

DIFFERENT PARKING POLICIES CONTROLLING TRAVEL RESPONSE BEHAVIOUR – A REVIEW

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Abstract—Modern world is considered as the era of science and technology. Science and technology have brought notable researches, innovations and improvements in each and every field of human accomplishment. It has brought advancements in the field of means of transportation. The number and type of vehicles are increasing day by day. Such advancements have demanded suitable parking system. Parking system is the need of hour. Parking can play a very crucial role in the betterment and economic development of an area. It has been considered as a profitable business for both public and private sector. Parking system is the act of providing sufficient space to vehicles in order to provide security and convenience to the visitors or vehicle owners. The present paper briefly discusses the various parking issues and parking policies controlling travel response behaviour. The study is conducted with the aim to solve the increasing parking problems. Suitable and well-designed parking system is needed for a good transporting system. Lack of parking area and facility puts everyone in a chaotic condition. Parking policy is considered as the fundamental principles and rules around which a parking system runs by controlling its barriers and solving problems pertaining to parking. Parking can be significantly controlled, arranged, and managed through various sorts of parking policies. These policies include space, spatial distribution, cost of parking, time or parking time, residential parking permits, parking charges, provision for staff parking and policy level. Parking policy can be taken as a fundamental requirement for a transport policy which intends to attain objectives concerning with transportation. It may however be used in promotion of aims in other fields such as economic aims which are attained by provision of suitable parking system which ultimately leads towards new developments..

Keywords: Parking System, Congestion, Mobility, Economic Development. Space, Spatial Distribution, Parking Cost, Time Limit, Employ Parking, Parking Policy...

1. INTRODUCTION:

The term 'Parking system' can be defined as "Any building, structure, land, right of way, equipment's or facility used or useful in connection with the construction, enlargement, development, maintenance or operation of any area or building for off-street parking of motor vehicles." The rapid increasing population in the big and metropolitan cities also increases the usage of vehicles. It raises the problem of parking which leads

to traffic congestion, driver's frustration, inconvenience and air and sound pollution. On the weekends, special occasions and festivals, the scenario of various public places such as shopping mall, multiplex cinema hall, main market area and hotels creates more parking issues and problems. The families are getting smaller but the total numbers of vehicles are increasing per household size. Such situations too demands suitable parking system.

In this modern and frantic world, everybody wants to save time and energy. Two wheeler and car parking consume valuable time of the people. It takes a lot of time to search appropriate parking space having. In urban areas, the land space is much less in comparison to the population of that area. Therefore, it is very hard to find a suitable parking area. Such situations lead to different barriers and hindrances.

1.1 Types of Parking:

There are various types parking system; some are these:

- Off-Street Parking (Private)
- Off-Street Parking (Public)
 - i. Short Stay
 - ii. Long Stay
 - iii. Contact
- On-Street Parking (Controlled/Paid)
- On-Street Parking (Uncontrolled/Free)

1.2 Parking Policy:

"Parking Policy" can be considered as one of the most significant ways for the town planners and policy makers to manage and control the travel related requirements and traffic in cities. Industrialization, better facilities, development etc. has brought a rapid increase in the population which leads to increased motor vehicle traffic. It gave rise to the demand of better parking system and better parking policies. Parking can be controlled outstandingly by adopting different parking policies. These policies consider the available space and its

distribution for vehicles. These policies also include parking cost, time limit, taxes and provision for employee parking.

Marsden says, “Parking policy should not be developed in isolation but as part of local and regional spatial and transport planning processes. Parking policy acts as glue between the implementation of land-use and transport policies.” (Marsden, Greg, 2006).

1.3 Objectives of Parking Policy

The Parking Policy of any area is designed in order to attain certain pre-determined aims and objectives. Some of most important objectives are discussed as under:-

- i. It should provide better accessibility.
- ii. Well planned transport policy should support better and strong economy.
- iii. It should provide a clean, safe and pollution free environment.
- iv. It should provide equitable Society.
- v. Specific objectives that are perceived to be conflict are: Regeneration, Restraint, Revenue (Marsden, Greg, 2006)

1.4 Basic Principles of Sustainable Parking Policy and Planning:

Some of the fundamental principle upon which bases a sustainable parking policy are mentioned in the following heads:

- “Minimum parking requirements” contribute to parking management as it shift the cost usage of vehicles onto development and also onto non- driving persons.
- It requires direct and indirect cost which parkers should bear and not the common people or general public.
- Easily approachable gave rise to more and more parking. Suitable Parking system needs to provide better facilities for public transit, walking and bicycling.
- Increasing the supply encourages the more parking demand by lowering the prices.
- The travelling choices and price affects parking demand.
- The facility and charges of kerbside and off street parking are connected and have impact on each other.

1.5 Types of Parking Policy

1. Commuting and Parking Policy.
2. Parking policies for other commercial and leisure uses.
3. Residential Parking Policy.

Shiftan explains, “These include controls on the number of parking spaces, their spatial distribution, parking costs,

parking time limits, residential parking permits, taxes, provision of employee parking, and levels of policy enforcement acting as travel-demand management strategy.” (Shiftan et al. 2001)

2. LITERATURE REVIEW

Bonsall (1991) presented different methods of data collect which are used to gather information on parking areas. The researcher also explained the role of technology in the advancements of these methods along with the availability of dada in order to access the usage and effects of parking spaces.

Axhausen and Polak (1991) adopted stated preferences data to model travelers response’ to change in parking attributes. They showed that purpose of visits has a great impact on the value of time and consequent parking choices.

Shiftan et al. (2001) conducted their study by using stated preference survey for data collection. They used a model to take response of the drivers regarding the various parking policies alternate in terms of increase in parking costs and decrease in parking availability. They concluded, “Workers are more likely to change mode or time of travel than to change destination or activity. The non-workers are more sensible to policies than workers.”

Tong et al. (2004) presented a method which was based on cluster analysis. This method was aimed to build an aggregate parking accumulation profiles at car parking to increase the efficiency. The study revealed the number of cars parked at different location throughout the day. They stated, “Such profiles assist transport professionals in the decision process. Actually they can validate parking demand models assist the development of real time parking information systems or be used to evaluate various traffic management strategies.”

Marsden and Greg (2006) reviewed the related literature of the response of the drivers to a series of real or hypothetical parking policy. The researcher confirmed that there is no evidence to counter the assumption that parking restraints measure makes centre less attractive.

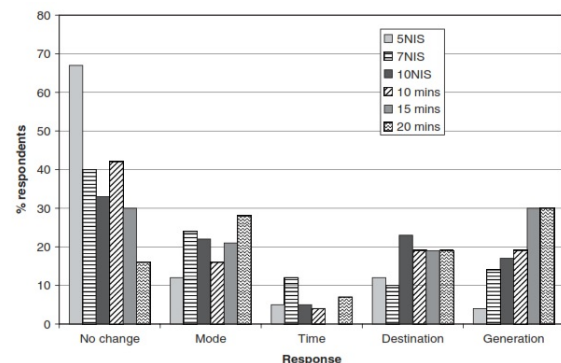


Figure 1. Non-work traveller responses to increases in parking price and walk time to destination.

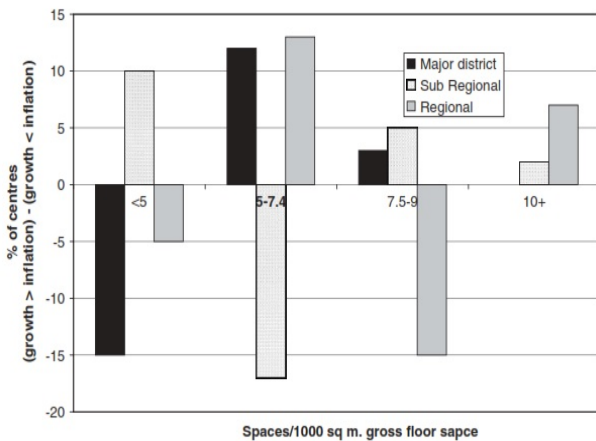


Figure2. Performance of shopping centers relative to parking space provision.

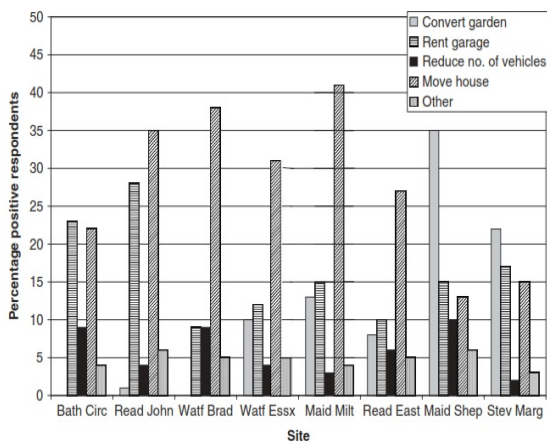


Figure3. Resident's response to increased congestion: Car owners

Alberta and Mahalel (2006) made an attempt to evaluate the variances in the attitude towards congestion tolls and parking costs in order to calculate the effect of all these policies on demand for tours and travel behavior. A stated preference survey was adopted in this study. They concluded, "Congestion tolls have a greater impact on travel behavior than parking fees and suggest that this is due to the fact that the latest are more accepted and that it is more appealing to choose another time for the journey (and avoid tolls) than to change destination."

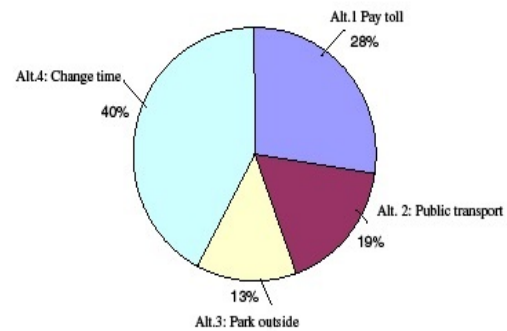


Figure4. Probability of choosing each alternative—congestion-toll scenario.

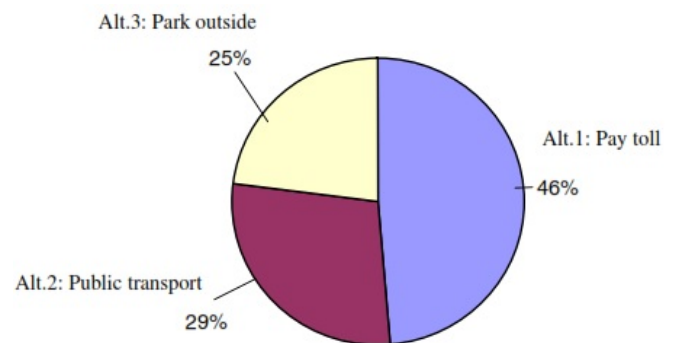


Figure5. Probability of choosing each alternative—parking-toll scenario.

Kelly and Clinch (2006) evaluated the difference of main impacts on different trips purposes initially and with the increasing of tariffs progressively. They stated that parking policy affects cars and congestion in the network clearly. On street survey data is used to measure such impact by the researchers.

Abdullah et al. (2008) explained an ideal method for parking site selection. It was done by using GIS, fuzzy logic and weighting criteria. It was done in order to determine suitable parking spots. Proper space for parking is selected for one of the high traffic regions of Esfahancity in Iran.

3. ANALYSIS AND DISCUSSION

The review studies revealed that limited research work has been done on parking standards. There noticed less investigations on the "successfulness of types of demand management measures in residential areas, particularly with regard to longer terms influence." The different studies confirmed that the availability of parking is an important factor influencing car usage. Many researches show that parking costs affects travel choices and encourage behavioural change. Controlled parking areas are perhaps larger policy measures in urban areas. The business parkers want to save

their time by parking at closer spaces in comparison with the leisure parkers. These studies also revealed that there is less evidence which indicate that parking fee reduces congestion. Some investigation directly noticed “the impact of parking upon traffic reductions, congestion and modal shift.” There is a need to study the “interconnection between sustainable transport measures and parking availability.” The investigations revealed that parking policies increase the turnover of parking area and provide a space easy to find by decreasing the number of parking spaces needed at a location. It leads to profit and lessen the traffic problems like congestion. Lastly, but not least importantly to notice that no single model has come into view as the stated preferred approach in parking research.

4. CONCLUSIONS

The following conclusions are drawn after going through the various reviews, analysis and discussion:

1. The study shows that changing of travel pattern positively impacts the travel response behaviour. The change in travel pattern may bring change in the response of travellers.
2. Some investigations reviewed that travel demand is a key factor in controlling travel response behaviour.
3. Traffic congestion plays a major role in formation of parking policies.
4. The car park management systems for controlling parking such as off-street parking facilities, parking guidance systems, meter revenue systems offers comfort for the users of vehicle and well organized usage of space for urban-based companies.
5. The responses of drivers in context with controlling parking were listed as change of parking location, parking duration parking type, making of trip, mode of travel, travel time, travel route, destination and car occupancy.
6. Parking has some limitations and ill impacts such as congestion, delay, parking accidents, environmental pollution (air and noise) and hindrances to fire-fighting operations etc.

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