

PUSAT SUMBER

FAKULTI ALAM BINA



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SIMULATION STUDY OF ON-CAMPUS TRAFFIC MANAGEMENT

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ABSTRAK

Tujuan utama dalam pengurusan lalulintas adalah untuk mengurangkan kesesakan, kemalangan dan pencemaran. Kajian ini bertumpu kepada pengurusan lalulintas di dalam kampus UTM. Strategi pengurusan lalulintas UTM yang sedia ada adalah sistem jalan satu hala dan perletakan kereta di bahu jalan. Keadaan ini menyebabkan berlakunya peningkatan masa perjalanan dan kesesakan terutamanya semasa waktu puncak. Selaras dengan hasrat UTM untuk mencapai status kampus mampan, perubahan dari aspek pengangkutan amatlah penting. Sebuah model simulasi dari rangkaian lalulintas kampus dibina menggunakan perisian yang dipanggil TrafPlus. Model simulasi merupakan satu pendekatan yang digunakan oleh ramai pengkaji dalam mengkaji keadaan lalulintas yang kebiasaannya sukar untuk dikaji menggunakan pendekatan analisis tradisional kerana keadaan semula jadi lalulintas yang sentiasa berubah. Tiga senario alternatif dikaji dan dinilai mengikut hasil yang ditunjukkan. Senario-senario tersebut adalah: menukarkan sistem jalan satu hala kepada dua hala, menghalang perletakan kereta di bahu jalan, dan menukarkan simpang di jalan masuk utama kepada bulatan. Aspek-aspek yang diukur (MOE) adalah masa perjalanan, masa berhenti, jumlah perjalanan dan tahap pencemaran. Hasil kajian menunjukkan sistem jalan dua hala memberikan keputusan yang lebih baik berbanding senario-senario lain. Kombinasi sistem dua hala dan bulatan juga merupakan langkah efektif dalam mengurangkan masa perjalanan.

ABSTRACT

Traffic management aims at efficiently managing the traffic flows on street networks to relieve congestion, reduce accidents and mitigate pollution. This study focuses on traffic management inside the UTM campus. The existing management strategies include implementation of one-way system combined with on-street parking along the roads. Eventually, this causes increased travel time and congestion during peak hours. As UTM is moving towards a sustainable campus status, it is necessary to evaluate possible improvement from the transport side. Simulation modeling is a preferred approach by many researchers to study traffic conditions which are normally difficult to study using traditional analytical methods. This is because of the dynamic nature of traffic flow and the stochastic behavior of drivers. A simulation model of the campus traffic network is built using software called TrafPlus. Alternative scenarios are simulated and evaluated for their performance. The scenarios are: converting the one-way system to two-way system, removal of on-street parking, and converting the junction at the entrance to a roundabout. The measures of effectiveness (MOE) used are travel time, stop time, number of trips completed and pollution levels based on distance travelled. The findings show that two-way scenario results in a better performance than other scenarios. In addition, a combination of two-way system and roundabout is also found very effective in reducing travel time.