

ABSTRACT

The Indonesian railway industry has grown dramatically in the past five years, with network and track length expected to triple by 2030. This is due to increasing railway demand. The Republic of Indonesia improves its infrastructure, especially trains. In contrast, Indonesian rail safety systems fail to meet rail demand. There is no proper rail safety system exists for the national mainline network. This country has several railway accidents, which frequent to cause fatality. Accordingly, the improvement of rail safety is essential in order to support national mobility. One promising direction to reduce this fatality is through the Automatic Train Protection System. This technology has kind of like several benefits, such as controlling and maintaining the train speed during operation.

The method used in this research was cost-benefit analysis. The benefit was reflected from the past rail accidents that could be prevented by automatic train protection system. The accident report will be analysed, extracted, contrasted and summarised particularly on the casualty and number of victims from each accident. Furthermore, the cost was covered the investment value both from infrastructure and rolling stock aspects. Several scenarios have been analysed on this research study, varying the sources of the accident cost and investment cost.

This automatic safety train protection has been proven in other countries to lower the number of accidents particularly the train passing signals at danger; over-speeding or failing to stop train; train collisions; derailments which caused by human error. Those accidents also affected 88 fatalities, 367 injuries and 67 broken rolling stocks. This study finds that there is significant reduction in the number of rail accidents by implementing the Train Automatic Protection in Indonesian Railways. The benefit is not only reducing the number of accident cost but also the non-monetised aspects.

Keyword: Indonesian Rail, Automatic Train Protection (ATP), Rail Safety, Accident Cost.