RECONSTRUCTION OF ROAD TRAFFIC AND TRANSPORT LAWS ON DETERMINING DRIVING AREAS FOR VEHICLES WITH AUTOPILOT SYSTEMS

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Abstract

One developmentartificial intelligence is a vehicle with an autopilot function. This issue needs to be regulated in Law Number 22 of 2009 concerning Road Traffic and Transportation, which does not accommodate the regulation of determining driving areas for autopilot-based vehicles. The added value of this article is that it discusses the settings for determining driving areas in autopilot-based vehicles. The aim of this research is analyzing the urgency of determining driving areas for vehicles with an autopilot system as well as reconstructing traffic and road transport laws regarding determining driving areas for autopilot-based vehicles. This research uses a normative juridical research method with a conceptual approach, a legislative approach and a comparative approach through a comparison of vehicle regulation laws with AI systems in Germany, South Korea and the United States. The results of this research show that the consideration and importance of determining the driving area in vehicles with the systemAutopilot is the level of safety and vehicle autopilot system, the condition of road infrastructure in Indonesia which must be adjusted to the autopilot system, traffic density in Indonesia and the potential risks and impacts on the safety of other road users. It is necessary to reconstruct the determination of autopilot-based vehicle driving areas in law number 22 of 2009 concerning road traffic and transportation.

Keywords: *Reconstruction, Driving Area, Autopilot Vehicle.*

1. INTRODUCTION

In this era of globalization, technological developments are very rapid. Artificial intelligence (AI), cryptocurrency, Internet of things and big data are the results of existing technological developments. This makes transportation manufacturers start to carry out new innovations to provide choices to consumers and be able to compete and excel in value from one product to another. One of the innovations created by motorized vehicle manufacturers, especially four-wheeled vehicles, is autopilot. This is an innovation that has long been developed in the global automotive industry. Various types of tests to check the suitability of the system to operate on the highway. The use of autopilot vehicles has begun to be widely used. There are several brands of autopilot-based vehicles that have entered Indonesia, including Tesla, which has almost all types of new vehicles released, such as models S, series, Hyundai Palisade, Toyota Raize, Toyota Voxy. Apart from that, no less is the presence of the car manufacturer from Melrceldels Belnz where the Drive Pilot System is introduced to be available on the latest generation S-Class W223 which has entered Indonesia. The Volvo car brand is not left behind with the L90 Recharge, L60 Recharge, L40 Recharge models which are also equipped with an autopilot feature which is available for sale at Volvocars Indonesia. Also followed by the Ford Co-Pilot360 car brand which is available on the Ford F-150 and Ford Mustang Mach-EL. Then vehicles with the Honda Odyssely brand, Honda CR-V, Honda Accord (Level 1), New Mitsubishi Pajero Sport Ultimate Dakar 4×4 (Level 1). The occurrence of accident cases proves that the presence of Autopilot technology in cars has the potential to harm the public and other road users in the future, but to date there is no positive law in Indonesia that regulates the use of technology. Meanwhile, developed countries such as Germany, South Korea and the United States have regulated autopilot-based vehicles. To date, several countries such as Germany, South Korea and the United States have accommodated autopilot-based vehicle operation settings.

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Table 1.1.
Autopilot-Based Vehicle Accidents in the United States, Germany and South Korea

Country	Year	Vehicle Brand	Accident Rate	Total
United States of America	2023	Tesla	87	610
	2013-2022	Tesla	308	
		Waymo	62	
		GM Cruise taxi service	23	
		Honda	35	
		Subaru	90	
		Ford	10	
		GM	5	
		BMW	5	
		Volkswagen	5	
		Toyota	5	
		Porsche	5	
German	2023	Tesla	2	37
	2022		6	
	2021		6	
	2020		9	
	2019		11	
	2017		3	
South Korea	2020	Tesla	3	3

Source: Secondary Legal Materials, processed by Researchers on January 17 2024.

Based on the data above, it can be seen that vehicles with an autopilot system can cause accidents. This can be a reference for how the Indonesian state constructs or builds a system in statutory regulations that accommodates autopilot-based vehicles in terms of the German state which has regulated provisions for autopilot vehicles called Straßenverkehrsgesetz (StVG), the South Korean state in the Act On The Promotion Of regulations. And Support For Commercialization Of Autonomous Vehicles, and the United States on NHTSA Federal Automated Vehicles Policy regulations. In this case, Germany and South Korea are countries that adhere to a civil law legal system and the United States is a comparison of common law countries. The existence of vehicles with an autopilot system cannot be separated from the highway as a driving route. Traffic is the movement of vehicles and people in road traffic space. To drive safely, drivers should make sure to obey traffic rules, maintain an appropriate speed, always wear a seat belt, and avoid using cell phones while driving. Check the vehicle regularly, including lights and brakes.

Obey traffic signs, give clear signals, and avoid driving while tired or under the influence of substances. In Autopilot-based vehicles, the first time the driver turns on Autopilot a message appears on the dashboard display warning that the function is designed for highways that have center dividers, clear lane markings, and no cross traffic. Autopilot vehicles are designed for no cross traffic and clear lane markings. That autopilot vehicles are not intended for use on winding roads with sharp turns, or in bad weather that causes reduced visibility. One brand of autopilot vehicle has a guide that lists a number of common conditions that can hinder the technology even on controlled-access highways, including roads with sharp turns, bad weather, bright incoming light, such as direct sunlight or headlights, hills, cars others in the blind spot (Rachel Lerman, Faiz Siddiqui & Trisha Thadani 2023). Regulations in Indonesia, namely Law Number 22 of 2009 concerning Road Traffic and Transportation, do not accommodate the regulation of determining driving areas for autopilot-based vehicles. This law does not yet accommodate the provisions regarding the area of operating vehicles with advanced technological systems made with computer systems. However, the law contains provisions for traffic management and engineering. The content of traffic management and engineering is carried out to optimize the use of the road

network and traffic movement in order to ensure security, safety, order and smoothness of traffic and road transportation with the provisions of traffic management and engineering that have been regulated, namely determining mass transportation priorities through the provision of lanes. or special lanes or roads, giving priority to safety and comfort for pedestrians, providing convenience for people with disabilities, separating or sorting traffic flow movements based on land use, mobility and accessibility, integrating various modes of transportation, controlling traffic at intersections, controlling traffic on roads, environmental protection. Based on these provisions, vehicles with an autopilot system should be accommodated for driving safety. It is appropriate for the law to keep up with the times to answer society's needs for certainty and protection for everyone in an area. Therefore, traffic and road transport laws must be updated to include provisions for determining driving areas for autopilot-based vehicles.

2. IMPLEMENTATION METHOD

This research is research in the form of normative juridical, namely legal research carried out by examining library materials or secondary data as basic material for research by conducting searches on regulations and literature related to the problem being researched or can be known by the approach library. The approach used is a statutory approach, a conceptual approach and a comparative approach. The technique for collecting this research with the materials used in the research is library research with primary, secondary and tertiary legal materials.

3. RESULTS AND DISCUSSION
3.1. The Urgency of Determining Driving Areas in Vehicles with Autopilot Systems

Setting limits on areas where autopilot can be used helps ensure that this technology is only operated in safe and controlled environments. This can minimize the risk of accidents caused by autopilot malfunctions or unforeseen conditions. Driving zoning helps determine who is responsible in the case of an accident. If an accident occurs in an area where autopilot is permitted, then responsibility may lie with the vehicle manufacturer or technology developer. Outside these areas, responsibility may shift to the driver. Driving region designation helps ensure that the data collected by the vehicle's autopilot is only used in permitted regions. This can help protect user privacy and prevent data misuse. Driving zoning helps ensure that autopilot technology is accessible to everyone fairly and equally. This can help prevent discrimination and ensure that everyone has the opportunity to benefit from this technology.

The considerations and importance of determining the driving area for vehicles with an autopilot system are the level of safety and reliability of the autopilot system, the condition of road infrastructure in Indonesia which must be adapted to the autopilot system, traffic density in Indonesia and potential risks and impacts on the safety of other road users, considering the autopilot system recognized by technology and if an accident occurs it can cause legal uncertainty in it. Even though the a quo law does not yet regulate areas for driving in vehicles with an autopilot system in Indonesia, legal norms must be understandable, therefore they must be drafted in accurate and precise language and consistency is required. In addition to the quality of legal norms, in terms of time, legal certainty is realized by the predictability of legal norms. Every legal subject must know what actions are prohibited or permitted by legal norms, so that legal subjects can know the legal consequences of their actions. On this basis, according to researchers, one of the conditions for realizing legal certainty is that legal norms can be predicted (predictability of the law principles). The principle of predictability requires that legal subjects must know the consequences/consequences that can arise from laws that have been established. The law must not only be announced, but the law must be formulated clearly and easily understood so that legal subjects know the legal consequences of the law itself.

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3.2. Reconstruction of the Road Traffic and Transportation Law on Autopilot-Based Vehicle Driving Area Determination

Due to societal changes related to the development of autonomous technology, the Indonesian government and Indonesian legislative institutions should be able to take an example and/or adopt the Autonomous Driving Act legislation. belonging to Germany and the Act on Promotion and Support of the Commercialization of Autonomous Vehicles belonging to South Korea and the United States, namely the NHTSA Federal Automated Vehicles Policy. In this case, Germany and South Korea are countries that adhere to a civil law legal system and the United States is a comparison of common law countries. The formation of regulations related to these vehicles could be a form of support from the Indonesian government for technological developments occurring in society, as has been done by the Federal governments of Germany, South Korea and the United States. Therefore, researchers have an interest in conducting comparative legal research in these countries. There are three stages in the legal comparison process according to Walter Joseph Kamba, namely the descriptive stage, the identification stage, and the explanation stage. These three stages are strongly influenced by the juridical views of the parties comparing, the social context, the legal systems being compared, and the legal context of the topics being compared in micro legal comparisons (Peter de Cruz 2012). Therefore, micro comparative legal research focuses on comparing laws related to the field of law regarding vehicles or traffic and roads. Changes that occur in society also need to be regulated in order to protect the interests of society itself and protect conflicts of interest that arise. Apart from that, the formation of these regulations can also be used as a form of anticipation before events that harm society occur.

Table 1.2.
Comparison of Vehicle Laws with the Artificial Intelligence Systems of Germany, South Korea and the United States

Comparative Criteria	German	South Korea	United States of America
Legal basis	*Straßenverkehrsgesetz*(StVG)	*Act On The Promotion Of And Support For Commercialization Of Autonomous Vehicles*	*Federal Automated Vehicles Policy Accelerating the Next Revolution In Roadway Safety*
Vehicle Operation Licensing	Operating permit from the Federal Motor Transport Authority	Unregulated	Unregulated
Driving Area Designation	Can only be used on public roads	Special Metropolitan Municipality, Metropolitan Municipality, Special Self-Governing City, Do, or Special Self-Governing Province (hereinafter referred to as "City/Do") which	Unregulated

		has jurisdiction over the area designated and notified to the public as an operation zone	
Autopilot Vehicle Operation	Operation of motor vehicles using highly or fully automatic drive functions is permitted if these functions are used as intended. Motor vehicles with highly or fully automated driving functions within the meaning of this Law are those that have technical equipment capable of controlling the motor vehicle in question once activated (vehicle control) to master the driving task - including longitudinal and lateral guidance, which is capable during vehicle control which is highly or fully automated to comply with traffic regulations intended for driving the vehicle, which can be manually overridden or deactivated at any time by the driver of the vehicle, which can recognize the need for the driver of the vehicle to control his own vehicle, which provides the driver with sufficient reserve time before delivery of control vehicle to the vehicle driver may be displayed optically, acoustically, tactilely, or otherwise visibly and which indicates use contrary to the system description.	Unregulated	Unregulated

Source: Primary Legal Material, (Dyah Kemala Hayati, 2024)

Based on a comparison of AI-based vehicle settings, in this case the author offers a reconstruction of Autopilot-Based Vehicle Driving Area Determinations in Law Number 22 of 2009 concerning Road Traffic and Transportation, including the following:

Table 1.3.

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Reconstruction of Autopilot-Based Vehicle Driving Area Determinations in Law Number 22 of 2009 concerning Road Traffic and Transportation

Before Reconstruction	After Reconstruction

There are no provisions on the operating mechanism for determining driving areas in autopilot-based vehicles	Paragraph 10
	
	Provisions for Operational Mechanisms for Determining Traffic Driving Areas for Autopilot-Based Vehicle Drivers
	
	Article 127
	
	(1) Autopilot-based vehicles can be operated on public freeways.
	(2) Operation of a motor vehicle using the autopilot function is permitted if the function is used as intended:
	
	  a. can control the motor vehicle in question once activated (vehicle control) to master driving tasks including longitudinal and lateral guidance;
	  b. have the ability during highly or fully automated vehicle control to comply with traffic regulations aimed at driving the vehicle;
	  c. can be overridden or deactivated manually at any time by the vehicle driver.
	
	(3) Motor vehicles with autopilot function that have technical equipment.

The Indonesian government needs to formulate new laws or revise Law Number 22 of 2009 concerning Road Traffic and Transportation against existing regulations by taking examples from Germany's Autonomous Driving Act, South Korea's Act on Promotion and Support of the Commercialization of Autonomous Vehicles , and the United States NHTSA Federal Automated Vehicles Policy . This step will be support from the Indonesian Government for technological advances and changes in society, as well as an effort to anticipate these developments. By regulating the requirements and operations of autonomous vehicles, Indonesia shows its openness to technological advances, which has the potential to attract investment from vehicle manufacturers to conduct research and testing of autonomous technology within the country.

4. CONCLUSION

Legal certainty regarding autopilot vehicles is very important to ensure safety, smooth traffic and fairness. Efforts to increase legal certainty need to be made by considering various existing aspects and challenges. Setting limits on areas where autopilot can be used helps ensure that this technology is only operated in safe and controlled environments. This can minimize the risk of accidents caused by autopilot malfunctions or unforeseen conditions. Driving zoning helps determine who is responsible in the case of an accident. Law number 22 of 2009 concerning road traffic and transportation does not accommodate the regulation of driving areas for autopilot-based

vehicles. However, the law contains provisions for traffic management and engineering to optimize the use of the road network and traffic movement in order to ensure security, safety, order and smoothness of traffic and road transportation with provisions for traffic management and engineering. Thus, vehicles with autopilot driving capabilities need to be regulated and reconstructed in Law Number 22 of 2009 concerning Road Traffic and Transportation by comparing the regulations of the German Autonomous Driving Act, the Act on Promotion and Support of the Commercialization of Autonomous Vehicles of South Korea, and the Federal NHTSA United States Automated Vehicles Policy.

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