

PERPUSTAKAAN UMP



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CASE STUDY ON SUPPLY AND DEMAND FOR PARKING FACILITIES
AT LYC HYPERMARKET
(ROAD GAMBANG-KUANTAN)

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ABSTRACT

The parking facilities is an important element in providing good transportation planning policy at a certain area. The increase of demand for parking space especially at shopping area requires ample, comfortable and safe parking space which taken into consideration the potential space and the use of ground especially at crowded area. The objective of this research is to assess the demand parking space available at LYC hypermarket, to assess the parking parameter such as duration, occupancy and turnover of parking and to recommend the improvement of parking facilities at LYC hypermarket. The research area is located in road Gambang-Kuantan. The finding from thus research through observation of entering and leaving vehicle method, it is clearly shows that the number of parking space at the LYC hypermarket, Kuantan is sufficient to cater the needs even high demand of consumers especially during peak hours. However, the parking facilities provided does not fulfilled the standard quality of a parking lots and there is no specific entrance and exit to the hypermarket. In preparing the planning of a parking facilities, the organization involved should take into consideration a few important criteria and it has to be planned well as to enable the facilities provided can cater for the increments of the number of vehicles from time to time.

ABSTRAK

Kemudahan tempat letak kereta adalah merupakan salah satu elemen penting dalam menyediakan dasar perancangan pengangkutan yang sempurna disesuai kawasan. Peningkatan permintaan terhadap ruang letak kereta terutama di pusat membeli-belah memerlukan penyediaan kawasan letak kereta yang mencukupi, selesa dan selamat dengan mengambil kira tentang keupayaan ruang gunatanah. Objektif kajian ini adalah untuk mengkaji penawaran dan permintaan tempat letak kereta di Pasar Besar LYC, untuk mengkaji parameter tempat letak kereta seperti tempoh masa meletak kenderaan, ketumpatan, perolehan dan untuk mencadangkan penambahbaikan kemudahan tempat letak kereta di Pasar Besar LYC. Kawasan kajian ini terletak di Jalan Gambang-Kuantan. Hasil kajian melalui kaedah pemerhatian kereta masuk dan kereta keluar, menunjukkan tempat letak kereta masih mencukupi untuk menampung keperluan walaupun permintaan tinggi para pengguna terutama pada waktu puncak. Walaubagaimanapun, tempat letak kereta ini tidak mempunyai lot tempat letak kereta yang memenuhi kualiti yang selari dan tidak mempunyai laluan masuk dan keluar yang betul ke Pasar Besar LYC. Dalam menyediakan kemudahan tempat letak kereta, organisasi yang terlibat haruslah menitikberatkan beberapa kriteria dan perlu merancang dengan teliti untuk membolehkan kemudahan tempat letak kereta menampung pertambahan kenderaan dari masa ke semasa.

TABLE OF CONTENTS

	Page
SUPERVISOR'S DECLARATION	i
STUDENT'S DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF SYMBOLS	xiii
LIST OF ABBREVIATIONS	xiv
CHAPTER 1 INTRODUCTION	1
1.1 Background of study	1
1.2 Problem Statement	2
1.3 Research Questions	3
1.4 Research Objectives	3
1.5 Scope of Study	3
1.6 Significant of Proposed Research	4
1.7 Expected Outcomes	4
CHAPTER 2 LITERATURE REVIEW	3
2.1 Introduction	5
2.2 Concept of parking	6
2.3 Parking Facilities	7
2.3.1 Parking Lots	7
2.3.2 Parking garage	7

2.4	Mode of parking	9
2.4.1	Parallel Parking	9
2.4.2	Perpendicular Parking	9
2.4.3	Angle Parking	9
2.4.4	Double Parking	10
2.5	Fringe parking	11
2.6	Types of available parking space	13
2.6.1	Permanent parking space	13
2.6.2	Temporary Parking Space	13
2.7	Parking Supply	14
2.7.1	Public off street	14
2.7.2	Private public available off street	14
2.7.3	Private residential	14
2.7.4	Private Non residential	14
2.8	Parking Demand	15
2.9	Use of Parking Space	16
2.10	Density of parking space	16
2.11	Research on time frame	16
2.12	General Requirement of parking area	17
2.12.1	Parking Layout Markings	18
2.12.2	Drainage Provisions	18
CHAPTER 3	METHODOLOGY	20
3.1	Introduction	20
3.2	Case Study	20
3.3	Reasons for the choosing research area.	23
3.4	Methodology and data resources	23
3.5	Data collection method	24
3.5.1	Observation of entering and leaving vehicle method	24

3.6	Evaluation of parking parameter	25
3.6.1	Parking accumulation	25
3.6.2	Average parking duration	26
3.6.3	Parking Turn over	26
3.6.4	Parking Index	26
3.7	Data Analysis	27
CHAPTER 4	RESULTS AND DISCUSSION	28
4.1	Introduction	28
4.2	Results	29
4.3	Discussions	35
CHAPTER 5	CONCLUSION AND RECOMMENDATIONS	36
5.1	Conclusion	36
5.2	Limitation	37
5.3	Recommendations	37
REFERENCES		39
APPENDICES		40
A	Duration of parking at 24 hour on Monday (24 th November 2014)	41
B1	Duration of parking on Wednesday starting from 08:00 till 17:00 (10 th December 2014)	44
B2	Duration of parking on Wednesday starting from 17:00 till 01:00 (26 th November 2014)	45
C1	Duration of parking on Thursday starting from 08:00 till 17:00 (11 th December 2014)	49
C2	Duration of parking on Thursday starting from 17:00 till 01:00 (17 th November 2014)	50
D1	Duration of parking on Saturday starting from 08:00 till 17:00 (13 th December 2014)	53

D2	Duration of parking on Saturday starting from 17:00 till 01:00 (29 th November 2014)	55
E1	Duration of parking on Sunday starting from 08:00 till 17:00 (14 th December 2014)	60
E2	Duration of parking on Sunday starting from 17:00 till 01:00 (30 th November 2014)	61
F	Accumulation data on Monday (24 th November 2014)	66
G1	Accumulation data on Wednesday starting from 08:00 till 17:00 (10 th December 2014)	69
G2	Accumulation data on Wednesday starting from 17:00 till 01:00 (26 th November 2014)	70
H1	Accumulation data on Thursday starting from 08:00 till 17:00 (11 th December 2014)	71
H2	Accumulation data on Thursday starting from 17:00 till 01:00 (27 th November 2014)	72
I1	Accumulation data on Saturday starting from 08:00 till 17:00 (13 th December 2014)	73
I2	Accumulation data on Saturday starting from 17:00 till 01:00 (29 th November 2014)	74
J1	Accumulation data on Sunday starting from 08:00 till 17:00 (14 th December 2014)	75
J2	Accumulation data on Sunday starting from 17:00 till 01:00 (30 th November 2014)	76

LIST OF TABLES

Table No.		Page
2.1	Recommend parking Requirements	18
4.1	Average parking duration with maximum and minimum parking duration	32
4.2	Average accumulation with maximum and minimum accumulation	33
4.3	Average occupancy (%)	34
4.4	Parking Turn over	35

LIST OF FIGURES

Figure No.		Page
3.1	The research area in the morning	21
3.2	The research area in the evening	21
3.3	The research area in the night	22
3.4	Vehicle entering the research area	22
3.5	Vehicle leaving the research area	23
4.1	Accumulation diagram on Monday	29
4.2	Accumulation diagram on combination Wednesday	30
4.3	Accumulation diagram on combination Thursday	30
4.4	Accumulation diagram on combination Saturday	31
4.5	Accumulation diagram on combination Sunday	31

LIST OF SYMBOLS

%	Percentage
Max	Maximum
Min	Minimum

LIST OF ABBREVIATIONS

CCTV	Closed-circuit television
PNR	Private Non-Residential
MUTCD	Manual on Uniform Traffic Control Devices

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

This chapter discusses on the introduction of study. It represents the overview of the study and briefly explains the background, the aim, problem statement, research question, research objectives, scope of study, significant of proposed research and expected outcomes from this research.

Basically, any building development and construction must consider space for parking lots. People need proper car parks to be provided to them inside or outside the building especially the building operates at 24 hours. If the parking area is not in the development consideration, then the project can be considered as failure.

These changes also cause impact to the modern technological system which becomes more sophisticated. The same goes to the advancement of modern transportation. Because of this, demand for modern motor vehicles increases especially cars. The use of motor vehicles especially cars creates a few problems, for example, congested traffic. And the worse problem that exist today is the parking space or parking facilities. Many problems arise because of this matter.

In this research, we must know the actual problem, the existing facilities is suitable or not, effect on traffic and also effect on the environment should considered in this marking parking problem. Besides that, research on stopping car also important because the car drive slowly to find parking place. There are several method will be made according to the type and volume size or research area. From this research, we

can imagine the real situation of available car parking system or the new available car parking. From this data, we can get the provision of parking policy and control the placement of parking needed.

The parking space provided by the road side has actually decrease the effectiveness of the road system. Therefore a research in facilitating this parking issues is highly recommended to foresee the needs and demands of this facilities. In short, this research is conducted to analyses the available parking space and facilities, as whether they are sufficient, comfortable and safemore than 85% in developing countries (Parkin, 2001; Lim *et al.*, 2014).

1.2 PROBLEM STATEMENT

Parking plays an important role in mobility, access and the economic development of cities at the same time, it is a profitable business for both the private and public sectors. The car parking market is a sector of the economy that has increased in importance as the market for cars has grown. Cars have become a fundamental element of journey mobility and, in consequence, parking has as well. The car-parking sector has always been of great importance in terms of urban mobility, since it is a fundamental element in achieving a high level of accessibility in the city centers. In fact, many businesses and municipalities see an adequate supply of parking, especially for visitors, as crucial for their competitive growth.

As the number of cars increases, with no initiatives and alternatives to combat the current scenario, many problems arise especially to the limited number of parking lot. This can give a significant effect, especially to commercial property. Parking issues come from the public behavior itself. The public come to the market and simply park their vehicle anywhere and everywhere they like.

1.3 RESEARCH QUESTIONS

The aim of the research is to assess the available parking spaces whether it is sufficient, safe and comfortable. A few questions will be brought up in order to find the solutions. Among the questions are:

- 1.3.1 How is the fluctuation of demand for parking spaces at LYC?
- 1.3.2 Are the parking parameters within reasonable limits?
- 1.3.3 What the improvement of parking facilities can be made at LYC hypermarket?

1.4 RESEARCH OBJECTIVES

The objectives of the study are as follows:

- 1.4.1 To assess the demand parking space available at LYC hypermarket
- 1.4.2 To assess the parking parameter such as duration, occupancy and adequacy of parking
- 1.4.3 To recommend the improvement of parking facilities at LYC hypermarket

1.5 SCOPE OF STUDY

The study is limited to scope and limitation, in order to receive a clear result from the analysis. The scope of the study will focus on:

- 1.5.1 The parking management in LYC Hypermarket. The issues are to see the supply and demand parking space provided.
- 1.5.2 To achieve the aim of this study, that is to assess the parking parameter form data available. Then followed by some conclusions and recommendations to the topic.
- 1.5.3 This study depends very much on primary and secondary data. Therefore, the nature of this study is more of a critical review on the time management, and to investigate the system and process of managing parking space.

1.6 SIGNIFICANT OF PROPOSE RESEARCH

There are some significant gains that can be achieved through the study. The importance on this study are:

- 1.6.1 The results of the finding can be used to make guidelines and references for parking management at Jalan Gambang, Kuantan in terms of planning, organizing and controlling for future benefits.
- 1.6.2 The study also can identify and improve the weakness on the management of parking, giving the alternative ways and recommendations.
- 1.6.3 The study can be used as a guideline and reference to any interested individual or society, for the purpose of parking management in established urban area.

1.7 EXPECTED OUTCOMES

As the ground rule of writing a research paper, the problems have been explored and suggestions are given on how to improve the parking facilities and the system related to it. It is hoped that this case study will benefit in helping to solve problems in the stated area and also other areas with similar problems.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will provide a literature review that was done through books, journal, conference proceedings and internet. Groups that will be participating in this study are governance and company's employees that is involving in any kind of parking management project.

This literature review will be covering scope of research such as the supply and demand of parking space. In additional, the ways to overcome the problem also included in this research. Thus, the company will know the benefits and advantages in implementing parking management in the development industry.

This chapter analyses critically a segment of a published body of knowledge through summary, classification and comparison of prior research studies, reviews of literature and theoretical articles.

2.2 CONCEPT OF PARKING

Parking typically is defined as "the stopping or standing of a vehicle whether occupied or not". It is the standing of a vehicle otherwise than temporarily for the purpose of and while actually engaged in loading or unloading merchandise or passengers. Precise definitions vary by state and local laws. Precise laws vary by state and local laws. A vehicle is usually not found to be parked if stopped temporarily for any of the reasons

According to the rules and standard procedure planning, a parking lots is a well-planned space provided for parking of cars or other types of vehicles. The rules and standard procedure takes into consideration all types of vehicles that require the facility. Generally, the parking lot can be divided into two categories which are on street parking lots and off street parking lots. The preparation and the location of these parking lots should take into account factors like safety, location, users' destination and the traffic at the area.

According to O'Flaherty c.a. (1995) research shows that on the average per year, a vehicle is in the halt position for 8360 hours which is 95% of its life span. This indirectly requires spaces to be provided for these vehicles.

2.3 PARKING FACILITIES

Parking facilities can be both indoor and outdoor, public or private. It can be a parking garage, or a parking space that belongs to the property of a person's house. These are the different types of parking facilities:

2.3.1 Parking Lots

A parking lot is an area that is assigned for parking. Normally, the parking spaces are marked on the ground with white or yellow lines that form squares that each fit one car. Parking lots are common near shops, bars, restaurants and other facilities that require parking. There are parking lots that are open throughout the year, but there are also improvised parking lots that are specially assigned for an event. For example, when there is a music festival that only happens once a year people can decide to open a nearby meadow to provide parking spaces for the visitors of that particular music festival.

2.3.2 Parking Garage

A parking garage is also called car park, parking structure, parking building, parking ramp, parkade or parking deck. There are several types of parking garages:

i. **Single level parking garage**

A single level parking garage is a parking garage that only has only one floor.

ii. **Multilevel or multi-storey parking garage**

Multilevel or multi-storey parking garages are parking garages that have multiple floors to park at. The design of a multilevel parking garage can be very different. The most common design is a garage with ramps to move from one level to another. Less common are parking garages that use lifts to go from level to level. Then there are also parking garages with robotic systems that

move cars from one level to another. The floors of the parking garage can either go up, down or both.

iii. Underground parking garage

An underground parking garage has levels below the surface and none above ground. Most often underground parking garages are located in city centers where there's not much space available to build a parking facility, but there is a big need to build one.

iv. Automated parking garage

The car park operates as followed: You drive your car onto a platform in the garage. Then the automated parking system will move your car to the available parking space somewhere in the tower. The cars can be moved vertically and horizontally with the use of hydraulic or mechanical lifts. There are several benefits to a multilevel parking facility with an automated parking system. For example you can stack more cars in a compact space because the cars are parked by robots. Also parking spaces can be smaller because no one needs to get in or out of the vehicle and people don't park it themselves; the robotic system doesn't need as much space to park a car than a human does. You do need to clean the equipment every once in a while, plus at least one to four times a year someone needs to check the equipment to see if it all still works properly. The number of times for a service check depends on the equipment that is used.

2.4 MODE OF PARKING

There are a lot of modes of parking services that motorist can use and it all differ in various countries and states all depending on the population, area and infrastructure itself. we are going to discuss mainly the modes of parking areas where you can easily park you vehicles. Basically there are four types of road parking:

2.4.1 Parallel Parking

It is the simplest mode of parking and can be seen in most of the markets and street sides where one can stand exactly behind the other one and one car's front bumper is close to the other car's back bumper. It is common due to its execution and also because it takes less width of the road. Its technique is simple in which driver that wants to park his car past the parking space and then reverse to fit in that space. In easy words it can also be called in-line parking.

2.4.2 Perpendicular Parking

This style of parking is more common in a lot of countries and cities with big road infrastructure. Most of times this sort of parking is used on both side of road front to front and aisles between them. In this sort of parking cars can be parked in two ways back-in and front-in with back-in you can easily take out and move forward but with front-in you have to reverse and then turn on the road side to pull out, In some roads a center line is defined for such parking and driver can pull through and go forward with the traffic.

2.4.3 Angle Parking

Angle parking is similar to perpendicular parking, except the cars are aligned in an angle. Normally the angle is aligned with the direction cars approach the parking space. It makes it a lot easier to drive into the parking space in contrast to perpendicular parking, where the parking space is at a 90 degree angle. With angle parking there is a gentler turn. Not only is it easier to park, but it's also faster and the parking spaces

are smaller, making it possible to add more parking spaces in the same size area. Angle parking is very useful in parking lots, it may also be used in street side parking. Most of the residential car parking have this mode of parking enabled as this take less space and can be used for large number of car parking. this sort of parking is mostly designed as head-in but in some cities back-in parking is used too.

2.4.4 Double Parking

Double parking means that someone has parked their car in a certain way that prevents another car from departing. Double parking can happen in different situation:

i. Double parking on-street

This type of double parking is illegal and you can get fined for it. Double parking on-street means that you park your car parallel to a car that is parked next to the curb. Double parking in this situation means that the car parked next to the curb cannot depart because it is blocked by your car, and often your car also blocks the traffic flow. Unfortunately, double parking on-street is quite common in larger cities. Sometimes the people who double park their car even leave the hand break off so that people can push their car forward or backwards a bit if it blocks them.

ii. Double parking in parking garages with attendees

In this situation, double parking is used to be able to park as many cars as possible in the parking garages. It's a different situation than on-street, because in this situation the cars are parked by attendees (or valets). The attendee holds on to the keys of all cars. If one needs to get out and it's block by another car, the attendee simply brings the keys to both cars and moves the car that blocks the other.

iii. Parking on more than one parking space

The term "double parking" is sometimes also used to indicate the situation where a car parks over the lines that separate the parking spaces and therefor taking more than one parking space.

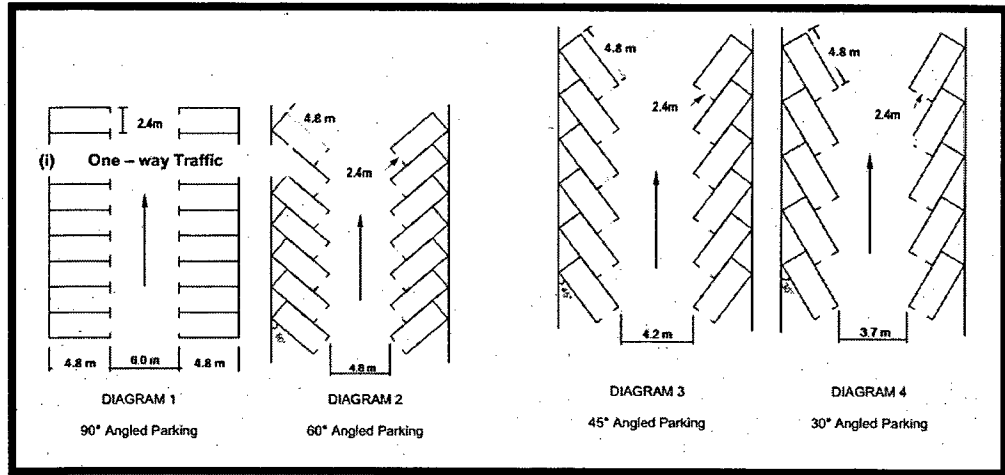


Figure 2.1: Dimension of car parking and circulation aisles

Sources: Jabatan Perancangan Infrastruktur Dewan Bandaraya Kuala Lumpur 2014

2.5 FRINGE PARKING

Fringe parking facilities are an important element as a collection point for individuals transferring to another vehicle containing at least one other person. Park-and-ride lots generally are designed to serve bus or rail transit, but also can be developed to facilitate carpooling, vanpooling, use of various types of shuttle services, and combinations of these high-occupancy vehicles.

A variety of support facilities and services can be provided in connection with either park-and-ride or fringe lots. Most basically, these are information, signing, and marketing aimed at promoting lot usage. Lots also can be designed to facilitate access by walking and bicycle; for example, sidewalks and access paths can be provided to a lot and secure bicycle storage devices can be placed at a lot that are of sufficient quality to deter thefts. A variety of personal services can be provided at major lot locations including day care, financial services, convenience stores, and dry cleaning establishments.

The benefits of park-and-ride facilities are numerous. In terms of user costs, use of fringe parking facilities can reduce automobile insurance premiums for policies written by companies that base their rates on vehicle mileage and travel purpose,

reduce fuel expenditures by reducing use of personal vehicles for the work trip, reduce vehicle depreciation by reducing vehicle miles of travel and exposure to potential vehicle damage, reduce vehicle maintenance costs by reducing the annual cost of mileage-related maintenance requirements and reduce travel related fees such as tolls and parking fees.

Despite these many benefits of park-and-ride programs, some disbenefits can be identified. These disbenefits can be minimized, though, if reasonable care is taken in the planning and design process. In terms of cost, park-and-ride facilities would normally not break even as a financial investment. In comparison to commercial parking rates, either no user fee is charged or user fees at park-and-ride lots are kept low in order for park-and-ride to be competitive with alternative modes. As a result, capital, operating, and maintenance costs may not be recovered through parking fees. However, in terms of overall societal costs, by reducing the need to construct more expensive facilities and by reducing highway congestion, these costs can be balanced. A further possible disbenefit of park-and-ride programs is their potential for transferring traffic and pollution problems from one location to another. Traffic and air pollution problems may increase in the areas where park-and-ride lots are located. Examples of these problems include congestion on access routes and interchange ramps serving overused facilities, increased illegal traffic maneuvers, increased ad hoc parking, and increased ambient air pollution levels in the vicinity of the lots. These issues are discussed further in the following sections. However, it should be noted that these impacts can be minimized through efficient planning and design of site access and lot location.

2.6 TYPES OF AVAILABLE PARKING SPACES

There are 2 types of parking spaces throughout the country which are permanent parking space and temporary parking space.

2.6.1 Permanent parking space

Permanent parking space can be found mostly in the housing area and shopping complexes since it has many users and workers who own vehicles and them permanently use the parking spaces. It normally covers a big area with many organized parking lots either in the building or in the basement. Most of them are handled by private company with certain charges. However, it can also be organized in a small quantity by the road side using the parking tickets which is handled by the town council.

2.6.2 Temporary parking space

Temporary parking space is normally prepared for an area without constant or permanent activity such as a show and a sale at a stadium since it is not economical and practical to provide a permanent parking space. However there are also parking provided on committed development near permanent business area like offices and business. This kind of parking is normally provided in large sizes without fixed lots. The usage normally depends the available sizes parking spaces and parking depends on empty spaces available.