a mismatch between the development of technology and the cultural readiness of society. Many motorists are not yet accustomed to the digital system, resulting in resistance (Starkey & Charlton, 2020). This reinforces the results of interviews which state that without behaviour change, ETLE only functions as a repressive tool.

Then, the results of interviews with one informant from motorists and ETLE operators at the Traffic Directorate of the South Sulawesi Provincial Police revealed a major challenge in the form of a lack of public understanding of ETLE procedures. Many motorists do not know the ETLE working mechanism, starting from how violations are recorded by the camera, the process of sending confirmation letters, to the obligation to pay fines. This condition shows a gap between modern policy design and the readiness of the community to accept and implement applicable rules. Thus, the context of ETLE in Makassar is indeed urgent and relevant. However, the success of its implementation is largely determined by the socialisation strategy and efforts to build an orderly traffic culture. This is in line with the research results Bradford et al., (2020) which suggests that the success of automated enforcement depends on a combination of technology and public education.

Compliance theory according to Tyler (2003) stated that obedience/compliance is not only influenced by the threat of sanctions or fines, but is further determined by perceptions of legitimacy and procedural justice in the interaction between authority and society. When law enforcement institutions, including systems such as ETLE, are seen as fair, transparent, and treat the public with respect, the public will feel that the policy is 'entitled' to be obeyed not for fear of being punished, but because they feel a moral obligation to comply (Bradford et al., 2020). Conversely, if the public perceives that ETLE procedures are unclear, unfair, or not treated with respect, then the legitimacy of the authority will fall, and compliance will be low.

In the context of ETLE, for example, procedures that are unknown to the public such as how offences are detected, how tickets are sent, how to prove a detection error can be a source of procedural injustice. If the public perceives that they are not given a 'voice' (an opportunity to object or clarify), that decisions are made neutrally, and that they are not treated with respect, then the legitimacy of ETLE will be compromised. When legitimacy is compromised, compliance is likely to decline, resistance may emerge, people may reject the policy, avoid offences but perceive the risks as too low or the socio-moral costs outweigh the benefits.

Input

Input indicators in the evaluation of ETLE policies in Makassar City focus on the availability of resources, technological devices, supporting regulations, and the readiness of implementing actors in supporting the success of the programme. In terms of technology, the implementation of ETLE has been supported by the installation of static, mobile and handheld cameras connected to the data centre at the South Sulawesi Regional Police. The system is also integrated with an online platform (<https://etle-korlantas.info>) that allows the community to confirm independently. However, the effectiveness of this technology input is still affected by the quality of the internet network infrastructure and the maintenance of camera devices, which must be carried out regularly to keep the data on violations valid.

In addition to the technological aspect, the human resource factor is also a key element in the input indicator. Police officers on duty are not only required to be able to operate the ETLE device, but also understand the administrative flow from data verification, issuance of confirmation letters, to follow-up law enforcement. The results of an interview with one of the officers at the South Sulawesi Police ETLE unit revealed that, 'We still lack personnel who are really experts in the ETLE system, so that several times the data verification process took longer than expected.' This shows that there are challenges in HR readiness to support smooth implementation.

Another input is the regulatory aspect. Police Regulation Number 2 of 2025 is a clear legal basis for the implementation of ETLE, because it emphasises electronic recording as legal evidence. This regulation closes the legal loopholes that were previously debated, thus strengthening the legitimacy of the ETLE programme. However, on the other hand, there are still obstacles in the form of low public understanding of administrative procedures, such as how to confirm or pay fines online. This understanding gap shows that input in the form of regulations has not been fully translated into massive socialisation.

The input aspect also includes financial support and institutional infrastructure. ETLE implementation requires large costs, both for device procurement, network maintenance, and system development. Budget constraints often make the placement of ETLE cameras still centred in certain strategic locations, so that they do not fully reach areas prone to violations. This condition affects the fairness of the system, because many people outside the ETLE range are still not monitored.

The analysis results from interviews with informants show the perception that the number of ETLE points in Makassar City is still very limited. In 2025, the number of active ETLE cameras only reached 9 points, while since the beginning of implementation in 2021 the number of points is much more because there are 16 points. This condition creates the perception that ETLE enforcement has not been fully equitable and fair, because there are still many road sections prone to violations that have not been monitored. The number of ETLE points in Makassar City in 2025 can be seen in table 1.

Table 1. Number of ETLE Points in Makassar City

No	Location Point
	Andi Pangeran Pettarani Street (in front of Living Plaza)
	Andi Pangeran Pettarani Street (Front of Makassar Post)
	Andi Pangeran Pettarani Street (Front of The Mutiara)
	Andi Pangeran Pettarani Street (in front of the Ministry of Religious Affairs)
	Andi Pangeran Pettarani Street (in front of Pegadaian)
	Urip Sumoharjo Street (Front of the Governor's Office)
	Perintis Kemerdekaan Street (Front of IMIM Islamic Boarding School)
	Perintis Kemerdekaan Street (Front of Ali Murah Restaurant)
	Perintis Kemerdekaan Street (Front of Aspol Panaikang)

Source: South Sulawesi Regional Police Traffic Directorate, 2025.

In addition, cross-sector institutional support is also an important part of the input. The synergy between Polri, local governments, banks (Bank BRI for ticket payments), and the public is a determining factor in the smooth running of the system. Strong cross-sector coordination allows the process to run more efficiently, for example by integrating population and vehicle data. Without this support, the available inputs are potentially not optimal in ensuring smooth policy implementation.

In addition to the limited number of ETLE points, the ETLE policy socialisation process is also an important factor in building legitimacy and community compliance. Informants mentioned that socialisation was mostly carried out through social media, such as Instagram, Facebook, which became the main channel for the police to convey information related to the location of ETLE cameras, electronic ticket confirmation procedures, and the purpose of implementing this system.

The analysis shows that the use of social media in ETLE socialisation is quite relevant, considering that the majority of urban communities, especially in Makassar, actively access information through digital platforms. This is in line with the view Murphy et al., (2009) where the legitimacy of legal authority is not only built through enforcement, but also through transparent communication and public engagement. Socialisation on social media

strengthens transparency (because information is open and easily accessible), and increases public trust (because they feel involved and given explanations).

In my opinion, this social media-based socialisation approach can support the successful implementation of ETLE, provided that it is carried out in a sustainable, clear and interactive manner. That is, not just announcing the existence of electronic tickets, but also providing education about the benefits of ETLE for traffic safety and legal justice. Thus, although ETLE points are still limited, policy legitimacy can be strengthened through an effective public communication strategy.

Thus, the input evaluation shows that although formally ETLE in Makassar has been supported by technology, regulations and implementing institutions, there are still obstacles in the aspect of infrastructure limitations, as well as a lack of socialisation to the community. This confirms the need for an input strengthening strategy so that the ETLE policy can run more effectively and in accordance with its initial objectives, namely reducing traffic violations and increasing community legal compliance.

Process

The ETLE implementation process in Makassar City shows quite complex dynamics, starting from the technical stage of camera device installation, data management, to the mechanism for confirming violations to the public. In general, this flow has been designed in accordance with the standards set by the Police. However, some obstacles are still found, especially related to the effectiveness of socialisation and the provision of camera points that have not reached all vital roads. From the analysis, it appears that the process has not been fully optimised in ensuring public engagement and increasing legal awareness.

One informant from among road users stated: "ETLE is actually good, but I think the process is uneven. The camera points are limited, so many offences on other roads are not recorded. In addition, sometimes we do not understand how the online ticket confirmation procedure works." This statement shows that even though the technology is available, people still have difficulties in understanding the administrative process after the offence is recorded.

In this context, public communication is an important element. Socialisation through social media, banners and local news has been done, but its effectiveness is still limited. Analyses show that a one-way communication strategy is not sufficient to improve overall public understanding. The low level of digital literacy in some communities further exacerbates the information gap. Therefore, community engagement through dialogue forums, face-to-face education in motorist communities, and digital interactive campaigns needs to be improved.

In addition, transparency in managing violation data also affects the success of the ETLE process. If the community feels that the confirmation, verification and fine processing procedures are unclear, then the legitimacy of the policy will be questioned. This is in line with the concept of procedural justice Li & Sun, (2025); Wolfe et al., (2016) which asserts that fair, neutral and transparent processes have more influence on compliance than harsh sanctions. The data on violators in 2025 can be seen in table 2.

Table 2: Number of offenders at each point

No	Location Point	Caught on Camera	Sent	Confirmed	Collectible	Blocked	Paid
1.	Andi Pangeran Pettarani Street (in front of Living Plaza)	461775	181	9	7	0	2
2.	Andi Pangeran Pettarani Street (Front of Makassar Post)	317556	275	9	2	0	0
3.	Andi Pangeran Pettarani Street (Front of The Mutiara)	340501	316	8	7	0	3
4.	Andi Pangeran Pettarani Street (in front of the Ministry of Religious Affairs)	574554	1066	62	22	0	5
5.	Andi Pangeran Pettarani Street (in front of Pegadaian)	316251	1751	76	23	8	11
6.	Urip Sumoharjo Street (Front of the Governor's Office)	299554	2026	96	19	0	4

7.	Perintis Kemerdekaan Street (Front of IMIM Islamic Boarding School)	357657	2900	196	57	0	21
8.	Perintis Kemerdekaan Street (Front of Ali Murah Restaurant)	471386	3485	202	41	0	14
9.	Perintis Kemerdekaan Street (Front of Aspol Panaikang)	538479	4447	206	22	0	17
10.	Total	3677713	16447	864		8	77

Source: Ditlantas Polda Sulsel, 2025.

Based on ETLE data in Makassar City from January to September 2025, there is a significant gap between the number of violations caught on camera and those that are actually confirmed and paid. For example, at the point of Jalan A. Pettarani (Front of Living Plaza) there were 461,775 recorded violations, but only 181 cases were sent, and finally only 2 cases were paid. A similar pattern was also seen at other points, for example at Jalan Perintis Kemerdekaan (in front of Aspol Panaikan), where 538,479 offences were recorded, but only 17 cases were paid. In total, of the 3,677,713 violations recorded by the cameras, only 864 cases were confirmed and 77 cases were actually paid by the violators. This represents a very low effectiveness rate of less than 0.01% of the total recorded offences. This finding indicates a serious problem in the follow-up process in the ETLE system.

One factor that can explain this condition is the lack of public understanding of the confirmation procedure. Some violators do not know the administrative stages after receiving an electronic ticket notification. This is in line with the statement of an informant who said: "I have received ETLE notifications, but I am confused about where to confirm, even the information on social media is not always clear. Finally I just let it go." This statement illustrates that weaknesses are not only in infrastructure, but also in procedural communication to the public.

In addition, low payment rates can also be caused by weak collection and enforcement systems. For example, the data shows that there are almost no cases that fall into the blocked category, which means there is no strong administrative follow-up against violators who ignore confirmation. In fact, this STNK blocking mechanism should be an important instrument to force compliance, because without the payment of the ticket, the vehicle owner cannot extend the vehicle tax validity period.

The absence of this blocking not only has an impact on the low effectiveness of ETLE, but also has implications for local revenue from the motor vehicle tax sector. Supposedly, when the STNK is blocked, the driver cannot pay the annual tax before paying off the ticket fine. This mechanism can be an entry point to improve traffic compliance while maintaining the stability of local tax revenue.

This lack of blocking not only has an impact on the low effectiveness of ETLE, but also has implications for local revenue from the motor vehicle tax sector. Supposedly, when the STNK is blocked, the driver cannot pay the annual tax before paying off the ticket fine. This mechanism can be an entry point to improve traffic compliance while maintaining the stability of local tax revenue. However, because the blocking process does not run optimally, many violators can still avoid their obligations, both ticket fines and tax payments.

From a theoretical perspective, this finding strengthens the compliance framework Tyler (2006) that legal compliance cannot rely solely on the threat of sanctions, but must be underpinned by perceptions of legitimacy, procedural justice and legal certainty. When people see that ETLE has no real consequences, policy legitimacy weakens and compliance becomes low. In other words, the implementation of ETLE in Makassar still faces an implementation gap, where policies are well designed but not followed by consistent execution.

Thus, the weakness of ETLE in Makassar lies not in the technology, but in administrative processes, inter-institutional integration, and public communication. If the Police and City Government want to increase the effectiveness of ETLE, they need to strengthen confirmation governance, expand more interactive socialisation, consistently enforce the STNK blocking mechanism, and ensure synergy with the regional revenue office. That way, ETLE not only functions as a traffic safety instrument, but also supports public fiscal compliance through optimising local tax revenues. From a technical perspective, the limited number of ETLE cameras in Makassar also has an impact on the effectiveness of enforcement. In 2021, the initial implementation of ETLE in the city began with several strategic points, but by 2025 the number only reached nine points. This creates a gap in enforcement coverage, where offences on other roads often go unmonitored. This infrastructure limitation has led the public to assess that ETLE implementation has not been fully consistent.

Product

Product indicators in evaluating ETLE implementation in Makassar City can be seen from the real results achieved after this system runs. Data recorded more than 3.6 million traffic violations successfully recorded by cameras in 2025 from nine ETLE location points. This figure proves that the system works effectively in detecting violations objectively and consistently. However, the high number of recorded offences also shows that the level of public driving discipline is still low, so the success of ETLE is still dominant in the detection aspect rather than in prevention efforts.

Furthermore, the effectiveness of the system appears limited to follow-up on violations. Of the total 16,447 confirmation letters sent, only 77 cases actually led to the payment of fines. This figure shows a large gap between recorded violations and the realisation of sanctions. These conditions confirm that ETLE has not been able to encourage full compliance, but only adds new administrative mechanisms that are often not followed up by the community.

Nevertheless, ETLE still has a positive impact on traffic governance and regional fiscals. The policy of automatically blocking STNK for violators who do not settle fines contributes to increasing compliance with motor vehicle tax payments. This impact strengthens the Regional Original Revenue (PAD) base that supports development. In other words, ETLE not only functions as a traffic control instrument, but also as a strengthener of the local fiscal system which is important for the sustainability of public policies.

In addition to the fiscal aspect, the existence of ETLE also encourages preventive behavioural changes in some communities. Many drivers become more careful when passing through points fitted with cameras, because they are aware of the potential for violations to be recorded. This shows a psychological effect in the form of self-regulation, although the impact is still limited to certain locations. Thus, ETLE has begun to form a culture of situational compliance, although it has not yet created comprehensive compliance on all roads.

However, the effectiveness of ETLE in reducing the overall number of traffic offences is still questionable. Millions of violations are still recorded each year, indicating that the existence of this surveillance technology has not been able to significantly change people's behaviour. This phenomenon can be understood through the concept of cultural lag, where the development of law enforcement technology runs faster than the internalisation of community disciplinary values. In this context, ETLE functions more as an offence detector than as an instrument of driving culture change.

Therefore, although ETLE policy products show positive achievements in terms of violation detection, fiscal support, and situational behaviour change, their long-term effectiveness still needs to be strengthened through other approaches. A more massive socialisation strategy, public education, and strengthening policy legitimacy are needed so that compliance does not only arise because of the threat of sanctions, but also because of collective awareness of the importance of traffic safety. Thus, product indicators show that ETLE in Makassar City is still at a transitional stage, from just a technological instrument to a deeper instrument of community behaviour change.

CONCLUSION

This research shows that the implementation of Electronic Traffic Law Enforcement (ETLE) in Makassar City has received strong legal legitimacy through Police Regulation Number 2 of 2025. This policy strengthens a more transparent and accountable electronic record-based law enforcement system. Evaluation using the CIPP model shows that ETLE is effective in detecting millions of traffic violations, encouraging legal transparency, and contributing to increased fiscal compliance through STNK blocking. However, the effectiveness of ETLE in reducing the number of offences and shaping long-term legal awareness is limited, so ETLE functions more as a detection instrument than a prevention instrument.

Although this study produced important findings, there are several limitations. First, the limited number of ETLE camera points only provides a partial picture of traffic behaviour in Makassar. Secondly, this study has not fully used longitudinal data, making it difficult to assess long-term trends related to the impact of ETLE on accident rates or levels of legal compliance. Third, the research focuses more on administrative data (recording and follow-up) so that it has not explored in depth the socio-cultural factors that contribute to community resistance to ETLE.

The findings of this study have important implications for public policy development. First, the success of ETLE is determined not only by technological sophistication, but also by legal legitimacy and public perception of procedural fairness. Second, the results of this study emphasize the importance of expanding ETLE camera locations and strengthening enforcement mechanisms, particularly in the follow-up of fine payments. Third, there is an urgent need to increase public awareness, legal literacy, and education so that compliance is driven not only by the threat of sanctions but also by moral awareness. Thus, ETLE has the potential to become a crucial instrument in building a sustainable traffic culture, while simultaneously supporting Makassar's smart city agenda.

Furthermore, the implications of ETLE also touch on regional fiscal aspects through the vehicle registration (STNK) blocking mechanism. When violators fail to pay their fines, their vehicles are automatically unable to pay annual taxes. This situation has the potential to reduce regional revenue from the motor vehicle tax sector. Therefore, compliance with ETLE fines must be viewed not only as a traffic law matter, but also as an instrument directly related to regional tax revenue. If not managed properly, even though ETLE increases transparency in law enforcement, it can paradoxically cause fiscal leakage due to the large number of vehicles being blocked without paying taxes.

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