**IDENTIFICATION AND EVALUATION OF TRAFFIC MANAGEMENT SCENARIOUS USING MICROSCOPIC SIMULATION IN MEKELLE**

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**Abstract**

Transpiration system is an integral part of modern society. An increase in transportation demand is a serious problem for every city. As the number of vehicle and pedestrian grows the roads which were designed back are remaining the same.The Mekelle city roads are narrow and suffering traffic congestion. There could be two approaches to solve this peoblem. First and the most obevious approach is come up with modification and construction new rods. But for developing countires like Ethiopia, fund and land aquistion are serious concerns. The second approach is to manage existing tarffic with supply and demand taffic managmet is the economical and easily implementable. If traffic congestion are not solved, they could open door socioeconomic and safetey problem mainly on the residence. Studies neglected to consider how traffic mangmet could help to relax traffic conestion and assoiciated impacts at Mekelle city.

The research study was aimed at investigates and evaluates traffic management scenarios using microscopic model at Mekelle city most busiest intersection and to select most suitable that can be adopt to reduce traffic congestion and other associated benefits such as reduction in in fuel consumption and motor vehicle emission. Different real-life implementaion tarfic managemet scenarios has been implemeted to solve those problems.The base case or do nothing was considered as control/reference for comparison success scenario. A model has been developed using microscopic simulation software SYNCRO 9 and performance of the intersction has been found before and after implemtation of traffic mangment measure. The proposed of traffic mangemet scenarios was converting curb parking to effective tarffic lane, wavinig/shifting out of private vehicle to outside main road and providing traffic signal: lane addition, traffic signal timining optimizing, and wavinig/shifting out of private vehicle to outside main road for Adi-Haqi Bridge and Adi-Shunduhun intersection respectively.

Result was extracted from the SYNCRO simulation output report the selection of the most decisive or most welcome scenario was based on set of measurement of effectiveness(Delay time, capacity, CO emission, queue length and fuel consumption). Based on the measurement of effectiveness criteria used the succeed scenario was recommended for implementation. The scenario or alternative congestion mitigation measurement being most effective were converting curb parking lane to effective lane and lane addition for Adi-Haqi Bridge and Adi-Shinduhun intersection respectively.

***Keywords:*** Traffic congestion; Traffic management; Microscopic simulation; Measure of effectiveness; most welcome scenario