Budaya Keselamatan pada Transportasi Jalan Indonesia

Safety Culture in Indonesia's Road Transport

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ABSTRACT

Transportation with all of its branches is dependent on infrastructure considering safety. Road transport has a large number of accidents, but they do not receive the same attention from media compared to those of other modes perceived as dramatic. The main objective of this research is to describe the facts and to help shift public behavior and attitude, influence policy and therefore contribute towards saving lives. The research is carried out by executing literature review. The results of the research highlight the magnitude of casualties each year as a result of road traffic accidents and the lack of road safety awareness of public and road users.

Keywords **:** *safety culture; traffic safety; road transport; road traffic; road accidents; transportation*

ABSTRAK

Transportasi dengan semua cabangnya sangat bergantung pada sebuah infrastruktur yang mempertimbangkan keselamatan. Transportasi jalan memiliki sejumlah besar kecelakaan, namun tidak mendapatkan perhatian yang sama di media dibandingkan dengan kecelakaan besar di cabang transportasi lain yang dianggap dramatis. Tujuan utama dari studi ini adalah untuk menggambarkan fakta-fakta dan untuk membantu mengubah perilaku dan sikap publik, mempengaruhi kebijakan dan oleh karena itu berkontribusi terhadap tindakan menyelamatkan nyawa. Penelitian ini dilakukan dengan melaksanakan tinjauan literatur. Hasil penelitian ini memaparkan besarnya jumlah orang yang meninggal setiap tahun sebagai akibat dari kecelakaan lalu lintas jalan, dan kurangnya kesadaran akan keselamatan jalan dari pengguna umum dan pengguna jalan.

Kata Kunci : budaya keselamatan; keselamatan lalulintas; transportasi darat; lalulintas jalan; kecelakaan jalan; transportasi

A. Introduction

Roads account for mostly of all transport in the world and that is why one could say that everyone is a road user. For most people, "taking to the road" whether figurative or literal, means communicating, seeing other people and other places, and often other cultures. On a more practical level, as well as economic one, roads represent a means for travelling to work and transporting goods (Red Cross, 2007). It is

the roads that create derivative demand in transportations and logistics industry. The function of the road is to support transportation and logistics activities, therefore safety for road users needs to be considered.

Road safety issues are not only limited in the absence of accident, but more broadly like creating a safe environment, comfortable and guarantee safety for road users. Road users such as car drivers, motorcyclists, moped riders, cyclists, pedestrians and also the organised players such as transport companies. They who carry out transportation and logistics activities in general related to safety that is to a large extent dependent on how this road users act. Since the road traffic is the most open with a very large element of private players, then road safety should be considered as a culture that must be formed, educated and socialized (Sugiyanto, Gito & Santi, 2015).

Road transport is very vital to Indonesia's development. Jakarta as the capital city of Indonesia is the third most congested capital in the world with traffic density where drivers need extra travel time up to 58 percent (Katadata, 2017). The total trips in Greater Jakarta (Jakarta, Bogor, Depok, Tangerang and Bekasi) througout 2015 recorded 47.5 million trips per day. Of the total trips, as much as 50 percent of the trip is the total amount of traffic from Bogor, Tangerang, and Bekasi to Jakarta, while travelling in Jakarta alone is only 40 percent (Ministry of Transportation, 2016).

In assesing the situation on the roads network, Indonesia in 2017 has 539,353 km, consisting of 47,017 km national roads, 54,554 km state roads and 437,782 km rural/urban roads (Indonesian Central Agency of Statistics, 2019). From this total network of road in Indonesia, 321,093 km of which already covered with asphalt while the remaining 218,260 km are non-asphalt roads (Indonesian Central Agency of Statistics, 2015).

The total number of motorized vehicles in 2017 was 138,556,669 units, where the growth in the past two years reaching 6-7 percent annually. The biggest contributor to this growth is motorcycles (Indonesian Central Agency of Statistics, 2019). The motorcycles have become the most popular form of family transport in South East Asia, including Indonesia. The number of motorcycles in operation is growing rapidly, generating a surprising degree of cause of traffic accident on the road. Data shows that motorbikers are involved in 73 percent of traffic accident throughout 2018 (Liputan6.com, 2018). By a great diversity of users, the chance of accident in a road traffic is also bigger.
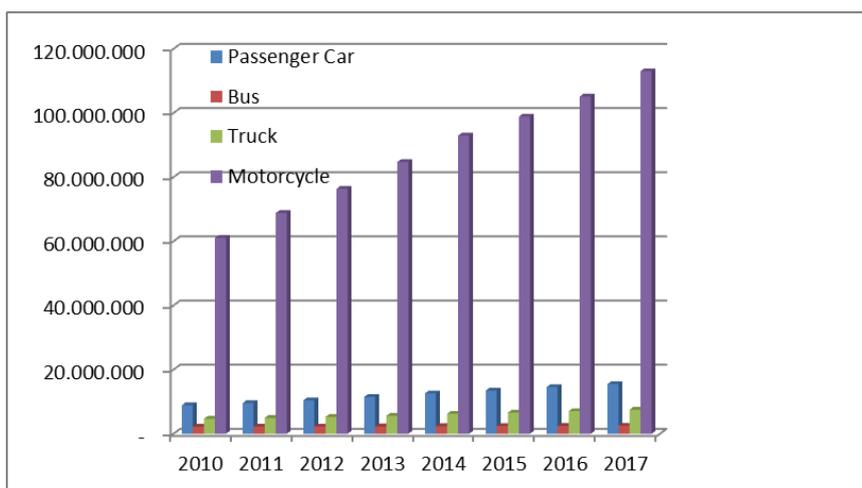
Source: Indonesian Central Agency of Statictics (2019a)
Figure 1 Motorized Vehicles Growth in Indonesia 2011-2017

Accident is an incident occuring unexpectedly and unintentionally, it is occasioned by human negligence (Verma and Gupta, 2017). Road traffic accidents have significant impact on individuals, communities and countries. Based on accident victim data, the tendency of the highest age group of victims is 16-30 years which is the age in the productive group (Siregar, 2013). The accidents could result in death victims, serious injuries, minor injuries and material losses. Indirect cost, such as loss of productivity, damage to vehicles and property, reduces quality of life and other factors. In spite of that, they involve massive cost to often overburdened health care system, occupy scarce hospital beds, consume resources and result in significant losses of productivity and prosperity, with deep social and economic repercussions (World Health Organization, 2014). All of these losses will result in economic cost that influence the Gross National Product (GNP).

World Health Organization (World Health Organization, 2014), make a comparison between regions or countries that use of death rates per 100,000 population more accurately reflects the size of the problem than absolute numbers. The reason for this because the use of the total number of deaths alone can be misleading, because it leads to comparisons of population of unequal size. The result shows the magnitude about 1,24 million people globally die each year as a result of road traffic crashed and that's nearly 34,000 deaths a day. The accident statistics in Indonesia is shown by the following table (Indonesian Central Agency of Statistics, 2019b).

Table 1 Accident statistics from 2010 to 2017

Detail - Year	2010	2011	2012	2013	2014	2015	2016	2017
Accidents	66.488	108.696	117.949	100.106	95.906	98.970	106.644	103.228
Deaths (person)							31.262	30.568
Severe Injuries (person)	26.196	35.285	39.704	28.438	26.840	23.937	20.075	14.395
Light Injuries (person)	63.809	108.945	128.312	110.448	109.741	110.714	120.532	119.945
Material Loss (million rupiah)	158.259	217.435	298.627	255.864	250.021	272.318	229.137	215.446

Source: Indonesia Central Agency of Statistics (2019)

Source: Indonesian Central Agency of Statistics (2019)
Figure 2 Accidents Trends
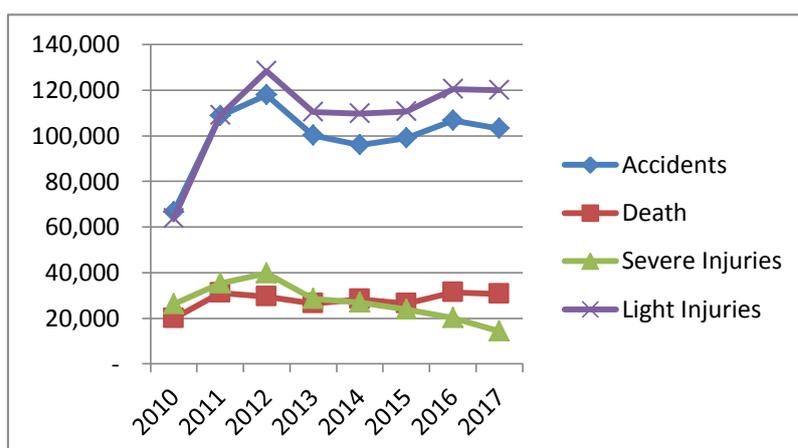
In 2017, there are approximately 103,228 accidents on Indonesian roads and 30,568 deaths by the analysis of State Policy in Indonesia. A key problem particularly in low- and middle-income countries is that road traffic deaths are underreported. Without data, in-depth information and

awareness of safety, annual road traffic deaths are predicted to increase.

B. Research Method

The research was carried out by following some steps which are formulating research objective, executing literature review, identifying existing condition, formulating ideal solution, identifying the needs and constraint, and formulating the policy.

C. Literature Review

The main challenge of safety culture in Indonesia's road transport is to bring about a change in road user behaviors. From the above facts and viewpoint, the study then go into five issues of safety culture in road transport namely legislation, engineering, law-enforcement, education, and emergency care that would be the perfect manner to approach the issues raising.

1. Legislation

The legal basis of road transporation is Laws of the Republic Indonesia Number 22 of 2009 which consists of 22 chapters and 326 articles which regulate road transportations and traffic regulations in Indonesia. There is an action plan as an integral part of the National General Safety Plan (RUNK) mandated in the Republic Indonesia Law Number 22 Year 2009 concerning Traffic and Road Transportation.

One of the disadvantages of implementing road safety in Indonesia according to the 2004 Asian Development Bank Report was poor coordination and management (Siregar, 2013). The success of an action plan is the work of good coordination from all interested parties. RUNK was compiled by appointing Ministry of National Development Planning (Bappenas) as conductor in integrating safety programs carried out by road safety stakeholders. To make this action plan succeed, National Traffic Policy have identified five policy pillars to work toward the UN decade of action for Road Safety. Bappenas is also coordinating for all pillars, and priority has been established with the help of the World Bank, Indonesia Infrastructure Initiative funded by AusAid, the Asian Development Bank, and other stakeholders ('Road safety situation in indonesia', 2013).

Source : Europe-Asia Road Safety Forum (2013)
Figure 3 Five Pillars to Improve Road Safety

Political awareness is essential in understanding safety culture in Indonesia's road transport and the measures needed. Let us consider the road, vehicle and users as a system. The interaction between users and the physical elements are critical, since road and vehicle design must allow for human error. The matrix in table 2 illustrates the

interaction between the three factors (human, vehicle and infrastructure) in the course of the three phases of a crash: before, during and after the impact.

Table 2 The Haddon Matrix

Phase		Human	Vehicles and Equipment	Environment
Pre-Crash	Crash Prevention	Information	Roadworthiness	Road design and road layout
		Attitudes	Lighting	Speed limit
		Impairment	Braking	Pedestrian facilities
		Police Enforcement	Handling	
			Speed management	
Crash	Injury prevention	Use of restraints impairment during the crash		
			Seat belts	Crash-protective roadside objects
			Occupant restraints	
			Other safety devices	
			Crash-protective design	
Post-crash	First aid skill		Ease of access	Rescue facilities
	Access to medics		Fire risk	Congestion

Source: World Bank Report 2014

Decision making on road safety policies depends partly on data. Government need both quantitative and qualitative data to target and monitor its effort better. To meet the accuracy, the data collection must follow best practices and be harmonized across sector and related parties (e.g. Police, Ministry of Health, Ministry of Public Work and Ministry of Transportation). It is necessary to prepare standardization of concepts on road safety, training of relevant cross sectoral officers and the availability of guidelines for filling in the format and the format of integrated national traffic accident data.

2. Engineering

The issue of engineering in road safety culture related to the road infrastructure, which considered as a whole (including road surface, road signs and design) and is a significant safety factor. Safer road as the second pillar obligates the government and related parties to design the road that concern about all safety aspects. Road design should recognize that human make mistakes and try to minimize the consequences of human error.

Many countries do not have accurate information on road traffic accidents, including Indonesia. Additionally, some definitions are not standardized yet. For example, the recording of locations in one area with another area is not the same. Some areas include the position of a kilometer mark and some are not. University of Indonesia's Transportation Laboratory states there are at least 4 (four) locations of occurence which are the name of the road, name of village, name of sub-district, and kilometer marking posistion (Siregar, 2013). In addition, investigation of the incidence of traffic accidents is carried out by officers with accident analysis competencies that are only oriented to law enforcement, not oriented to road safety engineering. To meet these standars, the use of Geographic Information System (GIS) has been proposed to identify locations traffic accidents combined with information technology system that have been developed by the Indonesian National Police.

Low cost Improvement on existing infrastructure can substantially reduce the occurence of road accidents and their severity. The improvements include the separation of different types of traffic, better roadmarkings and road signs, safer paths for pedestrian and two-wheelers, the construction of sidewalks or pavements and more visible pedestrian crossings, and slower traffic speeds (with the use of road humps, rumble strips and roundabouts) (Red Cross, 2007). The improvement of existing road should be prioritized at high-risk spots, where many crashes occur, especially at the entry and exit of built up areas and areas of high activity such as markets and schools. The improvement should be incorporated in the design of new road and road junctions. For example, to increase the safety of pedestrian, some measures should be determined in road design such as construction of 30 km/hour zones and raised, highly visible, uniform crossing, vehicle measures such as pedestrian-friendly car fronts, education on behavioral measures, information and socialization of key risk factors of cars incidents.

Another sub topic in the engineering issue is safer vehicle. Vehicle is an integrated part of the road transport system. The standar of a vehicle's safety features is a critical part. Although, the modern vehicle are considerably safer than older models, there sould be regulations, public campaign and law enforcement that ruled a) the size, nature and condition of wheels and tyres, 2) brakes and shocks, 3) lamps and reflectors, 4) warning devices, 5) the reguler inspection of vehicles, 6) maximum load for commercial vehicle transporting goods or passenger (or both at once, as is often the case).

3. Law-Enforcement

Political will is needed at the highest level of government and related parties to ensure appropriate road safety legislation and law enforcement. In this case, the government should be encouraged to allocate more resources to traffic law enforcement. The new paradigm in safety culture is needed

and making road safety a priority means placing a higher value of life. In spite of focusing on human error, the aim of the safe system approach is to develop a road transport system that can better accomodate human error and take into consideration the vulverability of human body.

Based on the global data, road crashes often result from a series of root cause which are the vehicles (a factor in 5 to 10 percent of crashes), road infrastructure (to which 10 to 20 percent of crashes may be attributed) and road user behavior (which is responsible at least in part of some 80 to 90 percent of road crashes) (Red Cross, 2007). In road traffic safety, human factors are influenced by physical and psychological conditions. If we learn the autonomy of human body, physically, it is not "designed" to move at high speeds, especially when experiencing physical collisions with other objects so that the consequences on the human body can even lead to loss of life. In the other aspect, psychologically, the concentration of someone at the time of driving is influenced by internal factor, which is embedded to namely background of knowledge, skill, insight, experience, logic, health conditions, fatigue, stress, and pressure on personal problems. External factor that influence psycological condition of driver such as weather, music, mobile phone use and text messaging, the presence of other tools or technology in vehicles, and other things that affect the driver's concentration.

Related to the rules needed to improve the quality of traffic safety, there are a number of things that must be added, including (Siregar, 2013):

a) There are no rules regarding the seating of children and babies

b) There are no rules regarding the alcohol in the driver's body (BAC or Blood Alcohol Contain) so that law enforcement on this problem has not been implemented properly.

c) Penalty or demerit system for traffic violation has been stated in law 22/2009 but does not yet have an implementation regulation so that it cannot be applied to

drivers who commit violations or involved in traffic accidents.

d) Regulations regarding the prohibition on using cellphones on when driving, including SMS or text, it has been included in law 22/2009 but law enforcement for these violations have not been implemented.

e) Provisions regarding road safety audits and analysis of traffic impacts are regulated in Government Regulations No. 32 of 2012 concerning traffic management and engineering but it has not gone well.

The traffic policy is responsible for ensuring the enforcement of traffic laws. A system should be put in place that ensures fines are properly paid, rather than pocketed by potentially corrupt officials. Police officials should receive training on the impact of road crashes on society and public health in order to have a better appreciation for why their job of enforcing traffic laws is so important (Red Cross, 2007). In spite of that, police forces must also have access to the technical equipment they need to do their jobs well such s radars, breathanalysers, as well as patrol cars.

4. Education

The main cause of road crashes and road crash injury and death in fact is the behavior of road users, particularly drivers. There is a need for greater awareness among road users about the risk factors and dangerous behavior. Making traffic safety a culture is the toughest challenge of improving the quality of drivers and prospective drivers.

Some information and social campaign should be delivered to the society related to key risk factors, namely speed, drinking and driver, motorcycle helmets, seat belts, child restraints, visibility and distracted driving. People, particularly children, students, college teens should be informed about safety culture in road transport in order to make them understand and follow the security aspects. Road users shoud also informed about the laws and regulatios of the motor vehicles act in the Law 22/2009.

Some social campaign and common information about road safety should be socialized to public, schools, markets, automotive workshops or places where people usually gather. Simple information or short sentences such as distance that is considered safe for braking is proportional to a vehicle's speed. For example, a car travelling at 50 km/hours takes 28 meters to stop, whereas a vehicle driven at 90 km/hour takes 70 meter to stop (World Health Organization, 2014).

Reducing road traffic deaths requires paying serious attention to the needs of pedestrian, cyclists and motorcyclists who have so far been largely neglected in transport and planning policies. Key risk factors in road transportation (speed, drinking and driving, motorcycle helmets, seat belt, child restraint, visibility, distracted driving) involved in human behavior, especially the behavior of the driver. The Iterate Consorsium (Siregar, 2013) describe the universal model of driver as shown in the figure 4 bellow:
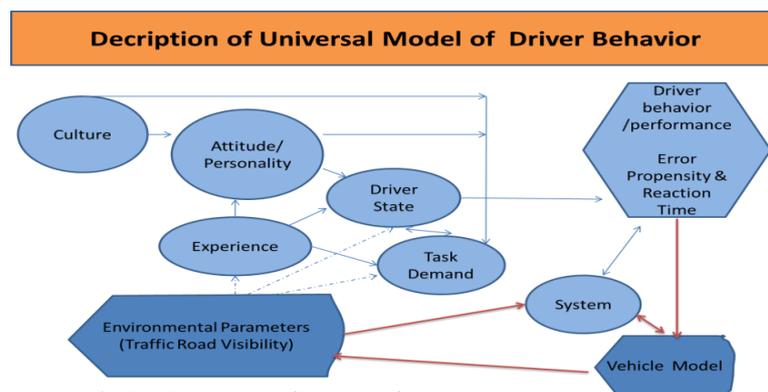
Source : The ITERATE Consorsium (Siregar, 2013)
Figure 4 Description of Universal Model of Driver Behavior

Based on the universal model, the biggest challenge of safety culture in Indonesia's road transport is to improve the quality of drivers, prospective drivers and all road users. From the data of accidents, children and young people have a high involvement in road crashes, so they must learn to use the road safely. Road safety awareness and culture can be improved by doing the traffic safety education from an early age and promotion of the importance of road safety for children (Sugiyanto, Gito & Santi, 2015). To make this a culture, long-term commitment is needed so that knowledge, skills and care for traffic established. For the sake of the reason, it is essential to implement road safety education as a part of curriculum, which is the most effective ways of providing youngters with road safety knowledge. Road safety education could develop knowledge, skill, attituted and even more importantly values that enable pedestrians, cyclists, motor cyclist, drivers and passanger to use road safely.

Education and training should be followed by social controls or strict law enforcement on the driver. Drivers in particular must know and care about all risks related to the operation of motorized vehicles and understand how to safely drive in various traffic situations and conditions.

5. Emergency Care

In collecting crash data, details are ideally required on where and when a crash occured, people and vehicles involved, the circumstances and causes of the crashes, and the material and human damage. In countries that have no system in place for tracking crash victims in hospitals, road deaths can be underestimated by up to 200 percent in some cases. Mortality data must take into account of deaths both at the crash scene and subsequently in the hospital, which is not the case in the majority of low and middle income countries, in example in 80 percent of the world (Red Cross, 2007). The information of crash data is essential to understand the factor involved in individual road crashes, and to show to the political authorities the scope of the road safety problem. The traffic police should be given access to information concerning the injuries of road crash victims, who have been treated in the hospital to make a comprehensive post crash data collection and reports.

Concerning the fifth issue of safety culture in Indonesia's road transport, first thing to do is to make sure that general public, children, students, teenagers know about emergency care such as crash alert, basic first aid, transport and admission to the closest medical care. A specific emergency number should exist, which is free of charge and well known by the public, that connects the caller directly with the emergency services.

D. Conclusion

Maximizing the efficiency of road transport system does not mean pay less attention to safety that leads to loss of life, health and wealth. With some adequate attention to road safety, Indonesia could continue motorize to support the need of the derivative demand in transportation and logitics industry.

Road users should understand that road is a share public space that need common respect among them. As moral obligations for road users, solutions do exist if society have willingness to make every effort to apply them and in view that road safety culture improvement benefit society at large.

With growth in number of both motorized vehicles and road users in general, it is important to make the road safety culture as a long-term commitment from all related parties. investing in road safety and build a road safety culture lead to economic savings while protecting both Indonesia's current population and its future generations. It is essentials to convince politicians and government to take into account safety culture in Indonesia's transportation system policy. In spite of that, regular campaigns are needed to make society aware of road safety and how to make it as a culture and long-term commitment. These campaigns is

addressed to prepare the public for new legislation and backed up by strong law enforcement.

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