

Perceived Safety Driving Paradigm of the Intercity-Bus Drivers in East Java

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Abstract – Nowadays, transportation research is developing to find out the causes of accidents that occur on the highway. In fact, it becomes world's serious concern. World Health Organization and the United Nations Organization through the third goal of Sustainable Development Goals program on health and the eleventh goal regarding sustainable urban transportation expect a reduction in the number of accidents on the road in each country and the existence of a sustainable public transportation system which is safe for people. This research aims to find out the paradigm of perceived safety driving which is the cause of the high number of accidents on inter-city bus drivers in East Java, assessed from the process view of risk from the driver's. Based on the test results, it is identified that the process of perceptual leap, the loss of the stage in the risk assessment are the causes of the bus driver ignorance to their safety driving behavior on the highway.

Key words: *paradigm, risk perception, risk assessment, risk tendency, safety driving*

I. INTRODUCTION

The *Sustainable Development Goals (SDGs)* program of United Nations (UN) by the end of 2015 replace the form *Millennium Development Goals (MDGs)* program which has 17 goals and 169 targets intended to equalize the economy, social and environment for the entire population of the world [1]. The focus of attention is sustainable development, and initiating movements in critical area for the next 15 years. These two world crucial concerns associate with the factors of road safety, namely the aim number three and number eleven in demanding the stabilization of the highway and decreasing

the number of deaths from accidents in 2020 and preparing a safe, affordable and sustainably accessible city transportation for all citizens [1,2].

The high number of highway accidents proves that the program of SDGs imposed by the United Nations is still not implemented in Indonesia. Data obtained from Regional Police of East Java in 2016 states that the accidents rate occurred 34,65% at most at 12:00 to 18:00. Motorcycle is the most frequent vehicle of highway accident (69,4 %). At the past 3 years number of victims recorded were 87, 9% with the age ranged from 16 – 60 years old with the factors explained as follows: disobedience 36,31 %, negligence 33,34%, and exceeding of limit 30,35% [4-5]. According to The Headquarters of the Indonesian National Police, although the highest number of highway accident comes from motorcycle accident, the highest number of casualties and losses is due to bus accident [5].

The potential massive loss of life and material due to highway accidents in Indonesia both in social and economic amounted to 203 billion – 217 billion per year or about 2,9% - 3,1% of the total Gross Domestic Product of Indonesia [6]. Police of Republic of Indonesia targets to decrease 50% of number in highway accident within 10 years due to the massive potential loss both material and immaterial of the victims [5-6]. This is in accordance to the program of *Decade of Action for Road Safety* proclaimed by the United Nations starting March 2010 [2]. Therefore, the research on paradigm model

of *perceived safety driving* due to the high accident rate by the bus drivers in East Java is acknowledged in terms of assessing risk, using *process view of risk* theory from Nicholson et al (1972) [7].

II. MATERIAL AND METHOD

Technique of sampling formulated was *rule of thumb* [8,9]. The result obtained from sampling was 204 bus drivers in East Java province out of 561 total of population. The samples were selected by using *systemic random sampling*, a daily frame sampling taken in every fifth order.

III. FINDING

Process view of risk theory describes how someone examines the process of a risk as the following: risk perception - risk assessment - risk tendencies - behavior. Someone's perception on the uncertainty and possible negative consequences of a deed or decision taken refers to risk perception [7,10]. Afterward, someone will do *risk appraisal*/risk assessment through the initial perception which probably changes after he acknowledges and comprehends further. Besides, risk tendencies will be formulated and manifested in the behavior. The concept of risk tendencies is implicated crucially on the theoretical modeling of risky behavior and practical insights. This motive underlies people in making choices in risk behavior or taking behavioral decisions [7].

Table 1 illustrates the perceptions seen from experience and knowledge indicators. A good category in experience indicator will lead people to promote the *safety driving* rate amounted to 100%. Furthermore, the better the knowledge obtained, the better the *safety driving* rate presented, in this case it is amounted to 73, 8%

The three indicators of risk assessment presented as the following: the assessment of financial risk, assessment of a good health risk as well as assessment of safety and environmental condition risk. These three assessment lead people to behave productively in safety riding. The data obtained that there is less tendency of *safety driving*, amounted to 50% toward the assessment of financial risk. On the other hand, the assessment of a good health risk leads the tendency of *safety driving* amounted to 100% and the assessment of safety and environmental condition risk leads the tendency of *safety driving* which is less than 100%. The decrease in *safety driving* behavior amounted to 55,3 % regarding the tendency of avoiding the risk as well as the tendency of obtaining the risk amounted to 63,3 % leads the decrease in *safety driving* behavior.

Table 1. Description Of Perception Factor Variable With Safety Driving of intercity Bus Driver In East Java (N = 204)

No	Variable indicator from process view of Perception	Safety Driving						Total	
		Less		Enough		Good		n	%
		N	%	n	%	N	%		
1.	Perception								
A	Experience								
	Less	21	42	29	58	0	0	50	24,5
	Enough	0	0	123	100	0	0	123	60,3
	Good	0	0	0	0	31	100	31	15,2
	Total	21	10,3	152	74,50	31	15,20	204	100
B	Knowledge								
	Less	21	61,8	13	38,2	0	0	34	16,7
	Enough	0	0	128	100	0	0	128	62,7
	Good	0	0	11	26,2	31	73,8	42	20,6
	Total	21	10,3	152	74,50	31	15,20	204	100
2.	Risk Assessment								
A	Assessment of financial risk								
	Less	20	50	20	50	0	0	40	19,6
	Enough	1	0,8	90	74,4	30	24,8	121	59,3
	Good	0	0	42	97,7	1	2,3	43	21,1
	Total	21	10,3	152	74,50	31	15,20	204	100
B	Assessment of health risk								
	Less	21	39,6	32	60,4	0	0	53	26
	Enough	0	0	120	100	0	0	120	58,8
	Good	0	0	0	0	31	100	31	15,2
	Total	21	10,3	152	74,50	31	15,20	204	100
C.	Assessment of the risks of Safety and Environmental Conditions								
	Less	21	100	0	0	0	0	21	10,3
	Enough	0	0	151	100	0	0	151	74
	Good	0	0	1	3,1	31	96,9	32	15,7
	Total	21	10,3	152	74,50	31	15,20	204	100
3	Risk Tendency								
A	Tendency accepts risk								
	Less	21	63,6	12	36,4	0	0	33	16,2
	Enough	0	0	140	100	0	0	140	68,6
	Good	0	0	0	0	31	100	31	15,2
	Total	21	10,3	152	74,50	31	15,20	204	100
B	The tendency to avoid risk								
	Less	21	55,3	17	44,7	0	0	38	18,6
	Enough	0	0	103	77,4	30	22,6	133	65,2
	Good	0	0	32	97	1	3	33	16,2
	Total	21	10,3	152	74,50	31	15,20	204	100

IV.RESULT

The result of research shows that there is a significant correlation between perception and risk tendency. On the other hand, process view of risk theory stated that risk appraisal/risk assessment in accordance to the former perception would be performed after distinguishing a process. This assessment could transform as soon as the new experiences and comprehension toward the risk are obtained. Afterward, the tendency to accept or refuse the risk would occur

The study conducted on offshore oil workers states that the workers who experienced accidents in the past two years feel less secure and tend to develop a perception of experiencing more dangerous risk than those who have never experienced an incident. Theory of Motivation and Protection states

that in order to secure oneself, an adequate risk perception is not the only one needed, but the skills and the devices for preventing action are also needed. A poor perception leads to a negative risk tendency and lack of *self-efficacy* [11]. On the other a research on young drivers resulted that risk perception was the strongest predictor in assessing the risks taken while driving. It explained the reason why young drivers did not choose to engage in risky driving, compared to the old drivers [12]. The results on risk assessment obtained that there is no significant effect on the risk tendency while the financial risks, health risks as well as safety and environmental risks are the indicators obtained. The influences above lead the intercity bus drivers to act in a reflex way, or in other words, the behavior presented subconsciously (behavior B for situation A), albeit in driving, one should be in the state of

awareness and alert to anticipate any possibilities and show a good safety driving attitude. Risk perception states that risk assessment could improve the positive effects towards the safety on the integration of a person's intentions and behavior [10].

Although there is a big concern presented in the risk assessment, it is not used as a further basis in decision making in tendency to act. The theory of social change is performed as "The greater the benefits received as a result of an action, the more the action are carried out" [13,19]. In this case, the greater benefits obtained by the drivers, the more risk assessment are eliminated. Other researcher concluded that perception, acceptance of risk and demands differed conceptually to explain the risk in behaving are the basis of the changing of risk concept [14]. Kurt Lewin explains that a change in behavior happens when a perceptual leap which overrides the risk assessment presented since the imbalanced individual functions and environmental functions (social and physical) occurs. Or in other words, the change in behavior happens when B (*Behavior*) = P (*Person*) < E (*Environment*) or P (*Person*) > E (*Environment*). As a result, a leap happened from the risk perception to risk tendency without passing through risk evaluation. Driving forces that happened in this present research were caused by personal needs given a higher priority than need for implementing safety driving behavior [15].

The research of risk tendency shows that the tendency to reject leads a behavior of a good *safety* driving and vice versa. The tendency of taking risk of each individual is significantly different, depending on sex, age, physiological and environmental conditions as well as life history such as parental status which influenced the behavior [16,18]. Research on the expectants shows that a significant influence towards the tendency of the risk taken by a mother to remain pregnant and choose how to deliver is based on social support from the surrounding. This case is in line with the bus drivers, since the sustainably social supports given and provided by the environment, the government, fellow drivers and passengers regarding the behavior of *safety driving* must be applied to influence the risk tendency taken. Revealed that the result on *perceived risk* evaluation as the greater the consumers tend to accept high risk, the greater the consumers have the risk behavior. In addition, personality factors influence risk tendency as well [17-19]. The decision making is strongly influenced by different personality with different hormonal reactions, feelings, and different experiences.

Nicholson's theory has revealed that an accident viewed from the process view of risk showed a result that an attitude may happen to begin

from a perception of risk into a tendency to risk since there is a driving force where in this present research is the driving force out of an individual known as external factor. This external factor gives a higher effect than a personal factor in the driver himself playing a role as a restraining factor.

A high driving forces among the drivers of inter-city buses when it is related to the Kurt Lewin's theory may be caused by the fact that there is a restraining factor that resulting little change, namely less application of the existing regulations because the regulations are often applied formally, and less proper understanding. This happen because of less education, less socialization and influence from other drivers. According to the social context, the peer worker, the superior and other people in the drivers' social network also influence their behaviors.

The third driving force is that there is a psychological reactions among the drivers, because they routinely pass through the same route with the same challenge. This makes their behavior is more reflective in their driving process. The fourth hindrance is their low tolerance to a change, because it is not supported by a holistic system from all layers such as less socialization from the concerned parties, less control social from the passengers and the media, and less supporting and impersonal regulations and policies.

The driving force of the inter-city bus driver is from Exponential E, namely the environment factor consisting of the work period, marital status, the number of the dependents, the wife's work, the way to obtain the driving license, the way to obtain the driving competence, the experience of accidents in the past one year, the condition of the accidents in the past one year, he recruiting system of bus driver, the speedometer condition, the limit speed in the morning, the limit speed in the evening, the production year of the bus, the maintenance system, and the road condition passed through which are the external characteristics. Moreover, there is also an environmental factor namely: management system, socialization, readiness of the vehicle, the condition of the road, and the weather when driving.

V.CONCLUSION

Based on the results, it can be concluded that the drivers of the intercity bus in East Java, experiencing a leap of process in interpreting the risk into forming behavior. The absence of assessing risk before deciding the tendency to behave leads the drivers behave instinctively and ignore the safety riding. A suggestion offered from this present research is that it is necessary for all concerned parties such as police,

transportation office, Land Transportation Organization, and Bus Company to be launch a fixed program with materials dealing with anything dealing with safety driving.

VI.CONFLICT OF INTEREST

None.

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