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SUSTAINABLE PARKING MANAGEMENT STRATEGIES FOR PUBLIC HOSPITALS : A CASE STUDY OF TENGKU AMPUAN AFZAN HOSPITAL, KUANTAN AND SULTAN HAJI AHMAD SHAH HOSPITAL, TEMERLOH

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Abstract:

This study was conducted to investigate the efficiency of parking lot management at Tengku Ampuan Afzan Hospital, Kuantan (HTAA) and Sultan Haji Ahmad Shah Hospital, Temerloh. Parking facilities can be considered as a part of planning requirement that can affect the overall traffic management. The lack of parking lots is a serious problem and this causes the percentage of roadside parking to increase especially in and around the hospital area. This study is conducted to identify Sustainable Parking Management Strategies for Public Hospitals. The scope of parking problem is specified to public hospitals in Kuantan and Temerloh. This study adopts the quantitative approach with total respondents of 100 public users including the staffs and visitors of the public hospitals. Then, these data is analysed by using descriptive and ranking analysis. The main objective is to identify the parking guideline for hospital, the second objective is to know the satisfaction of customers towards the parking facilities at hospitals, and the third objective is to identify the strategy for hospital parking space solution. Based on structured surveys and observation, it is hoped that this study can come out with a good result. In concluding this study, the researcher will propose a guideline for sustainable parking management strategy for Tengku Ampuan Afzan Hospital and Sultan Haji Ahmad Shah Hospital for consideration by the relevant authorities such as MPK and the management of Tengku Ampuan Afzan Hospital and Sultan Haji Ahmad Shah Hospital. Numerous strategies were been suggested to overcome or at least to lower the number of parking problem; for example sharing vehicle to the work place and using shuttle bus service.

Keywords: Parking Management; Satisfaction; Strategy; Improvement; Sustainable

1.0 INTRODUCTION

The problem of lack of parking lots is serious and this causes the percentage of roadside parking to increase. The existing parking lots are not enough and this makes traffic congestion more terrible and influences city image and causes distraction to the road (Wang et al., 2016). Thus, supply of parking operates at peak efficiency when occupancy is 85% to 90%. When the occupancy comes to this level, there may be delays and frustration in finding a space. Another problem is when the parking space occupancy reach their peak time, management will be slower (Arbatskaya et al. 2007). Therefore, a hospital must have sufficient parking to facilitate members of the public either receiving treatment or visiting a patient whereby insufficient parking will indirectly cause congestion. According to Utusan Malaysia on 7 February 2011, Tengku Ampuan Afzan Hospital (HTAA) Kuantan faced shortage of car park. The objectives of this research are to identify the parking guidelines, to measure the satisfaction of parking space for hospital, and to identify the solution for hospital parking. The scope of this research is to solve the physical parking issue in public hospitals within the regulation and guidelines from the relevant authorities.

According to the problem statements analyzed from a few sources that are related some objectives were spotted to carry out this research. The lack of adequate parking lots in Tengku Ampuan Afzan Hospital and Sultan Haji Ahmad Shah Hospital is a long-standing issue. Finding the parking space is a test of patience for many motorists due to lack of parking lots for the public. It has been a concern of local residents, hospital workers, patients and neighbouring businesses. The objectives of this research are to identify parking guidelines, to measure the satisfaction of parking space for hospitals, and to identify the strategy for hospital parking space solution. These objectives are derived from the problem statement.

2.0 LITERATURE REVIEW

2.1 Introduction

According to Mohd Noor (2003), parking problem occurs because of the growth of both urban function and the number of population who owns and uses motor vehicles as their daily activities thus increasing the demand for vehicle parking spaces. These growths together with the increase in density of developments such as residential, industrial and commercial land uses have limited land spaces and resulted in insufficient car parking areas compared to higher cost private vehicles. Parking problem occurs when parking demand is higher than parking supply. Every single vehicle that enters the city will end its journey on a parking space. When there are not enough parking space, the users will have no choice but to park their vehicles haphazardly. This situation will interfere with traffic regulations and sometimes might block other users and causing other serious accidents.

2.2 Guidelines for Parking

Guidelines for parking should be used for the purpose of development plan, provision development plan and application for planning permission. These guidelines set the minimum number and dimension of parking needed. Parking provision has to give emphasis to ease of arrival to the location and the access road must be strategically located and at a suitable distance for every user. The layout and design space must be innovative and responsive for every user and environment. It needs to prioritize design and technology that is consumer friendly and environmentally friendly. According to the guidelines, the type of land use for hospital is equal to four sick beds with additional one parking lot for Doctor and professional staff, three for another staff and additional 30% for motorcycle space and five spaces of 'lay-by' for taxi stop while disabled (OKU) parking is provided (Mohd Nor, 2003), based on the table below.

2.3 Satisfaction on Hospital Parking

The variables are summarized as follows:

Table 1: Satisfaction on Hospital Parking

INDEPENDENT VARIABLE (PARKING ITEM)	DEPENDENT VARIABLE (SATISFACTION)
1. Size Parking	Size parking for hospital is follow the guideline of parking
2. Number of Parking	The number of parking not enough to support many vehicles park
3. Location of Parking	Location of parking of hospital only provide in hospital area
4. Types of Parking	<ul style="list-style-type: none"> i. On-Street Parking ii. Off-Street Parking iii. Multi-Storey Parking iv. Private Parking v. Rooftop Parking vi. Basement Parking
5. Parking Payment System	Usually, for public hospital there is no charge for parking compared to the private hospital.

6. Parking Demand	In order to reduce congestion and ease the traffic, charging for the fee was given to the vehicles and keep raising the costs as well as parking demand in peak hours in Beijing. In this matter, economic tiers are unable to avoid. Maybe by limiting the population of vehicles, upgrading order for the transportation, which leads to has better effect for citizen to create another initiative way of life.
7. Parking Supply	Government also handled insufficient parking problem in Parcel E, D Government Complex and Putrajaya Hospital in Federal Administration Centre of Government, Putrajaya Corporation (PPj) with providing of 800 additional parking spaces for both area.
8. Parking Management	For better management in parking, some guidelines which can be referred to such as user information, user needs, consumer option, efficient usage and other flexibility. Parking user must have progressive thinking regarding their travelling choices as user. Thus, they must have general knowledge of the parking in their destination option.
9. Parking Facility	Among the parking facilities are parking space, parking lot, parking demand and supply.
10. Parking Design	This problem caused by inefficiency in usage by mechanical parking structures in airspace and resolved by innovation technology as suggestion.

2.4 Strategy to Solve the Parking Problem

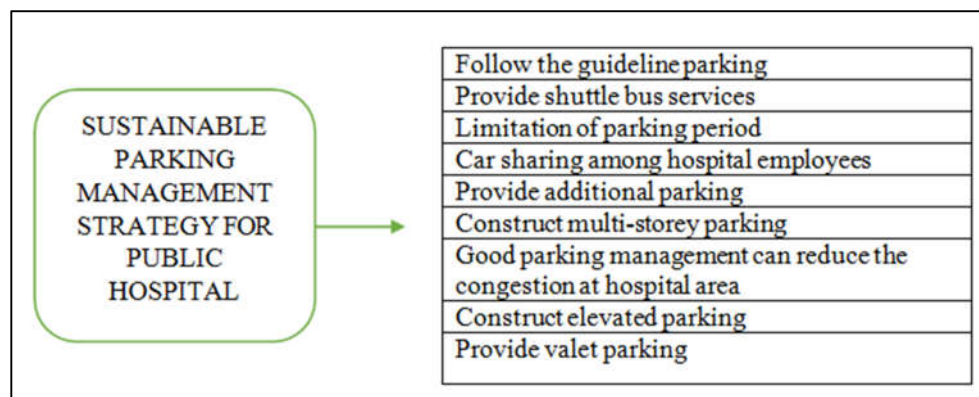


Figure 1: Independent Variable and Dependant Variable
Sources: Mohd Ridzuan (2016)

There are a few steps in order to handle this parking problem. Among them is government initiative of providing shuttle bus or shuttle van to the hospital. This system is functional whenever a van shuttle sign will wait in front of Selayang Capital and Selayang Hospital lobby from 7am to 5pm on working days. Signage for stops will be installed to ease public waiting for the vans that are doing patrol every 45 minutes. As an example, Selayang Hospital uses shuttle van to the hospital while Raja Permaisuri Bainun Hospital uses shuttle bus which is a free bus services to everyone that are shuttling to that hospital (Sinar Harian 12 October 2015). This initiative was taken to increase the services quality in that hospital and give awareness to them. Shuttle bus usage can decrease insufficient parking problems and congestion matters in hospitals.

Besides that, another way to handle parking problems in hospital is also via car sharing practice among hospital employees. This way is to handle insufficient parking in hospital. This is because existing parking facilities only accommodate 1/3 of total staff parking and the hospital's patients. The Government has also introduced limitation to maximum period of parking. This is aimed at handling usage of parking in long term periods. In order to handle insufficient parking in Pulau Pinang Hospital, the hospital opened more spaces in the hospital area to park the vehicles. Multi storey car park is one of

the alternative parking for high market value areas. Multi storey car parks with a large capacity, are designed to accommodate the optimum number of vehicles between 500 and 750 vehicles. The operations of multi storey parking are by machine, parking attendants or a combination of both.

Finally yet significantly, the government also constructs elevated parking facilities in Kuala Lumpur Hospital (HKL). Construction of elevated parking projects was officially launched on 12 December 2015. This proactive method is implemented to handle parking problems. In addition, this step also makes up the components towards upgrading HKL into the World Class premier hospital.

2.5 Table Matrix

Hence, the questions are tabulised as follows:

Table 2: Table Matrix

No	Questions	Sources/ Author
1	The management should follow the guideline provided for parking in order to improve the parking facility	Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia
2	Shuttle bus services can decrease insufficient parking problem in hospital	NAN MAM RON, 2012
3	Limitation of parking period can help parking problem	Mohd, 2016
4	Car sharing among hospital employees can reduce parking problem	Mohd, 2016
5	The government should provide the additional parking for public hospital.	NAN MAM RON, 2012
6	Multi-storey parking is suitable to provide in hospital area	Khairunnur, 2011.
7	The good parking management can reduce the congestion in hospital area.	Todd Litman, 2016
8	The parking management should construct elevated parking construction in hospital area.	Mohd Affendy, 2012
9	Valet parking is necessary to be provided in hospital area.	Todd Litman, 2016

3.0 METHODOLOGY

This research consists of five chapters which are introduction, literature review, research methodology, data analysis & finding, and conclusion & recommendation. The sources of data come from journals, books, magazines, newspapers, the internet and other sources. The method used in this research is the quantitative method where the researcher will collect data through questionnaire. The population in this study was selected in Pahang. There are 10 public hospitals in the State of Pahang but the researcher will focus on Tengku Ampuan Afzan Hospital, Kuantan and Sultan Haji Ahmad Shah Hospital, Temerloh as the case studies. This study will involve 100 respondents, made up of the visitors and staffs at the two hospitals. The sample design of this study is using the convenience sampling of the non-probability sampling design to select the respondents. The respondents will be randomly chosen without any specific person or position of work. To be specific the parking study in this hospital area is based on the total number of parking lot.

4.0 ANALYSIS AND FINDING

The number of return questionnaires from 100 samples is 89 questionnaires. The demographic of the respondents is determined by using Descriptive Statistics. From the 89 respondents, 57.3% of the

respondents are male while 42.7% are female. In terms of age brackets, 25.84% comes from the ages of 18-24 years old, 49.44% from the ages of 25-44 years old, 22.47% comes from the ages of 45-64 years old and the balance 2.25% comes from the ages of above 65 years old. Besides that, in terms of race, most of the respondents are Malays which is 68.54% while for Chinese and Indians only 19.10% and 12.36% respectively. The highest level of education of the respondents is 28.09% for Diploma level then followed with Degree level which is 25.84%, for SPM and STPM level they are the same percentage which is 20.22% and respondents that have master level of education only 5.62%. For occupation, the highest percentage comes from the private sector, which is 37.08% while for government sector, is 28.09%, self-employed that is 22.47% and only 12.36% is unemployed.

The first objective of this study has been analysed in the literature review. The guidelines of parking should be followed by the parking management which is Kuantan City Council. The planning standard for parking is used as guidelines in the preparation for car parking space. It is divided into two standards, which is fixed guideline and temporary guideline. Usually, fixed guideline is guideline for planning that had set in development planning and must follow the standard. Meanwhile, temporary guidelines always changes according to certain suitability. In Malaysia, the provision for parking refers to manual of parking standard for parking that had been adapted by department of town and country planning. However, there are a few planning standards for parking used by local authorities in providing sufficient space whether for shop units, office or other activities. The application is dependent on suitability of standard in a development. The provision of parking has to give emphasis to ease of arrival to the location and the access road must be at a strategic location and at suitable distance for every users. The layout and design space must be innovative and responsive for every user and environments. It need to prioritize design and technology that are friendly to consumers and environmentally friendly.

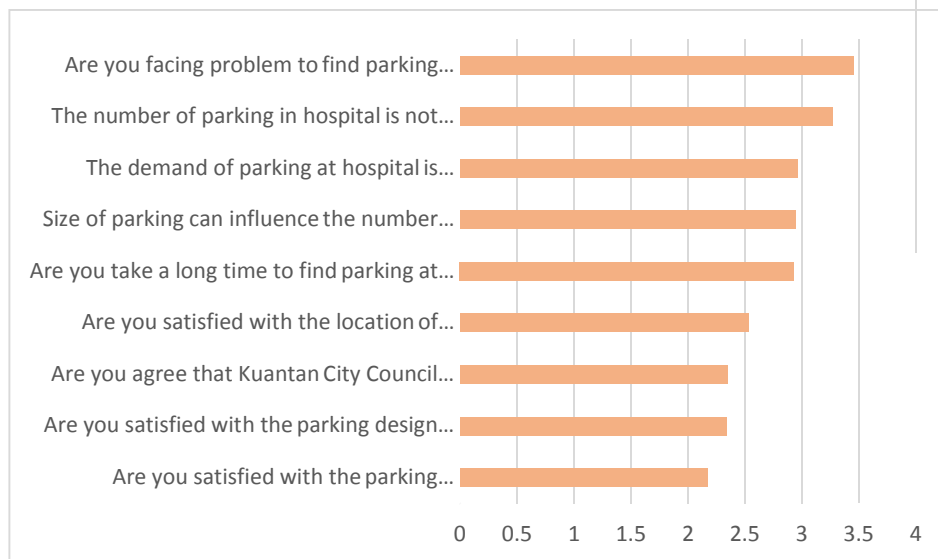


Figure 2: Satisfaction of parking space

Figure 2 shows the second objective of this study which is to measure satisfaction of parking space at public hospital. Mostly, the respondents face problem finding parking at the hospital. This is because the parking space at the hospital is full especially during peak hours. Besides that, the respondents were also not satisfied with parking space at Tengku Ampuan Afzan Hospital and Sultan Haji Ahmad Shah Hospital. This is because; the number of parking in this hospital is not enough to support many vehicles. Furthermore, the respondents were also not satisfied with the supply of parking at hospitals where the demand for parking at hospital is higher than supply of parking.

Therefore, a strategy is needed to develop improvement to solve the parking problem at hospitals. There are a few solutions to improve parking problem, which is by providing additional

parking areas for public hospitals. Besides that, the management of parking should follow the guideline parking in order to improve the parking problem. A means of achieving this is to construct multi-storey parking.

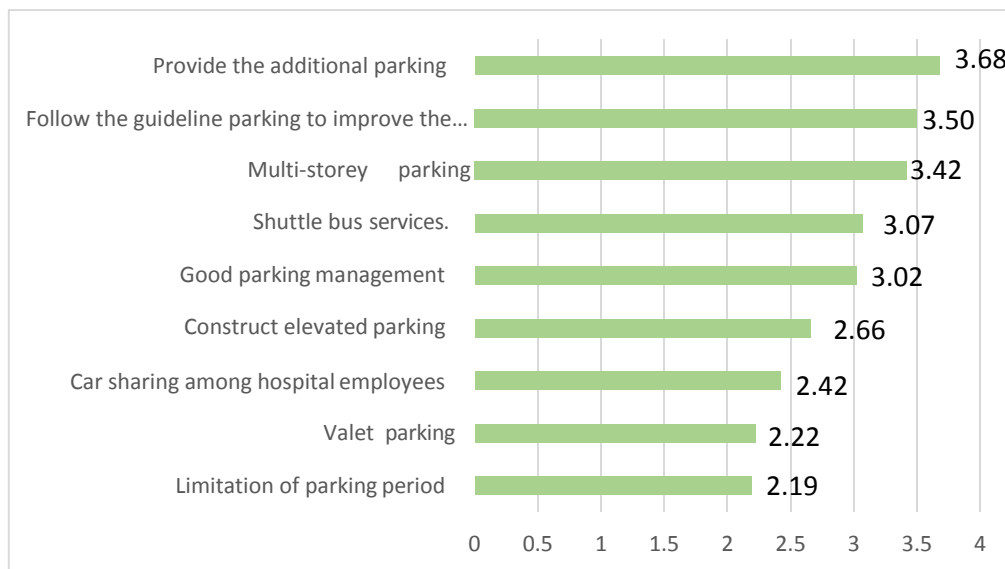


Figure 3: Sustainable parking management strategy

Figure 3 shows the findings for the third objective of this study. A percentage of respondents agree with the sustainable parking management strategies for public hospital to improve the parking problem. Most of the respondents were satisfied with the parking management strategies to improve the parking problem.

Based on Figure 3, the highest ranking in determinants of sustainable parking management strategy for public hospital is to provide the additional parking for public hospital which means the score at 3.68 is interpreted as high mean score. This strategy is the best strategy to solve the parking problem at public hospitals. This is because; the problem that happened at HTTA and HOSHAH is lack of parking. The existing parking lots are not enough and this makes traffic congestion more terrible and influences city image and cause distraction to the road users. The second determinants of solutions for hospital parking spaces is the parking management should follow the guideline provided for parking in order to improve the parking facilities. The mean score for the second strategy to improve parking problem is 3.50 which is interpreted as moderate mean score. In the guideline of parking, it sets the minimum number and dimension of parking needed.

5.0 CONCLUSION

In conclusion, after the data collection has been summarized to the finding and conclusion which is based on the sustainable parking management strategies for public hospitals. Most of the respondents agree with strategic parking management to improve the parking problems. Therefore, the parking management can solve the parking problem by using this study finding as guidelines. Based on the findings, it is concluded that the parking provided is not enough for the visitor needs. This is obvious during peak hours such as visiting hours. Based on research done, it was found that the parking demand is not balanced with the parking supply. As a result, visitors are faced with difficulties to find a parking lot, during peak hours. They have to wait for a parking lot to park. This will cause congestion and wasting visitors' valuable time. The expected outcome is the demand for parking is higher and the parking lots that have been provided are not enough for visitors and staffs of HTAA and HOSHAH. In concluding this study, the researcher will put forward a proposal for sustainable parking management strategy for HTAA and HOSHAH for consideration by the relevant authorities such as MPK and the

management of HTAA and HOSHAH. Numerous strategies were suggested to overcome or at least to lower down the number of parking problems for example sharing vehicles to the work place, and using shuttle bus.

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