Research Paper on the Road Safety Audit and a Case Study on Kaithal-Kurukshetra Road Haryana, India

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ABSTRACT

Road safety audit is formal procedure for assessing potential and safety performance in the provision of new road schemes, the improvement and rehabilitation of existing road and in maintenance of roads. The role of auditor is to provide independent advice in the form of recommendation. The primary role of auditing identifying the potential problems of a highway project by conducting the site inspection and collecting data. The objective of the study in the identification of accident prone areas on the road from FIR, to study the effect of roadway geometrics and traffic conditions on the road and development of statistical relationship between accident and various factors causing accidents. The road selected for the study is Kaithal-Kurukshetra, Haryana, India. Accident prone locations are identified by the all analysis.

INTRODUCTION

Road traffic accidents deaths and injuries occur worldwide. It was estimated that over 1.2 million people died each year on the world roads as a result of road traffic accidents. According to a survey by WHO, more than 3,200 people get killed and over 130 000 injured in traffic every day around the world. Also almost half of all fatal accidents involve pedestrians, cyclists and power two wheelers, collectively called vulnerable road users. Figure 1.

![Figure 1: Road deaths by level of income.](image-url)
From figure 1.0 above, it can be observed that more than 85% of accident fatalities occur in low and middle income countries such as India. Though road fatality rate in high income countries has been decreasing over the last decades, even in these countries road accidents remain one the main causes of death, injury and disability.

Objectives

The main objective of any road safety audit is to ensure that all new and existing highway schemes operate as safely as is practicable. This means that safety should be considered throughout the whole preparation, construction and after construction of any project but more specific objectives are:

a. To help produce designs and roads that reduce the number and severity of crashes
b. To ensure that road elements with an increased risk potential are removed or that measures are identified to reduce the risk thereof
c. To Reduce likelihoods of accidents
d. To minimize the severity and crash risk of road traffic crashes that may be Influenced by the road facility or adjacent environment;
e. To minimize the need for remedial measures after the opening of a new road Project
f. To identify and report on the crash potential and safety problems of a road Project
g. To avoid the possibility of the scheme giving rise to accidents elsewhere in the road network.

MOTIVE OF INSPECTION

To reduce the number of traffic accidents on our roads, we need to understand what causes the accidents in general. The highway transportation system can be broken down in to three broad categories:

1- The driver
2- The vehicles
3- The roadway and its environment.

Factors that causes accidents usually falls in to one of those categories above and most accidents have at least one contributing factor and also many accidents have more than one contributing factor.

A human factor includes things like inattention or distraction of driver, fatigue, use of alcohol and vision problems. Vehicle factors may be mechanical failures, bad brakes or tires or any other similar problems and a road related problems can be insufficient sight distance, poor or missing road signs and changes in roadway width or slippery road surfaces.

While concentrating on road safety, road design is one of the most important aspects to be considered regarding highway safety. Roads must be designed to reduce the unexpected situations, thus reduce the failure in the driver decisions. On the other hand, traffic control devices also play an important role on the road safety.

We cannot prevent all accidents on our roads but however, a good road safety improvement plan can be an effective way to reduce the risk of liability. It can reduce the number of accidents, the loss of lives and the economic costs related to them. Reducing the number of accidents reduces the exposure to liability and a good safety planning is a best way to accidents reduction. Figure 2
Figure 2 above shows that driver errors constitutes the highest percentage among the three main factors contributing to accidents followed by road condition with the second and lastly the vehicle defect or malfunction. Considering road transportation as a system, there are things that we can directly control and things that we cannot. Drivers and environmental events like weather are hard to control and if the parts of the system that can be controlled (roads and vehicles) are designed to allow for those we cannot (road users and weather), the system as a whole will work better.

The road safety is a complex matter to understand and analyze. Because of this reason, a model preparation including all of the three elements; human, vehicle and environment is a very difficult process. These elements can be considered separately or they can be evaluated together with their relations to each other. Increase in road safety requirements is an unavoidable consequence of rapid economic growth. Unless the road safety is maximized, the resultant economic and social costs could erode a substantial part of the benefits of economic growth. Millions of deaths and injuries, billions of dollars in medical costs, increased strain in welfare services, loss of productivity, and poverty problems are some of the consequences of slack road safety.

CONCLUSIONS

A roadway safety is one of the items that are being brought to the forefront of the transportation industry. Road Safety Audit (RSA) is becoming a major tool for assessing the risk on existing roadways. RSA is proactive in nature and look to find safety risk before crashes occur. It has been used to improve the ability of decision makers’ to assess risk on the roadways. On the other hand, transportation professionals need such a tool that can look at the complexity of the roadways.

In this paper the real practices of road safety audit on existing roads in different countries were summarized. By taking account these different opinions and auditing procedures into account a case study has been performed for road safety auditing on existing road on Indian highway. The conclusions that are drawn from the paper study can be summarized as follows:

Some safety defects observed during the audit study that can be considered as typical for Indian rural highway network can be mentioned as follows:

- Guardrails are deficient or not in appropriate positions
- Slopes are steep and cannot be considered as gentle regarding road safety
- Pavement damages such as potholes and pavement edge deterioration are considerably remarkable
- Shoulders are insufficient, narrow and are not paved at most locations.

FUTURE SCOPE OF WORK

The scope of this paper is to carry out a road safety audit in India and to evaluate different road safety auditing techniques on the road selected as a case study. Throughout the implementation and reporting at this case study, the present safety situation of Indian roads and available techniques will be evaluated.
For the purpose of this paper a 50 km section of Kaithal - Kurukshatra Major District Roadway which is an existing roadway in Haryana will be considered as a case study. The road is a dual carriage way which connects two cities with moderate population in Haryana India and also many towns were located along the road.

The aim of this paper is to evaluate different road safety auditing techniques and implement a case study on an existing road section in India.

REFERENCES