



SUSTAINABLE PARKING MANAGEMENT STRATEGY FOR SULTAN AHMAD
SHAH MOSQUE, KUANTAN

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ABSTRACT

Parking facility can be considered as part of planning requirement that can affect development scheme as a whole. The increasing of population of a town parallel with the increase of road users lead to parking concerns, especially around the Sultan Ahmad Shah Mosque, Kuantan. The mosque is a sacred place for the Muslim, however, the car parking problem at Masjid Sultan Ahmad Kuantan is a long-standing issue that tarnished the image of the Mosque. These problems occur because it is located around the business central such as banking, administration area and also as a center of Muslims meeting. The problem occurred because a limited number of parking spaces that can be used by patrons. The public complaint of insufficient car park and traffic congestion occurred in that area, and this study is conducted to identify the factors that contribute to the problem. The demand for parking at the Sultan Ahmad Shah Mosque is critical during Friday prayer. Therefore the main objective of this study is to evaluate the efficiency of the parking lots by various methods.

ABSTRAK

Kemudahan tempat letak kenderaan boleh dianggap sebagai sebahagian daripada perancangan keperluan yang boleh menjejaskan skim pembangunan secara keseluruhan. Penambahan jumlah penduduk sebuah bandar selari dengan peningkatan pengguna jalan raya yang membawa kepada kebimbangan tempat meletak kenderaan, terutama sekitar Masjid Sultan Ahmad Shah, Kuantan. Masjid ialah satu tempat yang dianggap suci bagi orang Islam, bagaimanapun, masalah tempat letak kereta di Masjid Sultan Ahmad Kuantan adalah isu lama yang mencemarkan imej masjid. Masalah-masalah ini berlaku kerana ia terletak di sekitar pusat perniagaan seperti perbankan, kawasan pentadbiran dan juga sebagai pusat mesyuarat umat Islam. Masalah itu berlaku kerana bilangan tempat meletak kereta yang terhad yang boleh digunakan oleh pengunjung. Aduan awam kekurangan tempat letak kereta dan kesesakan lalu lintas berlaku di kawasan itu, dan kajian ini dijalankan untuk mengenalpasti faktor-faktor yang menyumbang kepada masalah ini. Permintaan untuk meletak kereta di Masjid Sultan Ahmad Shah adalah kritikal semasa solat Jumaat. Oleh itu, objektif utama kajian ini adalah untuk menilai kecekapan tempat letak kereta dengan pelbagai kaedah.

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CHAPTER 1

INTRODUCTION

1.1 Project Background

Parking can be defined as a placement or storage area for vehicles that do not move and turned off the engine in an area. It is a convenience for drivers to park or store a vehicle for their business. It is important to do research about parking lot to find out whether it is adequate for current needs or otherwise. Development and rapid progress in the area will cause increased traffic system indirectly and the demand for parking requirements also increased.

The consequence of that, most of the modern country had taken action to solve the parking lots problem such as increase the charge, limit the duration of parking cars and also increase the public service quality. The reason for these actions is to limit the personal vehicles from entering the town and thus can control the increasing of parking demand.

In Malaysia, parking demand and parking requirement change very fast, this study will look into the parking problem that always occurs especially in the urban area. Limited land spaces in the town area and insufficient proposed car parking area compared to higher private vehicles is one another core of this problem. Besides that, parking spaces in central business are always full occupied during peak hour.

To avoid traffic congestion on the roads, provision an adequate parking spaces are required. The public will be satisfied to park their car when visiting a place.

1.2 Problem Statement

Mosque is a sacred place for the Muslim. However, car parking problem at Masjid Sultan Ahmad Kuantan is a long-standing issue that tarnished the image of the Mosque. These problems occur because it is located around the business central such as banking, administration area and also as a center of Muslims meeting. The problem occurred because a limited number of parking spaces that can be used by patrons.

1.3 Objectives

The objectives of this study are:

- a) To investigate the efficiency of parking lots at Masjid Sultan Ahmad, Kuantan
- b) To quantify environmental impact of the project using CBA

1.4 Research Questions

The research questions for this study are:

- a) Is the parking lot management at Sultan Ahmad Mosque, Kuantan not efficient?
- b) How to upset the cost to be incurred against the benefit especially unquantifiable one of the project?

1.5 Scope of Works

This project will be conducted at Masjid Sultan Ahmad , Kuantan. This place was chosen because always having trouble finding for parking. It is because Masjid Sultan Ahmad , Kuantan located in the Central District Business (CDB).

Figure 1.1 shows the site location and the parking lots around Masjid Sultan Ahmad Shah, Kuantan and Figure 1.2 shows the layout of parking Lots zones around the site location. The parking lots site will be divided into 5 zones.

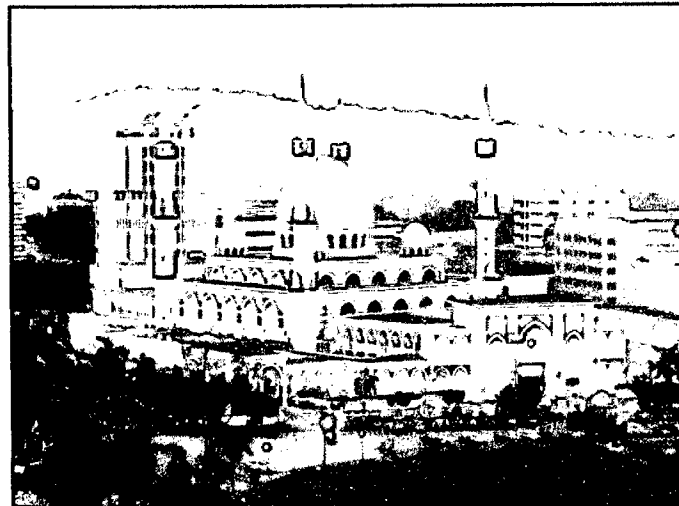


Figure 1.1: Site Location Masjid Sultan Ahmad Shah Kuantan

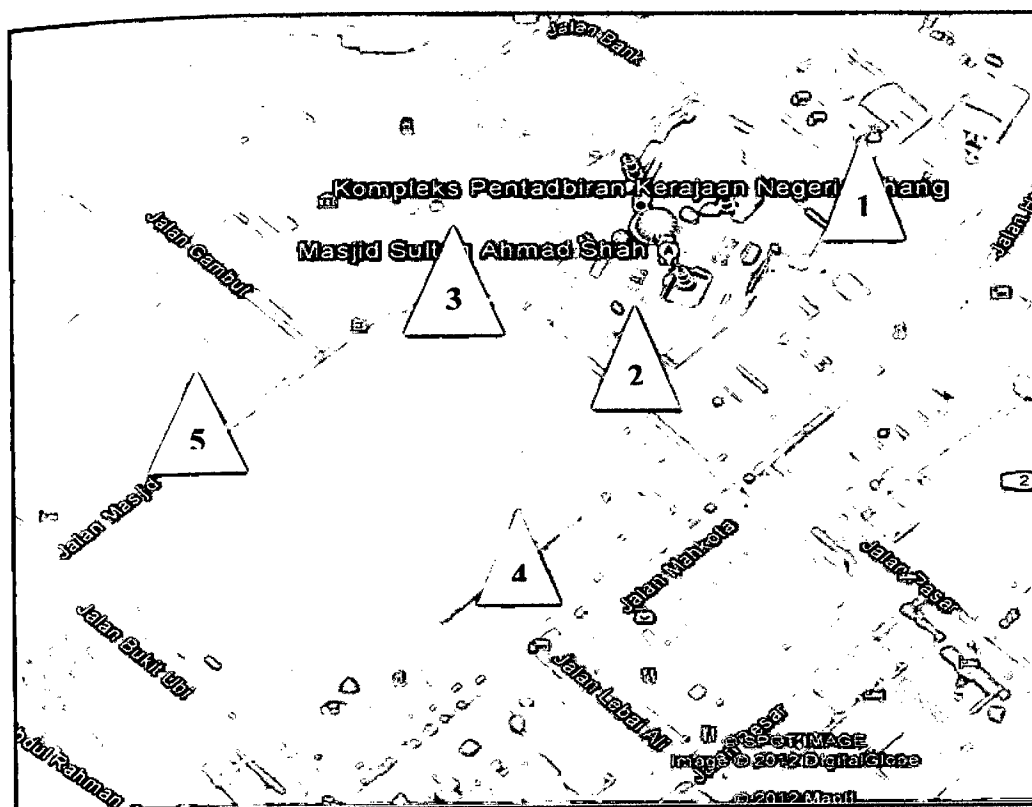


Figure 1.2: Layout Parking Lots zone (source Google Earth)

Table 1.1: Parking areas for every zone

Zones	Parking Area
1	Banking Area (BSN, CIMB)
2	In front of Masjid Sultan Ahmad
3	Kuantan Court
4	MPK parking lots
5	Government Office

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In terms of history, parking facilities have been held since the reign of Kaiser Juleus in Rome. He also had a law that prohibits excessive vehicles from entering the city of Rome at certain times to reduce traffic congestion. This means that parking is not a new phenomenon that exists today. It has been existed since a long time ago. Motor vehicle usage continues to increase by the 20th century.

The study found that by the average total of 8360 hours from 8760 hours a year, a car in the state of 'stop' (*John Brierry 1972*). About 95% of the life motor vehicles not in running condition, but in a 'stop' (*Harry Dupree, 1987*). This condition is needing a special place that available to park the vehicles that are in "stop". This requirement is significant because the number of vehicles increasing with high rates.

2.2 Definition

Parking can be defined as an area of land, usually in a largely natural state for the enjoyment of the public from having facilities for rest and recreation that often owned, set apart and managed by a city, state or nation. There are many terms in the parking facilities. There are parking lots, parking spaces, parking demand, parking supply and others.

2.2.1 Parking Lots

According to Jim Gibbons 1999 parking lots can be defined as a cleared area that is intended for parking vehicles. Usually it refers to the area that has been provided with durable or semi-durable surface. Parking lots are common in commercial areas such as shopping malls, stadium, airport, residential areas such as apartment complexes and similar venues often feature parking lots of large areas. Parking lots usually paved with asphalt and some are paved with concrete. There are also paved with gravel.

Parking lots can be small with just parking spaces for a few vehicles. Small parking lots are usually near building for small businesses or a few apartments. Parking garages refers to parking lots comprised of multiple levels. Parking garage also called multi-storey car park, parking structure, parking ramp parkade or parking deck. The structure of the building is designed for automobile parking with several floors or level that can accommodate with several cars and are arranged. In many large shopping malls, car park was built adjacent to the shopping center to enable customers to access the parking garage more easily on each floor. Parking lots that located on the roof may have an elevator taking the customers down into the center of the building.

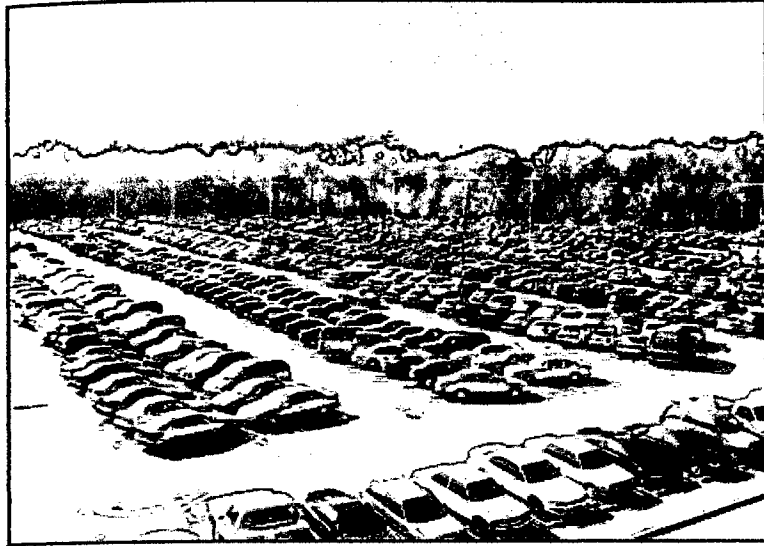


Figure 2.1: Parking lots



Figure 2.2: Parking garage

2.2.2 Parking Space

Parking spaces can be in a parking garage, in a parking lot or on a city street. It is usually designated by a white paint on tar rectangle indicated by three lines at the top, left and right of the designated area. The car fits in the space either by parallel parking, perpendicular parking or angled parking.

2.2.3 Parking demand

Base Victoria Transport Policy Institute 2011, parking demand means the amount of parking that would be used at a particular time, place and price. Parking demands are affected by vehicle ownership, trip rates, mode split, duration of motorist park, geographic location for example downtown and suburban, the quality of travel alternatives, type of trip likes going to work, shopping or recreational and factors such as fuel and road pricing. Different types of trips have different types of parking demand. Different types of trips tend to serve different types of facilities.

2.3 Characteristic of Parking Lots

Parking can manage through 2 methods which is the time limit and fee paying systems (Ibrahim Wahab, 1988)

2.3.1 Parking Fee

The parking fee has become an important characteristic nowadays. The objectives of parking fees are to cover costs and generate revenue. Other objectives are to control the saturation of parking demand and to help better manage the parking availability. There are several types of fee paying system for parking, which can be paid

in different ways depending on the technology available such as parking meters, coupon parking, parking permit and ticket vending machines.

2.3.2 Parking meter

A parking meter is a device used to collect money in exchange for the right to park a vehicle in a particular place for a limited amount of time. The user has to pay according to their duration of their parking. Below is the one type of parking meter that usually use in Malaysia.

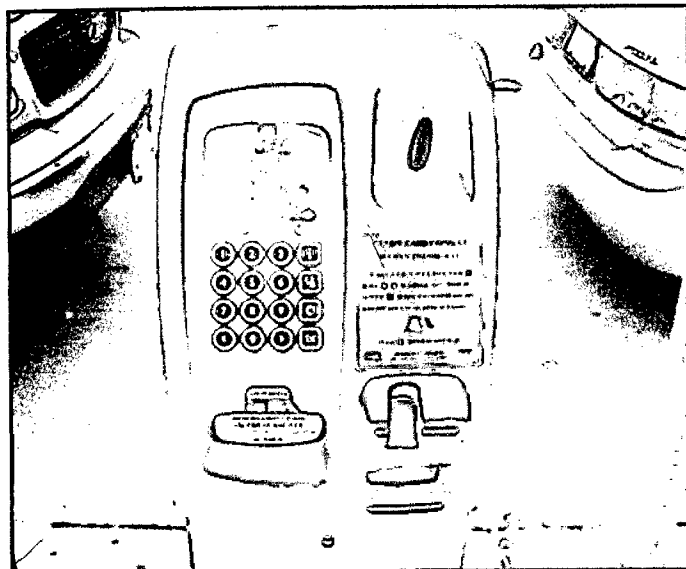


Figure 2.3: Example of parking meter

2.3.3 Coupon parking

Coupon parking relies on a customer purchasing ticket from is chosen retailers and need to display a validated coupon on the windscreen or side window. Usually coupon parking zones are used in the central business district. Figure 2.4 shows the example of coupon ticket used at Melaka. The reason of using the coupon is to reduce the duration for parker using the parking lots.

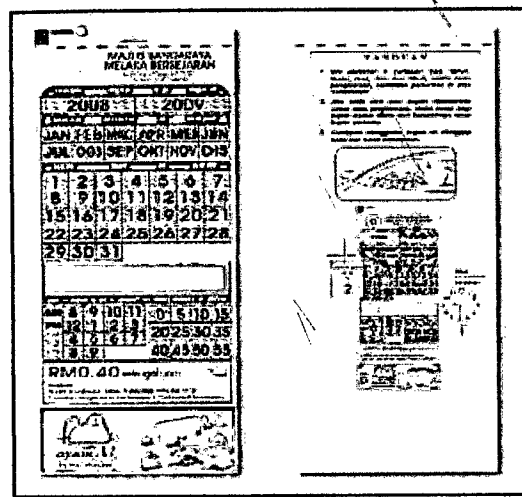


Figure 2.4: Example of coupon ticket

2.3.4 A ticket machine

Pay and display machines are a subset of ticket machines used for regulating parking in urban areas or in car parks. It relies on a customer purchasing a ticket from a machine. Usually the ticket machine is use of the garage parking lot in the building such as the East Coast Mall, Kuantan Figure 2.5 shows the machine that used to pay the parking fee.

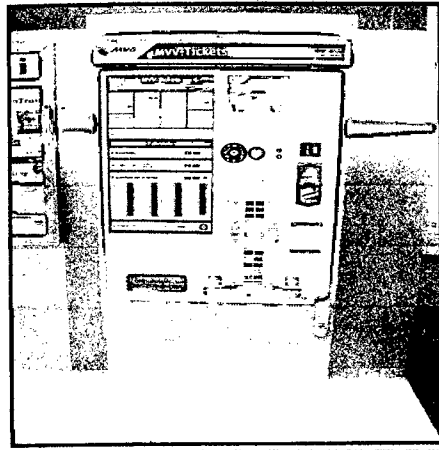


Figure 2.5 example of ticket machine

2.4 Policies relate to parking lots

Major factor in developing parking is the land use. Land use can be categorized into general types of activities which can help guide the type of parking control to be implemented. Basically there are many considerations may be taken before parking will be permitted which is:

- ↓ To control parking supply and demand through the pricing mechanism. This will encourage short term parking and discouraging long term parking to enhance the central business.
- ↓ To preserve the character of the neighborhood by restricting parking and enforcing land control.
- ↓ To design parking lots and their approach so that street traffic is not adversely affected by the ingress and egress of vehicles.
- ↓ To ensure that parking policy and public transit policies are complementary for example car parking facilities adjacent to express but the route would enhance bus rider ship.
- ↓ To strike a compromise between the amounts of curb space devoted to parking spaces and that devoted to moving vehicles.

- ↓ To make provision for parking delivery vehicles and for short and long term parkers.

2.5 Parking Area Types

2.5.1 On street

Street parking is effective in many aspects of the urban environment by providing an urban environment while providing this basic element (John Olson 2011). New research from the University of Connecticut shows that on-street parking is a key ingredient in a vibrant and pedestrian-friendly downtown. These studies found that on street parking plays an important role in benefiting activity centers on numerous levels. The benefits of on street parking are higher efficiency because users are more selected on-street parking spaces comparable to off-street parking and garage parking. So that, on street spaces experienced the most use and highest turnover. Besides that, on street parking is better land use because using the curb side for parking saves considerable amounts of land from life as an off surface parking lot. Furthermore, a medium sized town centers can save an average of more than two acres of land by providing street parking. So that, this efficiency can allow for much higher density commercial development. Another advantage on street parking increases in safety because drivers tended to travel at significantly slower speeds in the presence of features such as on street parking and small building setbacks. Slower vehicle speeds provide pedestrians, cyclists and drivers more time to react if anything happened and the chance of it being life threatening is greatly reduced. So that on street parking can help to create a safer environment compare to off street parking.



Figure 2.6: On street parking

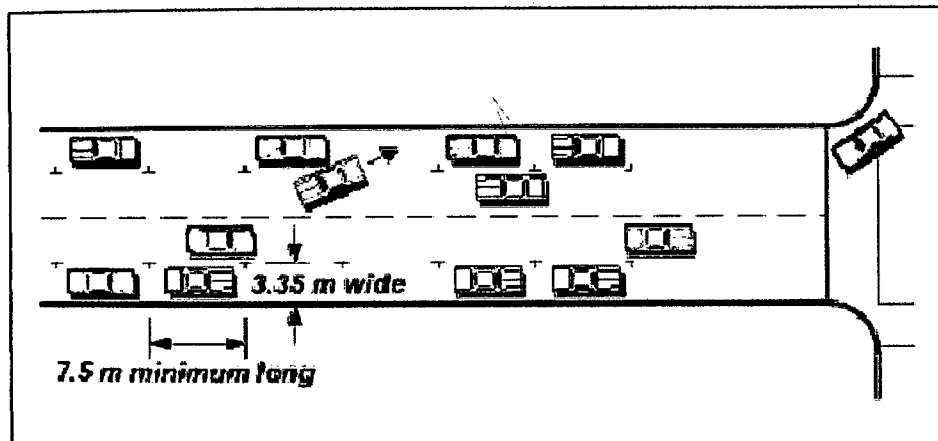


Figure 2.7: On street parking dimension

Table 2.1: Standard dimensions on street parking

Description	Dimension
Parking space width	3.35 meters
Parking spaces length	7.50 meters

(Sources: Parking design consideration September 1998)