Demand for Parking and its Contribution to the Search Parking Strategies: Case of UiTM Pahang

Nor Aziah Abd Kadir
Khalid Mat Pardi

ABSTRACT

The frustrations among drivers who are unable to find a parking space were common among the staff in UiTM Pahang especially when the demanded parking spaces were fully occupied. It may cause the drivers to circle the streets in order to find an empty parking spot and mostly will end up by parking illegally along the street. This situation creates havoc to the public where it may interrupt the traffic flow and increase the risk of accidents. Thus, this paper was to examine the factors that contribute to the parking search strategies used by the drivers to get to their intended destination. The observation and interview were done in order to get the information. As a result, we have concluded that the drivers used six strategies in searching for parking in the campus. The choices of strategies were based on the reasoned behaviour and automatic behaviour.

Keywords: *parking demand, search parking strategy, reasoned behavior, automatic behavior, illegal parking*

Introduction

Universiti Teknologi MARA (Pahang) has provided an enough parking space for lecturers at certain time. There are two zones of parking; Zone A which is located at the lecturers' building (Al Ghazali) and the other is Zone B near the Lecture Hall (Ibnu Zaibun). However, there is also one other place where parking is allowed although it is not a parking zone. It is the area at the One Stop Center (Balai Budaya) which being considered as Zone C. However, Zone C is restricted only for cars with 1.3cc and below and only applicable for those who are permitted. Therefore drivers with small capacity of car can actually park at zone C with no limitation in terms of numbers. UiTM Pahang has provided various parking spaces surround the lecturer Block (Al Ghazali). As lecturers, they have few choices whether to park at Zone A, Zone B or Zone C. Although there are several parking facilities near the lecturers' block (Al Ghazali), parking problem still exists. The most arising complaints are coming from lecturers who park at zone B. It seems that the Zone B is the most convenient area demanded for parking. However the problem occurs when the parking area (Zone B) is fully occupied. Since the zone provides many advantages to those who park their car there, drivers will try to use any strategies in order to get the parking space (Polak & Axhausen, 1990).

Thus, the objective of this paper is to identify the factors that contribute to the parking search strategies among lecturers in order to fulfill their demand for parking. This paper may help the administration in constructing the future parking system which can satisfy the users. If we understand how people make parking decision, we will be able to provide parking facilities that meet the drivers' needs and wants and also the needs of the management in terms of mobility management, safety and accessibility.

Literature Review

Polak and Axhausen (1990) used the exploratory model to examine the relation between parameters of the search process such as search time, egress time, number of opportunities examined, characteristics of the chosen parking, and the characteristics of the driver and his activity, as a basis for population segmentation. In their review for past literatures, Polak and Axhausen (1989) explained on the term 'parking search strategy'. It denoted a set of rules adopted by a car driver to find parking space for a particular activity on a particular day. The rules cover the desired initial type of parking, the route towards the desired type of parking and behavioural routines and decisions, if the desired initial type of parking is not available. Car drivers will prefer certain search strategy, but will use others if necessary. ANWB (2003) annual report of The Royal Dutch Touring Club and Snijder (2000) expected some important factors that may determine the parking choice. It was based on the proximity of the parking location to the destination, objectives and subjective safety of the parking area and room maneuverability. However, this claim is contradict with Van der Goot (1982), where he stated that the parking choice was not totally depend on the location but the type of parking should be

considered. On the other hand, Hess & Polak (2004) referred to Hunt (1988) later have come out with different types of parking such as access time, search time, egress time and parking cost. It was quiet similar to Polak and Axhausen (1990).

In our approach, we referred to the Theory of Reasoned Action (Fishbein & Ajzen, 1975). In this theory, an individual can have an attitude regarding a particular object (a thing, person, or group, but also an event, standpoint or idea). While attitudes lead to the formation of a behavioural intention. Griffioen, et. al. (2004) defined behaviour as the choice of parking in a particular location. They discovered two types of behaviour: reasoned behaviour and automatic behaviour. Reasoned behaviour is behaviour that has been well thought before it is performed (based on their intention) such as towards the characteristics of a parking system (e.g. safety, distance of the location). Alternatively, automatic behaviour can be neither conscious nor intentional, and needs little attention in its execution. Habit is one type of automatic behaviour. Characteristic of habits (as with most automatic behaviour) is that they are performed without being preceded by a conscious thought process and, thus, directly influence (parking) behaviour.

Methodology and Data Collection

In order to get some information regarding the factors and parking search strategies among the lecturers in UiTM Pahang, external observations were used. However, sometimes, the behaviour of the individual driver remains random, as the observers do not have the possibility to know what are the plans of the drivers are. Therefore, the observers have to impose external rules to make sense of the observation. The examples of such external rules are parking search begins with the driver passing the cordon and the first free parking space or search distance is the excess journey distance over the shortest possible distance (May & Turvey, 1985). Then, an interview related to the driver perception was done. It was a survey that covers subjective estimates of access, search and egress times, descriptions of the parking choices and open ended or closed questions on the search strategy adopted.

The only way to interpret correctly the empirical observations is by interviewing the observed driver at the parking space. However, the driver can only supply a subjective interpretation, which is open to post-hoc rationalization if the driver assumes that the interviewer might consider the observed search irrational or wasteful, or if the driver is too embarrassed to admit the rules followed.

Findings

The findings of this paper were presented based on the research questions. Table 1 and Table 2 represented the factors that contribute to the parking decisions among lecturers at Zone A and B. Referring to Polak and Axhausen (1989) the factors that contribute to the parking decisions are access time, search time, egress time and safety. These factors are explained by the reasoned behaviour. The majority of the lecturers (about 30%) parked at zone A as it was easy to access. The parking spaces were always available and they do not even bother about the walking distance even though it was quiet far to their destination. At Zone B however, the results were different where 50% chose to park there because it is the nearest location to their destination even though they have to compete in getting the parking space.

Table 1: Factors that contribute to the parking decisions among lecturers at Zone A.

Which of the following that best describe the factor to your parking choice? (tick one box)	
Items	**Percent**
Access time (to the parking area)	30
Search time (for a parking space)	25
Egress time (walking distance to the final destination)	15
Safety	30
N = 20	

Table 2: Factors that contribute to the parking decisions among lecturers at Zone B.

Which of the following that best describe the factor to your parking choice? (tick one box)	
Items	**Percent**
Access time (to the parking area)	10
Search time (for a parking space)	10
Egress time (walking distance to the final destination)	50
Safety	30
(N=20)	

Moreover, since the parking demands are limited and lecturers have to compete in order to get the best parking spot, various strategies have been implemented. Table 3 and 4 below showed the best statement representing drivers' strategies to find the best parking space in Zone A and B. From the result, the most popular statement was, the driver used to find the nearest parking space to their destination while the least statement was others. This statement was described by the respondents as they usually choose the on-street parking (illegal) as it led them to the nearest spot to their destination as their automatic behaviour. Whereas in Table 3, the respondents' socio- demographic characteristics were observed. This is to show the variety of the respondents who answer the questions based on the interview sessions that have been done.

Table 3: Search Strategy in Parking Lot Zone A

When you go into Campus, which of the following statements best describes the way you attempt to find a parking space? (tick one box)	
Items	**Percent**
I always go to the same parking space	10
I drive to my destination and then start looking for a place to park	30
I go to the nearest car park of my destination	45
I usually drive around the streets looking for a free space	10
Others	5
(N= 20)	

Table 4: Search Strategy in Parking Lot Zone B

When you go into Campus, which of the following statements best describes the way you attempt to find a parking space? (tick one box)	
Items	**Percent**
I always go to the same parking space	10
I drive to my destination and then start looking for a place to park	25

I go to the nearest car park of my destination	40
I usually drive around the streets looking for a free space	20
Others (N= 20)	5

Table 5: Socio-demographic characteristics of the participants (on street survey)

Criteria	Options	Percent
Gender	Male	25
	Female	75
Age	20-30 years	20
	31-45 years	60
	Above 45 years	20
Employment Status	Package Lecturer/Contract Lecturer (DM 41 and DM45)	20
	Permanent Lecturer (DM 45)	75
	Permanent Senior Lecturer (DM52 and above)	5
(N=20)		

From the interview sessions, participants were asked to describe the way in which they would search parking spaces on campus. In the analysis of their description, six distinct search strategies became obvious.

Strategy I: The drivers will go directly, mostly without searching to the `inside tip', which is as a rule near to their destination. The example is a parking space for the disabled or a space reserved for someone with a certain position such as coordinator's. However, people know that the parking is not being used by that person.

Strategy II: The drivers concentrate on any parking opportunities, which always offer a parking space without need to search. The drivers are willing to accept long walking distances to avoid the search for the parking space.

Strategy III: The search is anchor to a parking facility always offering a parking space, but the drivers make use of available on-street opportunities. The drivers do not engage in random circling.

Strategy IV: The drivers approach their destination on a variable search route adapted to trip purpose and duration (in contrast to strategy III). If the search were unsuccessful, the drivers use, especially for short stays, illegal parking space in close vicinity to their destination. The search times associated with this strategy can be long.

Strategy V: The drivers start circling around their destination. The radius of the resulting spiral remains small. Long search times are combined with short walking distances. Off-street facilities are considered to be the last resort after a long unsuccessful searches.

Strategy VI: For short stays, the drivers park after a short search in illegal spaces. The risk of being fined is accepted for short search and walking times.

For shorter stays the respondents chose predominantly Strategies I, III and VI. Two of those strategies including illegal parking is an option. The risk of being fined is judged to be small to be neglected by these respondents because for them, the traffic officers of UiTM are tolerable in dealing with lecturers' cars. Most of the drivers do not care about the effects of their acts when they park their cars at illegal parking areas as long as it is near to their destinations.

For longer durations the majority of the drivers chose Strategy II. The remaining respondents chose Strategies III and V in equal proportions.

The quasi-random circling search did not play a big role in the discussions. The respondents seemed to feel embarrassed to admit using this strategy, which is generally disapproved of. The true share of this strategy might be substantially higher.

Conclusion

Such a study should encompass not only a before and one after stage, but multiple after stage to find learning effects. Such a study would have to include drivers not using the signed parking facilities to search for their reasons to ignore the parking guidance system.

This paper has described the concept of the parking search strategy as an approach used by car drivers to guide their efforts of finding a parking space. Six strategies were identified on the basis of a small number of in-depth interviews. The implications of these theoretical and empirical results on the design and effectiveness of parking guidance systems should be discussed. The management should discover the best environment and parking condition offered to the public. The finding showed that a more cautious judgements of the potential benefit of such systems is necessary for normal workday conditions.

As a conclusion, drivers weigh the pros and cons of the various options and choose the parking location most suited to their needs. In order to understand why people park where, understanding how people make reasoned parking decisions, and upon which factors these decisions are based, is essential. In continuing such research, we provide support to relevant parties, in the planning and realisation of an efficient, cost-effective and driver-friendly parking network especially in and out campus parking condition.

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NOR AZIAH ABD KADIR, KHALID MAT PARDI. Universiti Teknologi MARA (Pahang).