GROSTLOG 2018
Global Research of Sustainable Transport & Logistics

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/atlr

Predicting The Effectiveness Of The Road Safety System In Klang Valley

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Abstract

Travelling taken by road has several factors that can influence the road traffic system which can cause smoother traffic flow or vice versa. Technology, accident factors and traffic flow factor have played important role in road safety system in order to ensure the journey taken is comfortable and able to give an impact towards reducing road accident rates. This paper examines the current practices applied to determine the effectiveness of the road safety system in the Klang Valley. This research investigates the road safety system towards reducing accident rates and to determine the major factor that contributes to the effectiveness of road safety system in the Klang Valley. In this study, the simple random sampling technique is used in order to gain data by distributing the questionnaires. The findings of this research are based on data analysis of 400 useable questionnaires received. Secondary data is also used by the researcher which is the sources coming from journals, annual report and articles. The analysis reveals that the efficiency and effectiveness of the road safety management system in Klang Valley may be sustainable improved by technology system applied which has affected the effectiveness of road safety system.

Keywords: Klang Valley, prediction, road safety management

Introduction

The road safety system is one of the system that contains an approach to road safety management which is based on the principle that our life and health that should not be compromised. The responsibility for the road safety is a requirement to the involvement of government, civil society as well as businesses from both the public and private sector (Eusofe & Evdorides, 2016). Safety system is also designed with the human being at its center which is taking human

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fallibility and vulnerability into account and accepting that even the most conscientious person will make a mistake at some point and it is aligned with the goal of safety system which is to ensure that this mistake do not lead from occur any crashes or the impact from crashes can be reduced and prevented from causing death (Eusofe & Evdorides, 2016).

There is a component in safety system that is divided into four main components which are safer roads, safer speeds, safer vehicles and safer road use. In order to improve road safety system, it should contain safe strategy which involves a big view of the road transportation system and the interactions among road and roadsides, travel speeds, vehicles and road users. Whenever the safety system is in the best level, it is able to help reducing the percentage of road accidents. There are a lot of examples in road safety system that have been implemented in various of countries and one of those country is Malaysia (Alfonsi, Persia, Antonino, & Usami, 2016).

Automated Enforcement System camera or also known as AES Camera is one example of road safety system that exists in Malaysia which is able to track traffic offenders. Other than that, ITS or Intelligent Transportation System also one of the common system that exists in various of the countries in order to cater traffic problems (Gosman, Cornea, Dobre, Pop, & Castiglione, 2018). From this system, it is able to provide pack of information regarding to the traffic flow or notification for road users such as emergency vehicle notification, variable speed limits and also automatic road enforcements. In Malaysia there is total 18 people that were reported death daily and this data was reported in 2014 (Gosman et al., 2018). Back to previous year in 2014, about 476,196 were reported in road crashes and around 6,674 reported in road deaths and this figure reflects the level of road safety in Malaysia. Therefore, it comes out with the index which brings per 10,000 vehicles equal to 2.66 (Karim, Ibrahim, Saifizul, & Yamanaka, 2014). Thus, the government play the role as a authorities to takeserious view of this accidents and to address these issues of road safety in a holistic manner as the number of statistics keep increasing from year to year by taking several steps such as by

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intervention of 5E approaches. This 5E approaches is divided into Enforcement, Education, Engineering, Environmental and Assessment (Jonathan Lee, 2015).

In order to address these issues and achieve the succession of approaches, the government has established Road Safety Department under government agencies which is their main objective to focus more on educating people about awareness of road safety. Advocacy campaign is one of the steps that has been implemented by Road Safety Department in order to reduce road accidents which is able to raise awareness of road safety among road users by collaboration with government agencies, non-government, private sectors and media's (Ramli et al., 2014). It gives views that road safety is one of important element in completing our journey in daily life because it will incur a lot of cost to the government if the number of deaths keep rising from year to year such as it gives impact to our economy in terms of cost during the accidents in term of losing manpower and also a social cost regarding to the time taken during accidents which it can be consumed on other important things more efficient. Therefore, in order to realize this objective which is to reduce the percentage of road accidents, a lot agencies are taking part in this matter. The road safety system is one of the biggest priorities to our country as it is able to give impact towards our nation.

Study Area Malaysian Road Safety Policies

Road accidents happen because of our current technologies in road safety system which is brought and caused life threats to road users. Thus, advancing in technologies towards road safety might help and able to reduce percentage of road accidents such as roadway lighting. The road users are able to figure out that our current roadway lighting system is not efficient enough to cater this problem. Lighting has important role to play in ensuring the safety of our roads and highways because in order to become one of the develop nation, there are many important aspects including the safety of its roads and highways (Ramli et al., 2014). Thus, advancement in lighting technology such as using LED roadway lighting, it is able to provide clear vision and visibility during night towards

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motorists and drivers. Besides that, it is more efficient way as it is to save about 40% to 70 % compare to previous technologies in roadway lighting. In Malaysia, about 489,606 was reported of road crashes including 6,706 road fatalities in year 2015 and it was increased by 2.74% compare to previous year. Thus, this shows strong enough relationship between the road users and the number of population that bring about 476,196 for road accidents in year 2014 (Ramli et al., 2014)(Abdul Manan & Várhelyi, 2015).

Other technologies that can be improvised are in terms of intelligent speed adaptation, alcohol ignition interlock system that is able to detect alcohol on the breath of drivers who prevent them from driving the vehicles (Spyropoulou, Karlaftis, & Reed, 2014). Electronic driver improvement monitors which connect individual driver profile assessments and an individual vehicle operator's actual driving performance, are also one of the technology that is able to reduce road crashes (Rutty, Matthews, Andrey, & Matto, 2013). Thus, this study has found out whether our current road safety system in Kuala Lumpur is able to reduce the impact of road accidents and prevent from deaths and the researcher would like to express the interest to research whether this safety system is in the best level if it is compared to other countries because the number of road deaths is always increased every year.

Methodology

This research was conducted using several of method for data collection in order to get accurate and exact numbers in the data. The researcher took the opportunity to use primary data which is based on the questionnaire. A second method that researcher used is based on secondary data which means this kind of data collection comes from the previous studies that have been conducted from other researchers and from several of sources which there would be compared for several years back in order to get accurate results for this research.

For the questionnaire, there are 3 sections which haveis different parts of question that requires respondents to answer which is related to the road safety

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systems in Klang Valley. In Section A, basically this section focuses on demographic factors such as age, gender, respondent's occupation and status. Next is Section B, that in this section, it requires the respondents to respond and answer the question which is related to the independent variable such as technology factors, accidents in Klang valley and traffic flow factors. In this section there are 9 different types of questions which have 3 questions per independent variable. This structure of answer questions will be in boxes and requires the respondents to tick in the boxes.

In last section of questionnaire is Section C andthis type of question basically focusses on the dependent variable which is about the effectiveness of road safety systems. This kind of questions will be in a liquid skills structure that it requires respondents to agree or disagree with the statement. In order to analyze the data, this research will use quantitative study where the data is obtained from questionnaires that distributed randomly for those who live in Klang Valley area. Furthermore, in order to obtain accurate results and data collection, one of the methods that the researcher uses is by SPSS Statistics software.

Result and Discussion

Based on the study, it shows that all variables in the study have an excellent reliability and the data is fit for this study. According to technology factor variable, the value is very reliable which is 0.740 where this data is above 0.7 shows that the reliability and also only 3 for the numbers of items in the variable and there is no item was removed. The next variable is accidents factor that the data shows it is also reliable as the outcome of the value is 0.788 which means it is above 0.7, thus it shows that the data is reliable and there is no removed items. Follow by a traffic flow factor, this variable also shows the result as 0.739 and it is the value for this variable and that is reliable data according to the scale that is stated that under 0.6 is unreliable and questionable for this study. There is no item removed and there is no item similar with other variable which is 3. Thus, for dependent variable the effectiveness shows the results 0.826 as for the value of

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Advances in Transportation and Logistics Research
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Cronbach alpha, and it is also very reliable but the number of items is 2 and there is no item removed. Overall, the data shows that this is a good feed for the study and greater results to be achieved.

Characteristics of Respondent's Profile

In this study, based on Table 1, most of the respondent is between at the age of 26 years old to 40 years old which is about 31% in this study, followed by 30% of respondents is from at the age of 25 years old and below. The least number in this age factor of respondents is at the age of 56 years and older which is only 16%. Thus, the highest percentage in this study is 31% in this age, which means that the population of this study is mostly from the respondents at the age 26 years old to 40 years old.

Based on the survey, mostly male is the highest frequency compared to female. Thus, this diagram shows that the study has slight differenc in the gender and there is about 4% among female and male respondents. The respondents are 52% for male and 48% for female. There is the highest number in level of education for bachelor's degree holder which equal to 128 out of 400 respondents which bring to 32% in education level. This education level followed by high school and equivalent as a second higher respondent in this study about 25%, which is basically most of them is self-employed, and full time housewife which brings to 100 out of 400 respondents in this study and the least respondents in term of education level is doctoral degree which is about 10% which means that only 40 out of 400 respondents is from doctoral degree holder. Thus, based on the figure, the majority of respondents is in education level coming from respondents who has a Bachelor's degree. For the organization characteristics, 148 respondents are from private sector respondents compared to the public sector, which is only 132 respondents and 120 coming from the other sector. There is a slight difference between private sector and public sector that is about 4% only.

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Table 1. Demographic of Respondents

Characteristics		**Frequency (100%)**
Age	25 or under	30
	26-40 years old	31
	41-55 years old	23
	56 or older	16
Gender	Female	48
	Male	52
Level of education	High School or equivalent	25
	Diploma	22
	Bachelor's degree	32
	Master	11
	PhD	10
	Other	0
Organization sector	Public sector	33
	Private sector	37
	Other	30

The Level of Effectiveness Road Safety System in Klang Valley

The summary analysis of independent variable which is from 400 questionnaires that were distributed randomly for those who live in Klang Valley area. In this section of the questionnaires it is focusing on the technology factors and using Likert scale question in the questionnaires. Based on the results, for the first question, most of the respondents answered agree which bring up to 41% for this question. The question is regarding to the current road traffic system in Klang Valley such as AES and information display board. So, most of the respondents agreed and satisfied with current technology in a road traffic system in the Klang Valley. There is some of respondents disagreed with the technology factors and unsatisfied that it's only 13% and 2% for strongly disagree.

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Most respondents agreed that technology factors are able to help to reduce accident rates which bring up to 41% and it is followed by 35% that respondents answered neutral. The least percentage in this question is 2% where the respondents strongly disagreed and 13% for disagreed. Based on this technology section, most of the respondents agreed with the technology factors in road safety systems in order to reduce accident rates and some of the respondents were uncertainty with current technology and still having doubts with technology factors. Technology factors have played a big role in order to provide better road traffic systems and able to reduce rates of accident's. Some improvements from time to time according the latest technology are aligned with the new era of the nation.

Most of the respondents agreed that Malaysia accident rates are one of the highest in the world that bring up to 44% and follow by 20% respondents answered strongly agree. Most of the respondents also agreed that speeding is one the highest contributors to road accident's rates in Malaysia as 48%. This independent variable shows the result that is about 44% answered in agreed by respondents and they agreed that this guiderail is able to avoid from accidents. The last question in this part is focusing on the traffic light at intersection of the road, whether it's able to avoid from accident occur. 44% of the respondents agreed that traffic light system at road intersection is able to avoid from accidents happen. This is followed by 20% answered in strongly agree and there is a slightly difference as 2%, and there are some of the respondents answered in neutral as 18%. Based on the results shown in this traffic flow factor, it can be stated that most of the respondents have agreed and satisfied with the road condition in Klang Valley but it needs some improvements in that factor in order to provide smooth traffic flow in terms of the mobility of people.

Conclusion

As a conclusion, the study shows that some of the independent variables have a relationship toward dependant variable and the effectiveness of road safety

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system in the Klang Valley and vice versa. This study is able to provide contribution and figure out the problems regarding to the road safety system and measure the level of the effectiveness in the area of Klang Valley. This is important, especially for those using roads as one of their way to travel and connected from point to point, because the number of road crashes is increased every year and this includes fatalities, deaths and injuries toward users as this road crashes and those are able to give impact to the country in terms of cost. This cost can be specialized such as social cost, economy cost and so forth. Thus, the study in terms of measuring the effectiveness of road safety system is one of the ways in order to figure out the problems and find a solution which is able to contribute positive impact to the society.

Acknowledgement

The authors would like to express their gratitude to the greatest support from Malaysia Institute of Transport (MITRANS), Research Management Institute (IRMI), and Universiti Teknologi MARA (UiTM).

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