

PARKING EFFIC



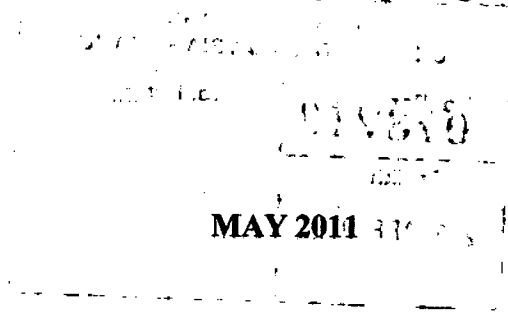
N PARADE, KUANTAN

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**A final year project submitted in partial fulfillment of the requirements for the
award of the Bachelor Degree of Civil Engineering**

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ABSTRACT

JLN Tun Ismail is located in the middle of Kuantan City. Business area is one of the most compact business districts in Kuantan. Shoppers and office employees to this district come not only from this capital city of Pahang, but also from the neighboring small towns and villages. This circumstances makes this area suffered from insufficient parking spaces that resulting in heavy traffic congestion especially peak hours and weekend. The objective of this research is to identify and locate the parking area that is available within the area. Basically based on the observation, we are going to determine the level usage of the parking area in term of demand versus supply. The results shown that, consumers prefer to park their vehicle near to the destination when the existing parking lots are not enough that leads to parking problems and traffic congestion. Action must be taken by the authority by providing more new parking spaces at strategic area.

ABSTRAK

JLN Tun Ismail terletak di tengah bandar Kuantan. Kawasan business ini merupakan salah satu kawasan perniagaan yang paling padat di Kuantan. Pembeli dan perkerja-perkerja di kawasan ini tidak hanya datang dari ibu kota Pahang, tetapi juga dari pekan-pekan dan kampung-kampung lain. Situasi yang berlaku di kawasan ini mengakibatkan kawasan ini mengalami kekurangan dari segi tempat meletak kenderaan, kesesakan lalu-lintas yang sangat teruk khususnya pada waktu buju and hujung minggu. Secara umumnya, tujuan kajian ini diadakan adalah untuk mengenal pasti dan mencari tempat meletak kenderaan yang boleh digunakan berdekatan kawasan tersebut. Berdasarkan hasil pemerhatian, kita akan menentukan tahap penggunaan kawasan tempat meletak kenderaan berlawanan bekalan. Hasil yang di perolehi daripada pemerhatian tersebut menunjukkan bahawa, pelanggan lebih memilih untuk meletakkan kenderaan mereka berhampiran dengan destinasi ketika tempat letak kereta yang ada tidak cukup. Situasi ini sering kali mengakibatkan berlakunya masalah untuk meletakkan kenderaan dan kesesakan lalu - lintas. Tindakan harus diambil oleh pihak berkuasa dengan menyediakan ruangan tempat meletak kenderaan yang lebih baru di kawasan yang lebih strategik.

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CHAPTER 1

INTRODUCTION

1.1 Background of study

Parking space is a basic and important public facility in urban areas. Problems of parking space are said to be always occurring in urban areas, especially in the city centre or busy commercial and services zones. In Malaysia, the common parking system adopted is shared-parking turn-time system, whereby members of the public share limited parking space in the city centre and have to take turns to keep their vehicle temporarily in parking lots. Parking is an essential component of the transportation system. Vehicles must park at every destination. A typical automobile is parked 23 hours each day, and uses several parking spaces each week. Parking convenience affects the ease of reaching destinations and therefore affects overall accessibility. This study will highlight existing parking problems for Kuantan Parade in city centre of Kuantan. It is located within city centre and are suffering from insufficient parking spaces that resulting in traffic congestion as well.

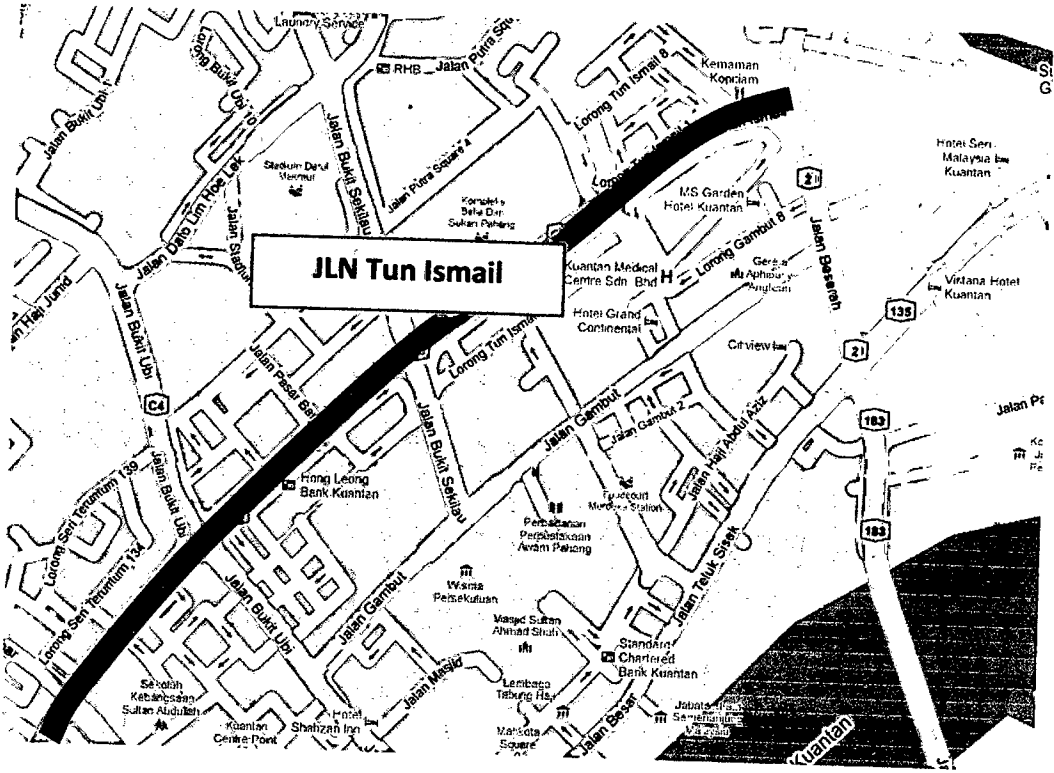


Figure 1.1 Location of JLN Tun Ismail, Kuantan

1.2 Problem statement

Urban areas are said to be suffering from insufficient parking space, forcing road users to park their vehicles on road shoulders or outside the gazette parking lots. This causes traffic congestion and arouses question of sufficiency of parking space in such areas. The basic task in addressing this issue is by carrying out supply and demand analysis of parking space.

Yet, the same people who complain about them often travel by automobile and require parking at their destinations. We dislike parking facilities until we need them, at which time we want parking that is abundant, convenient and free. The tension between our dislike for parking facilities and our desire to have them wherever needed creates a conflict for individuals, businesses and communities.

Innovative solutions can help reconcile this conflict. Parking management includes various policies and programs that result in more efficient use of parking resources. It means, for example, that a parking facility serves multiple destinations, that the most convenient spaces are managed to favor priority uses (such as deliveries and quick errands), and that motorists can easily obtain information on parking location and price. This squeezes more value from each parking space and reduces the amount of parking needed to serve an area.

Parking management is neither mysterious nor particularly difficult. There are more than two dozen strategies to choose from, including those that:

- Increase parking facility efficiency by sharing, regulating and pricing; use off-site parking facilities; implement overflow parking plans; improve user information; and improve walking and cycling conditions.
- Reduce parking demand by encouraging use of alternative modes of transportation and more accessible land use development.
- Improve enforcement and control of parking regulations, and address any spillover problems that occur.
- Improve parking facility design and operation, to improve user convenience and safety, and reduce negative impacts.

Many of these strategies are well known, and all have been successfully implemented. However, they are not being implemented to the degree justified by their significant benefits because current planning practices emphasize supply solutions and treat management solutions as a last resort, to be implemented only when it is particularly difficult to expand parking facilities. For example, when evaluating potential solutions to parking problems planners often overlook indirect costs that result from parking facility expansion, such as increased stormwater management costs, increased sprawl, and reduced pedestrian accessibility, and thus underestimate the full benefits of management solutions.



Figure 1.2



Figure 1.3

Figure 1.2 and 1.3 People park their vehicles on road shoulders or outside the parking lots which causes traffic congestion and arouses question of sufficiency of parking space in that area.



Figure 1.4 Traffic congestion due to illegal parking that makes the road narrower during peak hours.

1.3 Objective

The main purposes for conducting this study are:

- Identify and locate the parking available area within the study area shops and offices along JLN Tun Ismail.
- Determine the occupancy rate, average parking period, and level of usage of the study area, in term of demand versus supply.
- Propose a proposal to improve parking facilities for the study area.

1.4 Scope of study

- 1.4.1 Identify available parking areas along JLN Tun Ismail.
- 1.4.2 To recommend the suitable solutions to improve the parking facilities.
- 1.4.3 The study will cover both public (MPK), private parking (METRO) and on-street parking.

1.5 Significant of study

The study is conducted as to provide data for the ongoing traffic master plan study undertaken by the Project Team of FKASA lead by Ass. Prof Ir Adnan Zulkiple.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Central Business District (CBD) has highest demand of parking spaces. Our case study is along JLN Tun Ismail parking as mentioned earlier, which is classified as Central Business District (CBD). Demand of parking spaces is very high but increasing the number of parking spaces is restricted by the limitation of land area. As the parking spaces supply can not fulfill the demand, road users will be cruising around an area, and it add to traffic congestion. For planning purposes, knowledge about parkers' behavior can also support the allocation of parking demand according to the parking location.

2.2.1 Parking space

Parking is the act of stopping a vehicle and leaving it unoccupied for more than a brief time. Parking on one or both sides of a road is commonly permitted, though often with restrictions. Parking facilities are constructed in combination with most buildings, to facilitate the coming and going of the buildings' users.

2.3.1 Parallel parking

With parallel parking of cars, these are arranged in a line, with the front bumper of one car facing the back bumper of an adjacent one. This is done parallel to a curb, when one is provided. Parallel parking is the most common mode of streetside parking for cars. It may also be used in parking lots and parking structures, but usually only to supplement parking spaces that use the other modes.

2.3.4 Perpendicular parking

With perpendicular parking of cars, these are parked side to side, perpendicular to an aisle, curb, or wall. This type of car parking is more scalable than parallel parking and is therefore commonly used in car parking lots and car parking structures.

Often, in car parking lots using perpendicular parking, two rows of parking spaces may be arranged front to front, with aisles in between. If no other cars are blocking, a driver may perform a "pullthrough" by driving through one parking space into the connecting space to avoid having to reverse out of a parking space upon their return.

Sometimes, a single row of perpendicular car parking spaces is marked in the center of a street. This arrangement eliminates reversing from the manoeuvre; cars are required to drive in forwards and drive out forwards.

2.3.3 Angle parking/echelon parking

Angle parking of cars is similar to perpendicular parking for these vehicles, except that cars are arranged at an angle to the aisle (an acute angle with the direction of approach). The gentler turn allows easier and quicker parking, narrower aisles, and thus higher density than perpendicular parking. While in theory the aisles are one way, in practice they are typically wide enough to allow two cars to pass slowly when drivers go down the aisles the wrong way.

Angle parking is very common in car parking lots. It may also be used in street side car parking in the many countries. when there is more width available for car parking than would be needed for parallel parking of cars, as it creates a larger number of parking spaces.

2.4 Facility and Area Characteristics

2.4.1 Parking facilities

Parking facilities include indoor and outdoor private property belonging to a house, the side of the road where metered or laid-out for such use, a parking lot (American English) or car park (British English), indoor and outdoor multi-level structures, shared underground parking facilities, and facilities for particular modes of vehicle such as dedicated structures for cycle parking.

In the U.S., after the first public parking garage for motor vehicles was opened in Boston, May 24, 1898, livery stables in urban centers began to be converted into garages. In cities of the Eastern US, many former livery stables, with lifts for carriages, continue to operate as garages today.

The following terms give regional variations. All except *carport* refer to outdoor multi-level parking facilities. In some regional dialects, some of these phrases refer also to indoor or single-level facilities.

2.4.1.1 On-street parking

On the street, in controlled parking area, street parking is explicitly marked either as individual parking bays or as lengths of street where parking is allowed. The bays can be counted explicitly; for lengths of road where parking is allowed, it is reasonable to use an estimate of 5 meters of curb space for each car parking space.

2.4.1.2 Off-street parking

Off-street, land and structure which are designed to be used as parking are often market with car parking space, which can be counted explicitly. However, it is common place to see yards, service roads and other areas, which were never intended as formal parking, used for parking on a regular basis.

2.4.2 Accessibility Perspectives

Accessibility is defined as the ability to connect activities while mobility is a measure of the person-miles or vehicle-miles involved in travel. Higher values for mobility could be an indicative of congestion whereas increasing accessibility is associated with reduction of congestion. The ultimate goal of most transportation is accessibility (or just access) is to find the most effective way to connect our destinations and origins, the ability to reach desired goods and services, reduce congestion and create livable neighborhoods with sustainable transportation.

This perspective considers vehicle traffic a subset of mobility, and mobility a subset of accessibility. Accessibility is evaluated based on the time, money, discomfort and risk (the generalized cost) required reaching opportunities. Individuals often think of it as convenience, that is, the ease with which they can reach what they want. The major perspectives are:

2.4.2.1 Pedestrian

A pedestrian is a person travelling on foot, whether walking or running especially in an area also used by cars. In some communities, those traveling used roller skates, skateboards, are also considered to be pedestrians.

2.4.2.2 Pedestrian Access

As we can see an increased number of origins and destinations are located within a walking distance so that people who want to go to the grocery store, the shopping complex or a shops can choose between going walking or use their cars. Although some of the places have pedestrian paths, their designs usually require pedestrians to walk distances greater to what they want to walk. Consideration should be made to separate pedestrian movements from both work site activity and motor vehicle traffic. Pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway.

Accessibility is then still an issue for pedestrians and non-motorized travel in general because when their trip purpose is other than pleasure travelers want to reach their destinations in the faster and most convenient way. Even though it gives pedestrians more confident to cross but will affected the traffic flow especially at area were the volume of traffic is very high. Besides that, it gives conflict between

pedestrians and the driver who want to turn left or to the right (Shimogami, 1991). In urban and suburban areas with high motor vehicle traffic volumes, these signs should be placed at intersections so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing. There are considerations in planning for pedestrians in temporary traffic control zones:

- Pedestrians should not be led into conflicts with vehicles moving through or around the work site.
- Pedestrians should be provided with a safe, convenient path that replicates as nearly as practical the most desirable characteristics of the existing

2.4.2.3 Modes

Modes is a different way to perform transport. The most dominant modes of transport are road transport, water transport and rail transport. This perspective considers all access options as being potentially important, including walking, cycling, public transit, and telecommunications that substitute for physical movement and more accessible land use. It supports an integrated view of transportation and land use systems, with attention to connections among modes and between transport and land use patterns. It values modes according to their ability to meet users' needs, and does not necessarily favor faster modes over slower modes. It supports the broadest use of transport funding, including mobility management and land use management strategies if they increase accessibility.

2.4.2.4 Land Use

Land use is as important as mobility in the quality of transportation, and different land use patterns offer different types of accessibility. Land use clustering, mix, network connectivity and pedestrian conditions all affect accessibility, as discussed below. The best location for major activity centers is where there is a combination of convenient roadway access, transit service and walk ability. The number of destinations that is located within a geographic area tends to increase with population and employment density, reducing travel distances and the need for automobile travel.

2.5 Public Transportation

2.5.1 Taxi

"Taxi" means a hire car which is engaged, by arrangements made in a public place between the person to be conveyed in it (or a person acting on his behalf) and its driver for a journey beginning there and then; and "private hire car" means a hire car other than a taxi within the meaning of this subsection. (section 23 of the 1982 Act.)

Taxis are an important element of the system not only because of the connectivity function they can have in the mobility chain but also for their ability to provide an effective proxy of the private car with some distinctive comfort characteristics in their use, such as no need to lose time parking, refueling, planning and providing maintenance and still a perception of enhanced security.