

STUDY OF ASSESMENT OF SUPPLY AND DEMAND OF PARKING AT GIANT
HYPERMARKET, KUANTAN.

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ABSTRACT

This project is researched about assessment of supply and demand of parking at Giant Hypermarket, Kuantan. In case study, a method of study has been conducted which is survey and data collection are done at there. Data collection is about to collect the number of vehicles (excluded motorcycle, lorry, technician van) entering and out of parking. Collections of data are taken during Giant Hypermarket operation which is starting 9:00 am until all vehicles are fully out of that hypermarket. So, from data collection the results and analysis are obtained were duration of parking, accumulation, Parking Turn-Over (PTO), Parking Index (IP) and average of parking duration. Besides that, data collections are done on weekdays and weekends during non-salary week and salary week. Lastly, as a conclusion these hypermarket's parking is not sufficient during weekends and weeks of salary but in weekdays, the parking is sufficient.

ABSTRAK

Projek ini mengkaji tentang penilaian penawaran dan permintaan tempat letak kereta di Giant Hypermarket, Kuantan. Dalam kajian kes, kaedah kajian telah dijalankan iaitu kajian dan pengumpulan data dilakukan di sana. Pengumpulan data adalah kira-kira untuk mengumpul bilangan kenderaan (motosikal dikecualikan, lori, van juruteknik) memasuki dan keluar dari tempat letak kereta. Koleksi data diambil semasa operasi Giant Hypermarket yang bermula 9:00 sehingga semua kenderaan adalah sepenuhnya daripada pasar raya besar itu. Jadi, daripada pengumpulan data keputusan dan analisis yang diperolehi adalah tempoh letak kereta, pengumpulan, Parking Turn-Over (PTO), Indeks Tempat letak kenderaan (IP) dan purata tempoh letak kereta. Selain itu, koleksi data dilakukan pada hari biasa dan hujung minggu semasa bukan gaji minggu dan gaji minggu. Akhir sekali, sebagai kesimpulan letak kereta pasar raya besar ini adalah tidak mencukupi pada hujung minggu dan minggu gaji tetapi pada hari biasa ia mencukupi sahaja.

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LIST OF SYMBOLS

Symbol		Item
μ	-	Mean
S/D	-	Standard Deviation
t_{out}	-	Time of car exit the parking Giant Hypermarket, Kuantan.
t_{in}	-	Time of car entering the parking Giant Hypermarket, Kuantan.
Q_{in}	-	Total number of cars was entering parking Giant Hypermarket, Kuantan.
Q_{out}	-	Total number of cars was exit parking Giant Hypermarket, Kuantan.
Q_s	-	Total number of cars existing at parking Giant Hypermarket, Kuantan.
Q_p	-	Total number of cars parked during the opening time of the Giant Hypermarket.
IP	-	Index of Parking
am	-	ante meridiem
pm	-	post meridiem
%	-	percentage
Max	-	maximum
Min	-	minimum
St.dev.	-	standard deviation

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CHAPTER 1

INTRODUCTION

1.0 BACKGROUND OF STUDY

Giant Hypermarket is the one of hypermarket which is very famous at our country where it's have at every state. At Kuantan these hypermarket has two braches which is at Berjaya Mega Mall and Jalan Tanah Putih, Kuantan. Giant Hypermarket, Jalan Tanah Putih, Kuantan is located at Lot 5197, Jalan Tanah Putih, Seksyen 124, 2150 Kuantan. Location of Giant Hypermarket at Jalan Tanah Putih, Kuantan is nearest by residential area including homestay, college (Inderapura Industrial Institution) and so on. Furthermore, this location also nearest by Sungai Kuantan where it is as a tourist attraction. So, during holidays this Giant Hypermarket has a lot of customers.

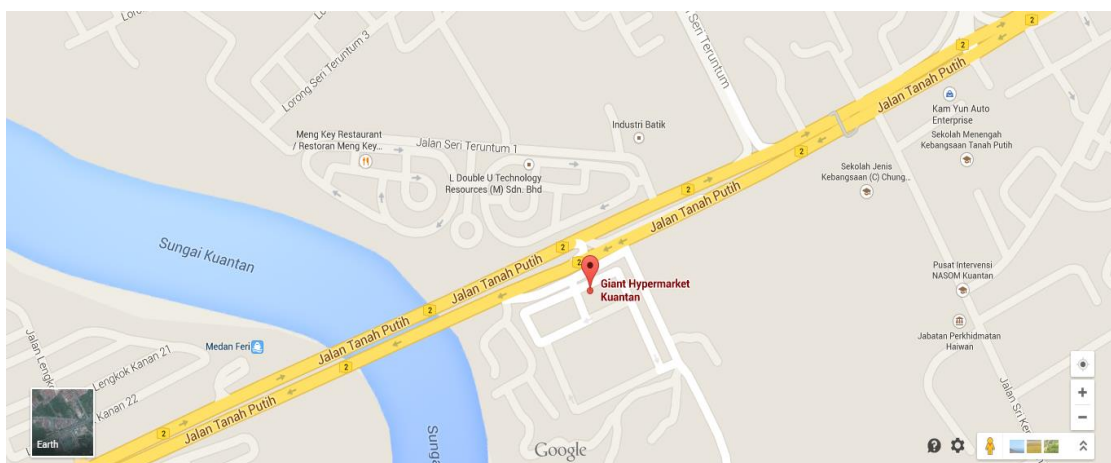


Figure 1.1: Location Map of Giant Hypermarket.

Next, at Giant Hypermarket, Kuantan have variation of stall or tenant or selling at this hypermarket such as computer and IT accessories, telecommunication, health and beauty (Guardian, Herba Sihat), Proton Showroom, food court and beverage (Pizza Hut, Big Appel Donuts and coffee) and others. So, the nearest residents or customers will be go to shopping at Giant Hypermarket is to take eat, window shopping or for others of objective.

Now, this hypermarket has 401 number of parking bays. Besides that, actually at these hypermarket has to type of parking lot at the inside area of Giant Hypermarket which is a roof parking and non-roof parking. Normally, the customers are very like to park the car at the roof parking than non-roof parking moreover during rainy. This is because human very take seriously about the perfection, safety and comfortable.

So, at Giant Supermarket, Kuantan, sometime has the problem which is doesn't have enough parking during peak hour and holidays. This is could be happen because everyone come to these hypermarket by their own car where doesn't have any car pool and public transportation. Besides that, location of this Giant Hypermarket is very strategy where nearest University Malaysia Pahang (UMP), residential area and others. So, most of UMP's students like to go Giant Hypermarket because nearest with their college and at there have many choices to shopping and buy the fast food without go to Kuantan Town. Besides, if they go to window shopping at others shopping complex like Berjaya Megamall, Kuantan Parade and so on will be take the highest of expense. This is because if they go to others mall they need to pay for the parking payment like at Berjaya Megamall and Kuantan Parade.

Then, this Giant Hypermarket will be have highest demands during peak hour, weekends, holidays, and the day of salary which is during the end of every months. Moreover, at every branches of Giant Hypermarket at our country is produces free payment of parking. Hence, free payment of parking is some of factors of the peoples like shopping at Giant Hypermarket.

Besides that, at Giant Hypermarket, Jalan Tanah Putih, Kuantan also has others parking which is parking at outside of Giant Hypermarket's area and parking in the area of Giant Hypermarket. From my interview of a worker at there, he had told me that the parking at outside of area of Giant Hypermarket where the free area at the side of Giant

Hypermarket is the parking for the workers or staffs of Giant hypermarket at this branch. So means that, mostly the customers of Giant Hypermarket will be park there are car at the parking in the Giant Hypermarket was provided.

Lastly but not last, from my researched on this case which is have some ideas to this hypermarket to overcome their problem that about parking area where do this hypermarket increase their parking area or not, Giant Hypermarket need to produce the rule which is a car only has 2 hours to park but if their timing are more than 2 hours they need to pay and other relevant ideas.

1.1 PROBLEM STATEMENT

The existence of cars parking outside the premise is an indication that the number of parking spaces inside is not sufficient. But it could be that they park there for practicality (quicker to park and does not park). So, even if the parking spaces inside are not fully occupied, some still park outside. It needs to identify how many more spaces are required and how to implement it.

1.2 OBJECTIVE OF STUDY

To study on:

- 1) To assess the demand and supply for parking spaces at Giant Hypermarket, Kuantan.
- 2) To assess the performance of the parking facility.
- 3) To identify problems and propose suggestion to parking Giant Hypermarket, Kuantan.

1.3 SCOPE OF STUDY

The scope of this study involve the collection of data and information through a literature review on the number of parking at Giant Hypermarket, Kuantan are adequate or not during peak hour. Actually, at Giant Hypermarket, Jalan Tanah Putih, Kuantan have variation types of parking such as outside parking (mostly use by workers of Giant Hypermarket), off street parking which is park by the person who rushing by time and lot parking inside the area of these hypermarket. However, this scope only focuses on the customers of Giant Hypermarket, Kuantan where doesn't included of parking for supplier trucks and motorcycles. This research focuses on:

- The data calculation is about parking parameters which is consists:

- I. Duration of parking.
- II. Accumulation.
- III. Volume of parking.
- IV. Parking turn-over. (PTO)
- V. Parking capacity.
- VI. Index parking (IP)

Some of methods for the data collection need to do. This is because from the data collection, the decision on parking requirements will be identified and described clearly. Besides that, analysis also can be conducted either need to supply a new car park or otherwise.

CHAPTER 2

LITERATURE RIVIEW

2.0 INTRODUCTION

A literature review discusses published information in a particular subject area, and information in this particular subject area within a certain time period. Literature review is made to understand and to obtain background of research topics beginning of the study title. This research is supported with the related reading material previous research about the Assessment of Supply and Demand of Parking Spaces at Giant Hypermarket Kuantan as the references to describe more and explain the factors of parking demands, parking parameters and method to obtain the data collection.

2.1 CONCEPT OF PARKING

Parking is the process of park the vehicles at a place or by side of the road in temporarily. According to Ibrahim Wahab, 1991: 114 parking is the space where used as a parking in certain duration and then drivers continue their driving or have other activities.

Parking included in the system of transportation consisting of vehicles, road and parking lot. For road transportation, according to Everett C. Carter and Wolganag S. Homburger, 1994:121 parking have more of examples such as garage, mall or private entrance hall, bus stop, taxi stand, loading/unloading zone, parking lot are provided.

Even, some of costumers didn't know about they had did activity which is more important in traffic system. They only know about their driving and destination without thinking about parking problems. So, requirement of parking space will be needed when have congestion of parking. Congestion of parking always occurred in town, mall and hypermarket especially during weekends and public holidays. So, for parking of vehicles we are need of spaces and time duration. According to Jakson (1973) in his report in Highway Research Board, he reported which area of parking is a lot to park the vehicles. Besides that, to construct the parking lot we are need to consider about size of parking, number of bays, and types of parking. This will be constructing the good and balanced of hypermarket or shopping mall. Then, time of duration is certain time that can be park of vehicles means that duration of parking shall be including in planning of parking lot. So, when the parking of vehicles had demand during peak hour hence limited of parking should be applied to all customers of hypermarket. Furthermore, according to Ibrahim Wahab, 1985 which time is limited and very important to people but everyone cannot be using time and spaces of parking without any rules. So, to park the vehicles in hypermarket it is need a good planning, management and efficient and effective system. Even though, it's a temporary parking but from concept of spaces and time it is very important like number of customers entering or coming to hypermarket.

Then, by following 'Garis Panduan dan Piawaian Perancangan', parking lot is the area provided to park the vehicles. Generally, parking lot can be divided into main of two types which are on-street parking and off-street parking. Parking lot was constructed need to take care about safety, location, and nearest traffic congestion. According O' Flaherty C.A (Town. Transport and Parking'. 1995) had researched

shown in average in a year where a vehicle in the parking for 8360 hours and around of 95 % from the life of vehicle doesn't in moving but actually in park situation.

2.2 BACKGROUND OF SUPPLY AND DEMAND OF PARKING SPACES AT GIANT HYPERMARKET, KUANTAN.

Planning of development in the shopping mall and hypermarket have required the best and highest valuation for their customers and workers and at the same time to ensure doesn't happen the traffic jam and other problems. Actually, the planning of construction of parking at it hypermarket should be can receive or consider about the increasing of population and other development for the next time.

One of development is about the increasing of number of vehicles in the road. Hence, demands of number of parking at hypermarket will be increasing. This scenario was happen because today the vehicle such as car is the one of requirement for the citizens or people. At the same time, the number of college nearest Giant Hypermarket, Kuantan also increasing. So, mostly the nearest student will go to Giant Hypermarket because The Kuantan Town is very far from their college. Furthermore, at Giant Hypermarket have applied free of parking to their customers. So, it will increase number of vehicles of customers to entering Giant Hypermarket and shopping at there.

Moreover, the data collection was obtained will be analysis for the planning and to estimate the future of increasing number of vehicles by depends on growth of transportation. So, this research can be as a good reference that to construct parking lot at hypermarket and at the same time to estimate the demands of transportation system at the future.

As a conclusion before to increasing the number of parking at Giant Hypermarket, Kuantan we need to consider such as the population of nearest residential area, the number of customers during peak hour, and peak day (holiday, salary day) and area of Giant Hypermarket. So, the factors or ideas need to take and consider in proposal consists:

- i. Planning to reconstruction of junction at an entrance of Giant Hypermarket.
- ii. Car park at outside of Giant Hypermarket

2.3 VARIATION OF PARKING

Generally, parking has two categories which are on street parking and off street parking that according to Ibrahim Wahab, 1994: 114.

2.3.1 ON STREET PARKING

On street parking is a conservative because it's an early of parking are constructed and very easily park of vehicles. This parking are applied in surrounding of world and constructed in small town. On street parking lot was constructed in side of road at famous premises and hypermarket like Giant Hypermarket, Kuantan. The purpose of on street parking is to facilitate the customers to park their vehicles and do their activities such as shopping. This type of parking was very like by customers because it give an easily way for them to get their requirement and bring their stuff. This is because they no need to walk far to hypermarket or location and also save their time and energy. However, on street parking is doesn't a good parking for hypermarket, shopping mall, traffic and town. Today number of transportation in our country is increasing by ratio 1 house will have 2 of cars where 1 house: 2 cars.

Organisation for Economic Co-operation and Development (OECD) (1980), stated on street parking always at side of road that nearest of exist of road or parallel to side of road. Actually, it's divided to any location which has square area or free land. Parking cannot be used any areas are planning to solve traffic problems and to construct public transportation way. So, rules of parking lot are introduced at certain zone that according to OECD Road Research Group, 1997:4).

In on street parking has variation of shapes and size of parking such as usually is side parking where it is dimension is following the standard. Firstly, 18 feet (5.45 m) until 20 feet (6.06 m) of length and 8 feet (2.4 m) of width where this parking is always construct at mini road. Secondly, 90° or known as L Parking. This parking was less construct on the mini or busy road. This is because to avoid the traffic congestion. Besides that, it's also constructed at hug area and parking lot where the size of parking is 2.44 m of width and 4.88 m of length. Thirdly, type of 60° parking where it is diagonally 60° from side of road. This is to facilitate the vehicles are entering and outing of parking and can decrease the traffic congestion. Furthermore, it is size is likely same as 90 ° parking. Then, are types of 45 ° parking and 30 ° parking. Actually, when

increasing of diagonally of bays, the vehicles are more easily and quickly to entering and outing of parking. Besides that, it is also decreasing used of spaces of road or area and smoothness the traffic.

2.3.2 OFF STREET PARKING

Off street parking is an idea came that to solve the problems of on street parking which is too demand and traffic congestion. This type of parking is involved the construction of building such as shopping mall, and apartment. But some of off street parking also has at hug area and built at terraced floors in towns with limited of development area. Besides that, it also built in the building, and underground that according to Ibrahim Wahab, 1991: 114. Other example of off street parking is private garage at residential area. This type of parking shall be constructed by public company, private company or company of semi-public that according to OECD Road Research Group, 1980:5). For examples of off street parking consists:

i. Surface Parking

According to Davies E, 1968:195 stated that surface parking is the hug area and non-roof parking where provided the bays that explain in previous part. It is constructed that following the standard, and has efficient of entrance that to facilitate the vehicles entering and outing and also has the highest safety. Actually surface parking can be into two types which permanent parking and temporary parking. Permanent of surface parking was constructed by concrete, pavement, fencing, gate, counter and others. Temporary of surface parking usually built on the land.

Furthermore, surface parking in Japan, United Kingdom and United State are automatic conducted and less of supervision. All of tickets and payments of parking are done at entrance and exit parking where having automatic machines. In Malaysia, this surface parking was applied by private parking of management. For examples, Metro Parking Sdn. Bhd. and Imej Parking Sdn. Bhd. Moreover, some of this parking lot had beautiful landscape.



Figure 2.1: Surface Parking

ii. Multi Storey Car Park

By built multi storey parking, the problems of limited of spaces, and traffic congestion can be solved besides to improve and as an interactive of business. Then, multi storey car park can be dividing into two types which are constructed in commercial building and had a special building as parking.

To build the multi storey parking where has some of standard that need to follow. For example, design of building need to be facilitating of vehicles to entrance and outing, had circular of circuit, and building also need to far from busy traffics. Besides that, it need good of ventilation, suitable temperature, lighting system, fire resistance and flood mitigation.

iii. Underground Parking

Underground parking was constructed in the commercial building, hotel, and office building and constructed by concrete and steel. Besides that, it also constructed below the road, and park such as Dataran Merdeka. In the building, underground parking will be constructed by multi storey but below the road or park, it will be construct only by single or two floors.

As a parking on the ground, underground parking also need lighting system, ventilation, suitable temperature, safety and good access road. In Britain, standards and rules to constructing an underground parking was established before 'Perang Dunia