KEBERKESANAN PELAKSANAAN *BRISBANE LINKED INTERSECTION SIGNAL SYSTEM* (BLISS) DI BANDARAYA JOHOR BAHRU
KAJIAN KES : JALAN TEBRAU, JOHOR BAHRU

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ABSTRAK

Pelaksanaan *Brisbane Linked Intersection Signal System* (BLISS) di Bandaraya Johor Bahru merupakan langkah pertama MBJB ke arah penggunaan teknologi dalam pengurusan lalulintas. BLISS membolehkan beberapa persimpangan lampu isyarat dikoordinasi dan dikawal secara berkomputer untuk memastikan aliran trafik mendapat nyalaan hijau berkala, mengurangkan kelengahan di persimpangan dan meningkatkan tahap keselamatan. Namun, sejak BLISS dilaksanakan pada April 2001 hingga timbulnya cadangan pelaksanaan Fasa II BLISS pada tahun 2004, didapati hingga sekarang tiada sebarang kajian penilaian pernah dijalankan oleh mana-mana agensi atau pihak MBJB sendiri terhadap keberkesanan sistem ini dalam mencapai objektif pelaksanaannya serta menyelesaikan masalah lalulintas semasa. Kajian *Keberkesanan Pelaksanaan BLISS di Bandaraya Johor Bahru* dijalankan untuk menentukan keberkesanan sistem BLISS dalam meningkatkan prestasi aliran trafik di Jalan Tebrau dengan menilai tiga parameter iaitu kapasiti, panjang baris gilir serta kelengahan dan tahap perkhidmatan persimpangan (*LOS*). Kajian ini dijalankan dengan membandingkan keadaan sebelum dan selepas pelaksanaan BLISS di dua (2) daripada 10 persimpangan yang terlibat iaitu persimpangan Jalan Tebrau / Jalan Dato' Sulaiman / Jalan Keris dan Jln Tebrau / Jalan Bakar Batu. Data purata kenderaan per jam daripada 10 hari bekerja yang meliputi waktu puncak pagi, tengahari dan petang digunakan dalam kajian ini. Hipotesis bagi ketiga-tiga parameter dibentuk dan digunakan sebagai asas dalam analisis statistik seterusnya. Analisis kajian melibatkan dua peringkat iaitu analisis SIDRA dan analisis statistik. Hasil analisis menunjukkan terdapat perubahan selepas pelaksanaan BLISS bagi setiap parameter yang dikaji. Data sebelum dan selepas pelaksanaan BLISS kemudiannya dibandingkan dengan menggunakan kaedah pengujian hipotesis. Dalam kajian ini, ujian-*t* berkembar dipilih untuk membuktikan samada perbezaan tersebut adalah signifikan atau sebaliknya. Setelah analisis statistik dijalankan didapati terdapat faktor luaran yang mempengaruhi nilai-*t* yang dikira iaitu pergerakan ralat. Punca wujudnya pergerakan ralat tidak diketahui namun berkemungkinan ia disebabkan oleh corak pemasaan lampu isyarat yang ditetapkan. Pergerakan ralat ini kemudiannya diabaikan dalam pengiraan nilai-*t*. Hasil kajian mendapati ketiga-tiga parameter yang dikaji menunjukkan perubahan positif yang menyumbang kepada kelancaran aliran trafik iaitu dengan peningkatan kapasiti persimpangan, pengurangan masa kelengahan dan panjang baris gilir seterusnya meningkatkan tahap perkhidmatan persimpangan (*LOS*). Keadaan ini membuktikan aliran trafik di Jalan Tebrau lebih lancar berbanding sebelum pelaksanaan BLISS. Keseluruhannya kajian ini mendapati pelaksanaan BLISS terbukti secara signifikan adalah berkesan dalam meningkatkan prestasi aliran trafik di Jalan Tebrau. Kajian ini mencadangkan agar pelaksanaan Fasa I BLISS di Jalan Tebrau dikekalkan manakala cadangan pelaksanaan Fasa II BLISS diteruskan. Pelaksanaan BLISS dilokasi-lokasi lain yang bersesuaian juga boleh dipertimbangkan memandangkan sistem ini terbukti dapat mencapai objektif pelaksanaannya.

ABSTRACT

The implementation of BLISS in the city of Johor Bahru is the first step taken by MBJB towards the application of technology in traffic management. BLISS allows for several junctions with traffic lights to be coordinated and controlled by computers to ensure that the traffic flow operates by consequential green lights, to minimise delays at junctions and to optimise the level of safety. However, since BLISS started operations, there is no evaluative study that has been carried out, either by MBJB or other agencies, regarding the effectiveness of this system in achieving the objectives in eliminating the current traffic problems. This study, *"The Effectiveness In The Implementation of BLISS In The City Of Johor Bahru"* is being carried out to ensure the effectiveness of BLISS in increasing the quality of traffic flow along Jalan Tebrau. This can be done by evaluating the three parameters which are; the capacity, length of traffic queue, delays and the level of services at junctions. This study is carried out by comparing traffic situations prior to and after the implementation of BLISS at two out of the 10 junctions involved. These are (1) the Jalan Tebrau / Jalan Dato' Sulaiman / Jalan Keris junction and (2) Jalan Tebrau / Jalan Bakar Batu junction. The average data of vehicle per hour from 10 working days, inclusive of morning peak times, afternoons and evenings were used in this study. The hypothesis for the 3 parameters were structured and applied as the basis for the future analysis of the statistics. The analysis would include two different levels, which are the SIDRA analysis and the statistical analysis. The results of the SIDRA analysis would show that there have been changes after the implementation of BLISS for each parameter. These data would then be compared using the hypothetical test method. In this study, the *t*-test has been chosen to prove whether or not the differences found have been significant or otherwise. After the statistical analysis has been done, it was found that there were external factors which influenced the calculated *t*-value such as the pattern by which the traffic lights were placed. The change in the movement was later taken into account in the calculation of the *t*-value. Results form this study also showed that all the three parameters chosen shows positive changes towards contributing for an increase in the level of traffic junction services. Increasing the level of junction capacity, decreasing the delay time and the length of queue. This situation proves that the traffic flow at Jalan Tebrau is better compared before the system started. On the whole, this study found that the operation of BLISS has significantly proven to be effective in increasing the quality of traffic flow at Jalan Tebrau. This study proposes and recommend that the implementation of BLISS be continued. The introduction of BLISS at other suitable locations should be considered as this system was tested and found to be successfully implemented.