The Importance of Dashcam Integration in Mandatory Periodic Inspections of Motor Vehicles As An Update to the Transportation Law Enforcement System in Purbalingga Regency

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Abstract : This study analyzes the legal framework governing dashcams as evidence, examines the urgency of mandating dashcam installation during periodic inspections of Motor Vehicles Subject to Mandatory Testing (KBWU), and explores stakeholder perceptions and readiness in Purbalingga Regency. The study employs a qualitative socio-legal approach combining normative and empirical methods. Primary data were collected through in-depth interviews with nine informants from the Transportation Agency, UPUBKB, Purbalingga Police Traffic Unit, and transportation business operators. Secondary data were obtained from literature and periodic inspection reports. Data validity was ensured through source and method triangulation. The findings show that dashcam recordings have a valid legal basis as electronic evidence under the ITE Law, Constitutional Court Decision No. 20/PUU-XIV/2016, and the LLAJ Law. However, no regulation specifically mandates their installation. Periodic inspection data reveal a 19.46% decline in compliance during the first half of 2026, while the KBWU fleet increased from 2,491 to 5,647 units. Stakeholders generally support mandatory dashcams, although readiness varies by business scale. These findings highlight the need for regulatory reform to strengthen transportation law enforcement.

Keywords : Dashcam; Periodic Inspection; Electronic Evidence; Transportation Law Enforcement; Legal Vacuum

Abstrak *: Abstrak: Penelitian ini menganalisis kerangka hukum penggunaan dashcam sebagai alat bukti, mengkaji urgensi kewajiban pemasangan dashcam dalam pengujian berkala Kendaraan Bermotor Wajib Uji (KBWU), serta mengeksplorasi persepsi dan kesiapan pemangku kepentingan di Kabupaten Purbalingga. Penelitian menggunakan pendekatan sosio-legal kualitatif yang menggabungkan metode normatif dan empiris. Data primer diperoleh melalui wawancara mendalam dengan sembilan informan dari Dinas Perhubungan, UPUBKB, Satuan Lalu Lintas Polres Purbalingga, dan pelaku usaha angkutan. Data sekunder diperoleh dari literatur dan laporan pengujian berkala. Keabsahan data dijamin melalui triangulasi sumber dan metode. Hasil penelitian menunjukkan bahwa rekaman dashcam memiliki dasar hukum yang sah sebagai alat bukti elektronik berdasarkan UU ITE, Putusan Mahkamah Konstitusi Nomor 20/PUU-XIV/2016, dan UU LLAJ. Namun, belum terdapat regulasi yang secara khusus mewajibkan pemasangannya. Data pengujian berkala menunjukkan*

penurunan kepatuhan sebesar 19,46% pada semester pertama 2026, sementara jumlah KBWU meningkat dari 2.491 menjadi 5.647 unit. Pemangku kepentingan umumnya mendukung kewajiban dashcam, meskipun tingkat kesiapan berbeda menurut skala usaha. Temuan ini menegaskan perlunya reformasi regulasi untuk memperkuat penegakan hukum transportasi serta mendukung peningkatan kepatuhan, transparansi, akuntabilitas, dan keselamatan dalam penyelenggaraan transportasi jalan.

Kata kunci : *Dashcam; Pengujian Berkala; Alat Bukti Elektronik; Penegakan Hukum Transportasi; Kekosongan Hukum*

INTRODUCTION

Traffic accidents are a serious problem in national transportation management that have a tangible impact on the social and economic lives of the community. Data show that the number of traffic accidents rose from 100,028 in 2020 to 148,798 in 2023 the highest figure in the past seven years (Enggarsasi & Sa'diyah, 2017). The Indonesian National Police's Traffic Corps (Korlantas Polri) recorded that in 2023 there were more than 152,000 accidents resulting in 27,689 fatalities and material losses exceeding Rp500 billion in a single year, making traffic accidents the third leading cause of death in Indonesia (Wicaksono & Dwilaksana, 2020). The magnitude of this impact calls for comprehensive reform of the transportation safety and law enforcement systems, including through the use of digital recording technology.

The process of proving traffic accident cases faces serious structural challenges within the Indonesian legal system. Article 184(1) of the Criminal Procedure Code (KUHAP) stipulates five types of admissible evidence: witness testimony, expert testimony, documents, circumstantial evidence, and the defendant's statement (Harahap, 2016). This exhaustive list of evidence often makes it difficult for investigators to objectively reconstruct the chronology of an accident, particularly in incidents not witnessed by third parties and not captured by surveillance cameras (Hamzah, 2016). The absence of visual documentation causes the evidence to rely on the subjective statements of the parties involved, which are prone to inconsistencies; consequently, the investigation process becomes longer, and the results fail to satisfy the sense of justice (Ramiyanto, 2017; Tolib Effendi, 2014).

A dashboard camera, or dashcam, is a video camera device installed on a motor vehicle to continuously and automatically record driving conditions. Functionally, dashcams serve as a tool for documenting road incidents, an evidentiary instrument that provides objective and chronological visual evidence, a tool for monitoring driving behavior, and supplementary documentation for insurance claims (Buana et al., 2021). In countries such as Russia, South Korea, and the United Kingdom, dashcams have become standard equipment that significantly expedite the resolution of traffic cases and reduce insurance fraud (Buana et al., 2021; Sefiana & Heniarti, 2023). In contrast, in Indonesia, the use of dashcams remains voluntary and is not integrated into the motor vehicle inspection system; consequently, their availability at the time of an accident depends entirely on the vehicle owner's initiative.

Developments in Indonesian law have, in fact, accommodated electronic evidence through several regulations. Law No. 11 of 2008 on Electronic Information and Transactions (ITE Law), as amended specifically Article 5, paragraphs (1) and (2)—recognizes electronic information and documents as valid legal evidence and constitutes an expansion of the scope of evidence under applicable procedural law (Khristanto, 2020). Furthermore, Constitutional Court Decision No. 20/PUU-XIV/2016 affirms that electronic evidence, including video recordings, may be used as evidence provided it is obtained in the course of law enforcement (Ramiyanto, 2017). Concurrently, Article 272 of Law No. 22 of 2009 on Road Traffic and Transportation (LLAJ Law) permits the use of electronic devices in traffic law enforcement, with the resulting evidence admissible in court (Dahlan et al., 2023; Wicaksono & Dwilaksana, 2020). Nevertheless, there is no regulation that

explicitly mandates the installation of dashcams in motor vehicles, creating a legal vacuum that hinders their widespread use.

Periodic motor vehicle inspections, or KIR inspections, are a series of mandatory periodic technical inspections required under Article 49(1) and Article 53 of the Road Traffic Law for Vehicles Subject to Mandatory Inspection (KBWU), which include public passenger cars, buses, freight vehicles, articulated vehicles, and semi-trailers (Pinayungan et al., 2018). Ministry of Transportation Regulation No. 19 of 2021 on Periodic Motor Vehicle Inspections stipulates the inspection components, which currently focus on conventional technical-mechanical aspects such as emissions, brakes, steering, lights, and vehicle dimensions, but do not accommodate digital technology components such as dashcams (Pinayungan et al., 2018; Mulyadi, 2012). The integration of dashcams into periodic inspections has the potential to transform the function of these inspections from merely a technical safety measure into a systematic means of ensuring the availability of legal evidence.

Studies on the urgency of integrating dashcams into the periodic motor vehicle inspection system remain very limited in Indonesian legal literature. Existing research generally examines dashcams from the perspective of the admissibility of evidence in a normative sense (Sefiana & Heniarti, 2023) or the legal framework for electronic recordings in general cases (Khristanto, 2020; Choirunnisa et al., 2024), without linking them to the periodic inspection mechanism as an instrument for systematically ensuring the availability of evidence. This study fills that gap by integrating two dimensions that have thus far been studied separately, namely, electronic evidence and periodic testing systems, into a single analytical framework contextualized to the empirical conditions in Purbalingga Regency. Based on this description, this study seeks to answer three main questions: first, what are the applicable legal regulations in Indonesia regarding the use of dashcams as evidence in the resolution of traffic accident cases? Second, what is the urgency of mandating dashcams in periodic vehicle inspections as part of efforts to reform the transportation law enforcement system? And third, what are the perceptions and readiness of transportation business operators and relevant agencies in Purbalingga Regency regarding the proposal to mandate dashcam installation as part of the requirements for periodic vehicle inspections?

RESEARCH METHODS

This study employs a qualitative legal approach that simultaneously combines normative and empirical (socio-legal) methods (Soekanto & Mamudji, 2015; Marzuki, 2016). The normative legal approach is used to analyze relevant positive legal norms, including the Criminal Procedure Code (KUHAP), the Information and Electronic Transactions Law (UU ITE), the Land Transportation Law (UU LLAJ), Government Regulation No. 55 of 2012 on Vehicles, Minister of Transportation Regulation No. 19 of 2021, and Constitutional Court Decision No. 20/PUU-XIV/2016, by applying grammatical, systematic, teleological, and comparative interpretations (Marzuki, 2016; Soekanto & Mamudji, 2015). The empirical-juridical approach was used to analyze the law in its implementation, particularly regarding stakeholders' perceptions and readiness regarding the discourse on the dashcam requirement. The research design employed is non-doctrinal, specifically a sociological-legal approach that views law as a social phenomenon interacting with non-legal factors such as economic conditions, culture, and public legal awareness (Soekanto & Mamudji, 2015; Rahardjo, 2000).

The research was conducted in Purbalingga Regency, Central Java Province, focusing on two main institutions: the Transportation Agency through the Motor Vehicle Periodic Inspection Implementation Unit (UPUBKB) and the Traffic Unit (Satlantas) of the Purbalingga Police. Primary data were obtained through in-depth semi-structured interviews with nine informants purposively selected for their positions and expertise (Miles et al., 2014). Informants from the government sector included the Head of the Transportation Division at the Department of Transportation, the Head of the Road Traffic Control and Enforcement Section, the UPUBKB Coordinator, and the Operations Coordinator (KBO) of the Purbalingga Police Traffic Unit. Informants from the transportation business sector included the chairperson of a transportation cooperative with a fleet of 600 vehicles, the operations manager of a transportation company with 78 vehicles, an operations manager of a company with 45 vehicles, a truck driver operating 4 vehicles, and a

public minibus driver operating 15 vehicles. Secondary data were collected through a literature review of primary and secondary legal materials, as well as a review of documentation from the Purbalingga UPUBKB's annual inspection reports for 2025 and the first semester of 2026 (Marzuki, 2016; Soekanto & Mamudji, 2015).

Data validity was ensured through source triangulation and methodological triangulation, member checking, and thick description (Miles et al., 2014). Source triangulation was conducted by comparing information from different informants on the same topic, while methodological triangulation was conducted by comparing interview data with data from literature reviews and documentation. Data analysis utilized the interactive analysis model proposed by Miles, Huberman, and Saldaña, which consists of four components that occur simultaneously and cyclically: data collection, data condensation, data presentation, and drawing conclusions or verification (Miles et al., 2014). Normative legal analysis was supplemented with legal interpretation methods, while empirical data were analyzed using a theoretical framework of legal effectiveness comprising five factors: legal substance, law enforcement officials, resources and facilities, society, and legal culture (Soekanto, 2018; Friedman, 1975).

RESULTS AND DISCUSSION

Legal Regulations Governing Dashcams as Electronic Evidence

Dashcam recordings are legally classified as electronic information and electronic documents, the existence of which is recognized under Indonesia's positive law system. Article 1(1) of the ITE Law defines electronic information as including images and similar materials that have been processed and possess meaning; thus, dashcam video recordings, which are audio-visual in nature, clearly meet these criteria (Khristanto, 2020; Choirunnisa et al., 2024). In terms of legal consequences, Article 5, paragraphs (1) and (2), of the ITE Law affirms that electronic information and documents constitute valid legal evidence and constitute an expansion of conventional evidence under applicable procedural law in Indonesia (Ramiyanto, 2017; Pribadi, 2018). In the context of traffic accident cases, findings from interviews with investigators from the Purbalingga Police Traffic Unit confirm that dashcam recordings serve to reinforce or support existing evidence and have been effectively utilized in several accident cases, whether from vehicles directly involved or from other vehicles in the vicinity of the incident.

Constitutional Court Decision No. 20/PUU-XIV/2016 provides a fundamental clarification regarding the requirements for the admissibility of electronic evidence in Indonesia's criminal evidentiary system. The ruling states that electronic information and documents used as evidence must be obtained for law enforcement purposes at the request of the police, the prosecutor's office, or other law enforcement agencies designated by law (Khristanto, 2020; Ramiyanto, 2017). Within the framework of Article 183 of the Criminal Procedure Code (KUHAP), which adopts the negative-legal theory of evidence (negatief wettelijk bewijstheorie), dashcam recordings serve to reinforce the judge's conviction, which is based on at least two admissible pieces of evidence (Harahap, 2016; Mulyadi, 2012). Case law indicates that electronic video recordings are generally treated as an extension of circumstantial evidence under Article 188 of the Criminal Procedure Code, linked to other empirical facts in the case (Hamzah, 2016; Irsan & Armansyah, 2019).

The admissibility of dashcam recordings as evidence requires the fulfillment of four cumulative conditions: authenticity, integrity, relevance, and lawful acquisition. Verification of authenticity and integrity is conducted through digital forensic examination, which includes analysis of file metadata, verification of hash values, examination of timestamps, and analysis of potential tampering with the recording (Munir Fuady, 2012). Field findings indicate that investigators from the Purbalingga Traffic Police have implemented digital forensic procedures as a prerequisite for accepting dashcam recordings as evidence, even though the available digital forensic capacity and resources remain limited. Irsan and Armansyah (2019) explain that the evidentiary weight of electronic recordings depends heavily on adherence to strict chain-of-custody procedures from the time of acquisition through presentation in court, while Hamzah (2016) emphasizes that, in essence, the probative value of all types of evidence is equal; thus, dashcam recordings that meet both formal and substantive requirements do not have a lower probative value than conventional evidence.

Although dashcam recordings already have an adequate legal basis as evidence, there is a fundamental legal vacuum (rechtsvacuum) in the form of the absence of regulations mandating the installation of dashcams on motor vehicles, particularly KBWU. The Road Traffic Law (UU LLAJ), Government Regulation No. 55 of 2012 on Vehicles, and Ministry of Transportation Regulation No. 19 of 2021 on Periodic Motor Vehicle Inspections do not list dashcams as mandatory components to be installed or inspected during periodic inspections (Sefiana & Heniarti, 2023; Buana et al., 2021). This situation means that the availability of dashcam footage at the time of an accident depends entirely on the voluntary initiative of vehicle owners, making it unreliable and unable to serve as dependable evidence in legal proceedings (Sefiana & Heniarti, 2023). All informants from government agencies, including the Department of Transportation and the Traffic Police, agreed that this legal gap must be filled immediately through a regulation at the level of a Minister of Transportation Regulation so that it applies nationwide and provides certainty for all stakeholders (Mertokusumo, 2010; Otto, 2002).

The Urgency and Feasibility of Integrating Dashcams into Periodic Inspections

Data on periodic inspections at the Purbalingga UPUBKB reveal a significant paradox between the growth of the KBWU population and the actual compliance rate with inspection requirements. The number of registered KBWU vehicles surged sharply from 2,491 units in January 2025 to 5,647 units in June 2026 an increase of 126.7 percent over an 18-month period. However, the number of vehicles that actually underwent periodic inspections actually decreased from 2,420 inspections in the first half of 2025 to 1,949 inspections during the same period in 2026 a decrease of 19.46 percent (471 inspections). The average number of inspections per month fell from 403 to 325 units. These data are detailed in Table 1 below.

Table 1. Comparison of the Implementation of Periodic Exams in the First Semester of 2025 and 2026

Indicators	First semester of 2025	First Semester I 2026	Changes
Total number of vehicles tested	2.420	1.949	-471 (-19,46%)
Average number of tests per month	403	325	-78 unit
Number of registered KBWUs (end of period)	2.952	5.647	+2.695 unit
Ratio of actual cases to the population	~81,9%	~34,5%	A significant decrease

Source: UPUBKB Purbalingga Annual Testing Reports for 2025 and 2026 (compiled by the researcher)

An assessment of the institutional readiness of the Purbalingga UPUBKB indicates conditional readiness across four key dimensions. In terms of human resources, vehicle inspectors are deemed to possess adequate basic capabilities, though additional technical education and training are required; this is supported by a mechanism to update inspectors' competencies, conducted every two years through periodic training. Regarding equipment, the UPUBKB does not yet have a device to test dashcam functionality, as this component has not been tested. From a regulatory perspective, there is currently no legal mandate or regulation of technical standards for dashcams. From a budgetary perspective, the elimination of KIR testing fees effective January 2024 pursuant to Law No. 1 of 2022 on Financial Relations Between the Central and Local Governments is not considered to hinder the expansion of testing components, as the addition of a single component is deemed to remain within the government's budgetary capacity through allocations from the Regional Budget (APBD) (Pinayungan et al., 2018; Soekanto, 2018). The status of institutional readiness is summarized in Table 2.

Table 2. Assessment of UPUBKB's Institutional Readiness for Dashcam Integration

Dimensions	Status	Description

Human Resources	Conditionally ready	The examiner is deemed competent but requires additional technical training; competencies are updated every two years.
Equipment	Not yet ready	Dashcam function testing equipment is not yet available; procurement is needed through the local budget (APBD) or central government support.
Regulation	Not yet available	There is no legal basis yet requiring dashcams; a Ministry of Transportation regulation is needed for nationwide implementation.
Budget	Feasible	Eliminating the fee would not pose an obstacle; adding one component is considered affordable from a budgetary perspective.

Source: Results of interview data analysis (processed by the researcher, 2026)

The limited infrastructure for static traffic surveillance in Purbalingga Regency is a key factor underscoring the urgency of making dashcams mandatory. According to a source from the Traffic Police Unit (KBO Satlantas) of the Purbalingga Police Department, CCTV availability in Purbalingga Regency is extremely limited, with only one operational CCTV unit in the urban area; consequently, ETLE enforcement is conducted via ETLE Mobile. This situation results in many traffic accidents on regency roads going undocumented visually, causing investigators to face fundamental challenges in obtaining sufficient evidence (Wicaksono & Dwilaksana, 2020; Dahlan et al., 2023). In this context, dashcams on vehicles function as a distributed surveillance system that moves with the vehicle, thereby effectively supplementing the documentation coverage that limited static cameras cannot provide.

Stakeholder Perceptions and Readiness

All informants from government agencies expressed positive perceptions and supported the idea of mandatory dashcams, provided that an adequate legal framework is in place. The Head of the Transportation Division at the Department of Transportation stated that integrating dashcams would bring significant innovations to the field of motor vehicle testing and is expected to assist law enforcement officers, particularly in accident investigations. The KBO of the Traffic Police Unit offered support with the important caveat that the function of dashcams on KBWU vehicles is primarily to serve as supplementary evidence in accident cases, while ETLE enforcement is more effective through dashcams installed on police vehicles. The UPUBKB Coordinator emphasized that the digitized testing ecosystem, which includes digital-display speedometers and digital emissions testing equipment, constitutes a technological foundation that facilitates adaptation to new digital inspection components such as dashcams (Friedman, 1975; Nonet & Selznick, 2001).

The perceptions and readiness of transportation business operators vary by tier and correlate with the scale of their operations. Large-scale operators, namely, a transportation cooperative with a total fleet of 600 units (450 freight vehicles and 150 passenger vehicles) and 11 years of experience, as well as companies with fleets of 45–78 units and 12–13 years of experience, tend to demonstrate a higher level of readiness. They have a financing structure that allows them to include dashcam procurement costs in their operational investment plans, and some of their fleets have even voluntarily installed dashcams. In contrast, small-scale operators such as truck drivers with 4 vehicles and public minibus drivers with 15 vehicles demonstrate conditional readiness constrained by cost burdens; they expect device prices in the range of hundreds of thousands of rupiah per unit, an adequate adjustment period, and the possibility of government support or incentives (Buana et al., 2021; Pinayungan et al., 2018). The extensive experience of all business operator informants with periodic inspections ranging from 10 to 15 years serves as a positive asset, indicating that a culture of compliance with periodic inspections has been established among the transportation business operators who were the subjects of this study.

Discussion

Legal Gaps and the Dashcam Evidence Framework

The research findings confirm a fundamental legal paradox: the Indonesian legal system has provided an adequate basis for the admissibility of dashcam recordings as evidence, yet simultaneously fails to provide norms that ensure their systematic availability. This situation can be analyzed through Gustav Radbruch's theory of legal certainty, which requires that positive law be clearly defined, predictable, and consistent so that society can adjust its behavior accordingly (Muslih, 2013). Jan Michiel Otto adds that "real legal certainty" is achieved only when clear rules are available, consistently applied by authorities, and accepted by the majority of citizens (Otto, 2002; Putri & Arifin, 2018). When there is legal recognition of dashcam recordings as evidence under the ITE Law but no obligation to ensure their availability, substantive legal certainty has not yet been achieved, as the acquisition of such evidence remains dependent on voluntary, non-standardized initiatives.

The theory of the rule of law (rechtsstaat), as articulated by Julius Stahl, provides an important constitutional perspective. The principle of governance based on law (wetmatigheid van bestuur) requires that any imposition of obligations on citizens must be based on valid legal norms within the hierarchy of applicable laws and regulations (Hadjon, 1987). Consequently, the dashcam requirements to be formulated must be grounded at the level of law or government regulation as a foundation, and then technically regulated through a Minister of Transportation Regulation (Putri & Arifin, 2018; Muslih, 2013). From the perspective of Lon Fuller's eight principles of legality, the dashcam regulations to be established must meet the requirement of clarity regarding obligations and technical standards, not demand the impossible from small businesses (possibility of compliance), be general in nature (generality), and ensure consistency in enforcement by periodic inspection officers (congruence) (Fuller, 1969; Mertokusumo, 2010).

The integration of technical standardization for dashcams through periodic inspection mechanisms offers a solution that simultaneously addresses the admissibility issue identified by Sefiana and Heniarti (2023). By establishing minimum specification standards as a requirement for passing periodic testing, this mechanism serves as a quality assurance measure that ensures compliance with the substantive requirements of Article 5, paragraph (4) of the ITE Law regarding the authenticity and reliability of electronic documents (Irsan & Armansyah, 2019; Munir Fuady, 2012). Standardization through Indonesian National Standards which cover minimum recording resolution, storage capacity, timestamp reliability, and device durability will provide quality assurance that gives judges certainty in assessing the probative value of dashcam recordings submitted in court. Compared to the existing framework, in which the authenticity of each dashcam recording must be verified on a case-by-case basis, standardization through periodic testing will significantly reduce procedural disputes and expedite the investigative process, in line with the objectives of the criminal justice system as outlined by Tolib Effendi (2014).

A comparison with the legal frameworks of other countries provides an important perspective for the formulation of dashcam regulations in Indonesia. Germany's experience shows that although continuous recording by dashcams intersects with data protection laws, courts may still accept the recordings as evidence, considering that the interest in seeking the truth outweighs the partial and proportionate infringement of privacy (Nasution & Pratama, 2023; Dahlan et al., 2023). The experience in the United Kingdom demonstrates tangible economic benefits: insurance companies offer incentives to dashcam users because it speeds up claim settlements and reduces cases of fraud (Buana et al., 2021; Sefiana & Heniarti, 2023). Lessons from these two countries underscore that dashcam regulations in Indonesia must strike a balance between law enforcement interests and privacy protection, as stipulated in Law No. 27 of 2022 on Personal Data Protection, including regarding the cloud-based data security mechanisms recommended by informants (Nasution & Pratama, 2023).

The Urgency of Updating the Transportation Law Enforcement System

The paradox between the growth of the KBWU population and the decline in compliance with periodic inspections found in this study is a systemic symptom with dual implications for the concept of dashcam mandates. Within the framework of Soekanto's (2018) theory of legal effectiveness, the decline in compliance reflects a weakening of at least two of the five factors of

effectiveness: the law enforcement factor, as indicated by the reduced intensity of joint roadworthiness operations conducted by the Department of Transportation and the Police; and the societal factor, reflected in the low awareness among some vehicle owners regarding the mandatory periodic inspection requirement (Soekanto, 2018; Friedman, 1975). The first implication is that the periodic inspection mechanism, as a control point for dashcam compliance, will only cover vehicles that are present for inspection; therefore, strengthening enforcement of periodic inspection compliance is a critical prerequisite for the effectiveness of dashcam integration. The second implication is that the widening compliance gap underscores the urgency of a comprehensive overhaul of the law enforcement system, including through the availability of more reliable evidence.

The concept of integrating dashcams into periodic inspections reflects the recommended transition from autonomous law to responsive law, as conceptualized by Nonet and Selznick (2001). The current periodic inspection system, which focuses on conventional technical and mechanical components, reflects a rigid procedural orientation. The integration of dashcams is a step toward a legal system capable of adapting to technological developments to achieve social goals such as safety and more effective law enforcement (Nonet & Selznick, 2001; Rahardjo, 2000). In the spirit of Satjipto Rahardjo's progressive legal philosophy, the law must serve humanity and renew itself in accordance with societal needs, including responding to advancements in digital recording technology. In line with this, Roscoe Pound's concept of "law as a tool of social engineering" provides a framework in which the requirement for dashcams integrated into periodic vehicle inspections constitutes a form of social engineering aimed at transforming driving behavior from undocumented to systematically documented (Pound, 1959; Rahardjo, 2000).

The phased implementation strategy agreed upon by all informants reflects a pragmatic and equitable approach that remains consistent with the principles of responsive law. The distinction between new vehicles, which are required to be equipped with dashcams from the time of production by the Sole Brand Distributor (ATPM), and older vehicles, which are granted a grace period for compliance, reflects careful consideration of the public's actual capabilities and circumstances (Nonet & Selznick, 2001; Pinayungan et al., 2018). At the regulatory level, incorporating the dashcam requirement into a Minister of Transportation Regulation as the technical implementing regulation of the Road Traffic and Transportation Law is an appropriate choice of instrument because it can be applied nationwide without requiring a lengthy legislative process, while remaining consistent with the hierarchy of norms as conceptualized by Hans Kelsen and implemented in Law No. 12 of 2011 (Marzuki, 2016; Otto, 2002). In the medium term, the formulation of minimum technical specification standards based on SNI, including the ability to record clearly under various weather conditions, storage capacity for the past three months, and connectivity to the cloud, is a critical regulatory component to ensure consistency and objectivity in testing across all UPUBKBs.

A cost-benefit analysis of implementing the dashcam mandate shows a balance that supports the policy's feasibility. From the public benefit perspective, the dashcam mandate for thousands of KBWUs operating on the roads effectively creates a distributed surveillance network that is far more extensive than the very limited static CCTV infrastructure (Wicaksono & Dwilaksana, 2020; Dahlan et al., 2023). From the perspective of private benefits, vehicle owners gain legal protection against unilateral claims in accident cases, easier support for insurance claims, and benefits from driver monitoring and fleet operational efficiency (Buana et al., 2021). The main obstacle, procurement costs, can be mitigated through SNI standardization and collective procurement; these challenges are surmountable and disproportionate compared to the benefits generated. By raising awareness of these dual benefits, business operators' perceptions may shift from viewing dashcams as a regulatory burden to seeing them as a profitable investment, which in turn fosters compliance based on an understanding of the benefits (Soekanto, 2018).

Stakeholder Readiness from the Perspective of Legal Effectiveness

The differences in readiness identified in this study that correlate with business scale have important implications for policy design. Within the framework of Friedman's (1975) legal system theory, stakeholder readiness is part of the legal culture component that determines the effectiveness of implementation. Differences in financial capacity between large and small

businesses require a tiered approach, rather than a one-size-fits-all policy that could lead to proportional injustice (Hadjon, 1987; Putri & Arifin, 2018). This equitable approach aligns with the Pancasila principle of the rule of law, which calls for a balance between the interests of law enforcement on the one hand and the economic capacity and actual conditions of society on the other, as articulated by Hadjon (1987). Operationally, this differentiation can be achieved through: varying transition periods based on vehicle age, facilitating collective procurement to reduce unit prices, and implementing support schemes for micro and small businesses in the transportation sector (Moho, 2019; Soekanto, 2018).

A comparison of this study's findings with previous research underscores its original contribution. Buana et al. (2021) recommended a general dashcam mandate but did not examine the specific mechanisms for its implementation; this study complements that by demonstrating that periodic KBWU inspections are an appropriate instrument to ensure compliance with this mandate. Sefiana and Heniarti (2023) raised doubts about the normative validity of dashcam recordings; this study offers a solution by standardizing technical procedures for periodic inspections, thereby strengthening compliance with the substantive requirements of the ITE Law. Khristanto (2020) examined the status of static CCTV recordings as circumstantial evidence; this study shifts the focus to mobile cameras as a strategic complement to the limitations of static CCTV (Choirunnisa et al., 2024). Dahlan et al. (2023) examined ETLE from the perspective of legal certainty; this study adds the dimension of personal data protection to the discussion of mandatory vehicle dashcams. Pinayungan et al. (2018) identified constraints related to limited human resources and equipment in implementing safety standards; this study confirmed the relevance of these constraints and demonstrated that both are surmountable in the context of Purbalingga Regency (Pinayungan et al., 2018; Wicaksono & Dwilaksana, 2020).

Overall, this study demonstrates that the successful integration of dashcams into periodic vehicle inspections cannot be reduced to a purely technical or regulatory issue. Within the framework of Friedman's (1975) legal systems theory, success depends on the integration of three components: legal substance (clear and comprehensive regulations), legal structure (institutional readiness of the UPUBKB and investigators' digital forensic capacity), and legal culture (public acceptance and readiness, particularly among transportation business operators). Failure in any one of these components will hinder the overall effectiveness of the system, as evidenced by the decline in compliance with periodic inspections, which not only impacts vehicle safety but also diminishes the effectiveness of the dashcam requirement if implemented without simultaneous enforcement strengthening (Soekanto, 2018; Friedman, 1975). Thus, this study concludes that the mandatory use of dashcams in KBWU periodic inspections is not only feasible but also an urgent step in the agenda for reforming Indonesia's transportation law enforcement system one that is responsive to technological developments and the real-world needs for evidence collection in the field.

CONCLUSIONS AND RECOMMENDATIONS

This study yields three main conclusions. First, dashcam recordings already have a valid legal basis as electronic evidence under the ITE Law, Constitutional Court Decision No. 20/PUU-XIV/2016, and the LLAJ Law; however, there is a fundamental legal gap in the form of the absence of a regulation mandating the installation of dashcams on KBWU vehicles. The main issue lies not in the validity of the recordings as evidence, which is theoretically established, but in the lack of systematic availability of this evidence due to the absence of a mandatory requirement for their installation. Second, the integration of dashcams into periodic inspections of commercial vehicles is of strong urgency and has sufficient feasibility. The paradox of a 19.46 percent decline in compliance with periodic inspections amid rapid growth in the KBWU fleet, coupled with limited CCTV infrastructure, reinforces the need for a distributed system of mobile visual evidence devices installed on vehicle control units. The mandatory use of dashcams should ideally be regulated through a Minister of Transportation Regulation with minimum technical standards based on SNI, implemented gradually with distinctions between new and older vehicles, and accompanied by strengthened enforcement of periodic inspection compliance through consistent joint roadworthiness operations. Third, all stakeholders in Purbalingga Regency expressed positive

views, with varying levels of readiness depending on the scale of their businesses. The main obstacles the lack of regulations, the unavailability of inspection equipment, and the financial burden on small businesses can be overcome through comprehensive regulations, the procurement of equipment, and equitable financing schemes.

This study recommends that the Ministry of Transportation immediately draft a Minister of Transportation Regulation that mandates and regulates technical standards for dashcams in commercial vehicles; The Purbalingga Transportation Agency and UPUBKB should prepare institutional readiness by procuring inspection equipment and providing technical training for inspectors; traffic police officers should standardize digital forensic procedures for handling dashcam recordings as evidence; and small-scale transportation operators should receive support schemes and adequate transition periods to comply with this requirement. Further research is recommended to examine the quantitative impact of dashcam implementation on reducing accident rates and accelerating case resolution, as well as to develop comparative studies of implementation in regions with different geographic and demographic characteristics

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