

Comprehensive Study and Analysis on the Basics of Vehicle Parking Layout with Investigation of Problems and Solutions Related to Current Parking Issues

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Abstract – Nowadays, increase in vehicles that is resulting in the traffic congestion and creates parking problems in the urban cities. There is continuous need to facilitate public transport and adequate parking facilities. According to the current situations, the demand of parking doesn't meet the desired requirements as per survey. In present research work, we have conducted the Google form survey related to parking space issues to identify the efficiency, convenient, parking public needs with different types of parking. In India, the fact is, people are facing serious problems of lack of parking facility due to improper and inadequate design of parking. We observed that through our project, what are the major problems of parking and we suggest the corresponding solutions to meet parking demand. We also observed that area wasted, accumulation capacity & depth of stall with respect to 600 and 900 angled parking, which mainly help to overcome from major parking problems.

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1. INTRODUCTION

Concerning the population, India stands 2nd in the world. The growing community of India, urbanization, has introduced many recent problems, one of which is "Parking". The term, "Parking" indicates, placing of a vehicle temporarily in a particular place, designated for that purpose. The places where the cars are parked are termed as parking spaces.

In recent days, one of the challenges that we confront every is car parking. Besides the space for the cars, moving on a road, more significant is the problem in the critical area for parking vehicles, as private cars remain parked most of the time. While residential buildings nowadays allow spaces for temporary car parking, the main problem occurs in commercial places, where the number of vehicles that comes to the park is almost uncertain in an instance of a day. Parking is one of the significant problems which are created by increasing road traffic. It's the impact of transport development. The availability of less area in urban regions has necessitated the importance of Parking spaces, particularly in regions like Central business area. Thus, efforts have been given to find the alternatives of the vehicle parking spaces, using the

advanced technology of nowadays and modern construction techniques.

Great parking lots are safe, attractive, drain efficiently when it rains and are screened from residential areas. Striping and signage indicating regular and handicapped parking spaces, as well as direction of traffic flow, should be clearly marked. Safe pedestrian walkways, including easy access for wheelchairs, need to be separate from the traffic-flow areas. Parking lot design involves many considerations. All too often the only consideration for the design is developing a sufficient parking area to meet the required number of vehicles based on adjacent occupancy. Local regulations will dictate many of the planning and design decisions made by the planner or designer.

2. LITERATURE REVIEW

The resultant scarcity of parking space has begun to spill over to other aspects of urban life in form of congestion, fuel loss, dispersed land use and low air quality. Therefore, it is imperative to arrive at a solution that on one hand provides space for parking while simultaneously managing demand for parking on the other (1). Proper design of parking space is

very important for good transporting system. If there will be lack of parking space and facility then it will be a chaotic condition for everyone. But designing of any parking space is not an easy job. It seeks a lot of parameters which we need to know, we need to find out with the help of simple data by applying some technique.(3)

In this paper, an initiative has been taken to identify the major centers of congested car parking in major hubs of Kolkata and its probable measures of suggestion to combat the issue. This area. A suffering from an overall lack of parking space at time, resulting in drives having difficulty in finding a space and excessive traffic congestion. It can be concluded that provided measures are taken, the city can combat its car parking problem issue (2).

The procedure followed for the analysis of need of parking facility is depicted in methodology of their study. Manual survey as well as google form was submitted to more than 283 people and common results were considered Then analysis of data was done using pie charts and percentage calculation. In future scope of this paper design of parking.(4)

They are facing so many problems. Two of those acute problems is parking problem and traffic congestion. There do not have an accurate parking management in their metro cities and mainly for their developing cities. This paper focuses on such problems contextual to Kotacity. Kota is an emerging city. There are lots of industries and coaching centers situated in the city that contributes to its economy. Due to this there is an increment in population and number of vehicles that has resulted in the traffic congestion and parking problems in this city, street space hasn't increased so far, but population of this city is in seven-digit number.(5)

3. ANALYSIS:

3.1. Questionnaire survey

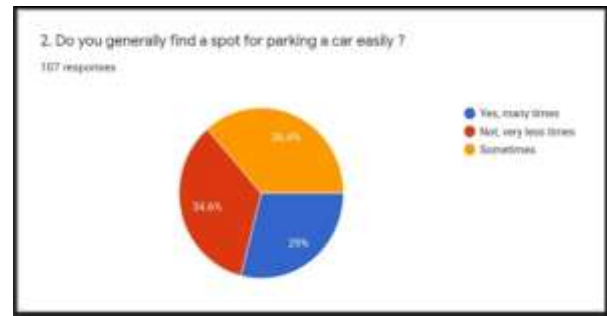
Survey was carried out by making a questionnaire regarding parking problem faced by the peoples, so their responses are recorded and it is represented in pie charts

A) Survey on Spot for parking

This question was framed to know that peoples find out the easily spot for parking

Total number of responses indicate are as follows:

Sr. No.	Categories	Contribution
1	Yes, many times	29%
2	Not, very less time	34.4%
3	Sometimes	36.6%



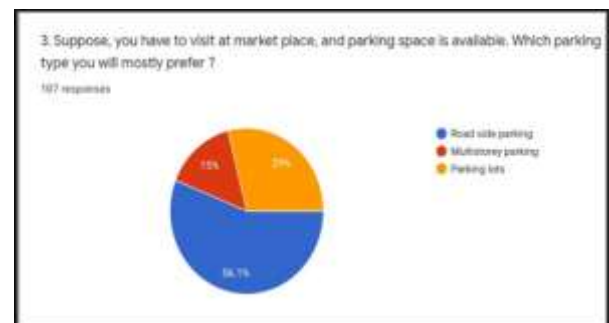
Survey on spot for parking

B) Survey on peoples prefer in parking type

This question was framed to know that peoples are mostly prefer the which parking type

Total number of responses indicate are as follows:

Sr. No.	Categories	Contribution
1	Road side parking	56.1%
2	Multi-storey parking	15%
3	Parking lot	29%

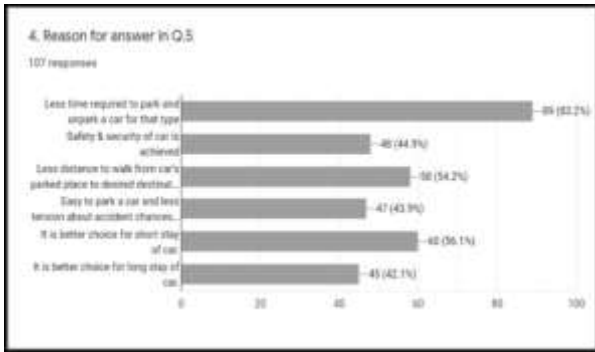


C) Survey on road side parking

This question was framed to know that why people choose that road side parking

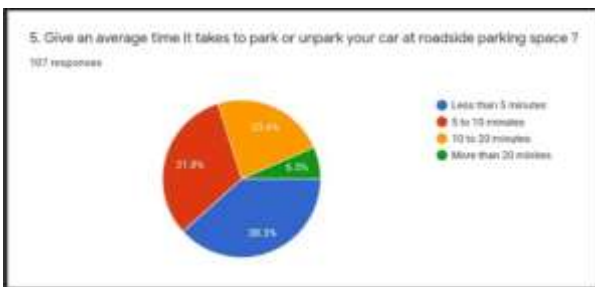
Total number of responses indicate are as follows:

Sr. No.	Categories	Contribution
1	Less time required to park and in park a car for that type	83.2%
2	Safety and security of car is achieved	44.9%
3	Less distance to walk from cars parked place to desired destination	54.2%
4	Easy to park a car and less tension about accident chance	43.9%
5	It is better choice for shortstay of car	56.1%
6	It is better choice for long stay of car	42.1%



D) This question was framed to know that average time on park or unpark car at roadside parking space. Total number of responses indicate are as follows:

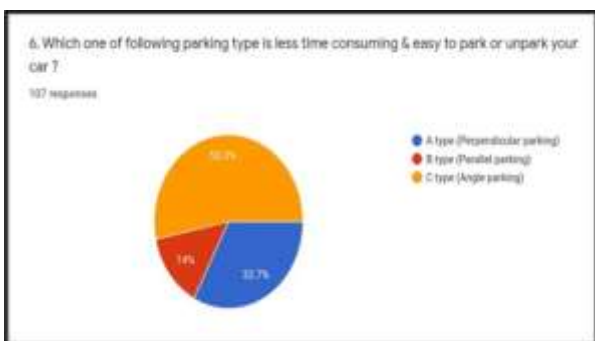
Sr. No.	Time	Contribution
1	Less than 5 minutes	38.3%
2	5 to 10 minutes	31.8%
3	10 to 20 minutes	23.4%
4	More than 20 min.	23.4%



E) This question was framed to know that which type of parking is less time consuming and easy to park or unpark

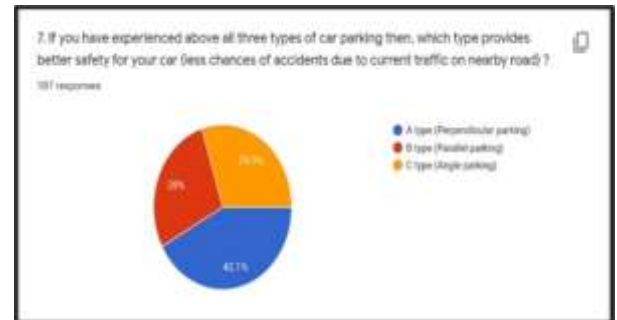
Total number of responses indicate are as follows:

Sr. No.	Parking type	Contribution
1	Perpendicular parking	32.7%
2	Parallel parking	14%
3	Angle parking	53.3%



F) This question was framed to know that which type of car parking provide better safety for car. Total number of responses indicate are as follows:

Sr. No.	Parking type	Contribution
1	Perpendicular parking	42.1%
2	Parallel parking	28%
3	Angle parking	29.9%



G) This question was framed to know that parking is not available to the destination then what distance people agree to park the car.

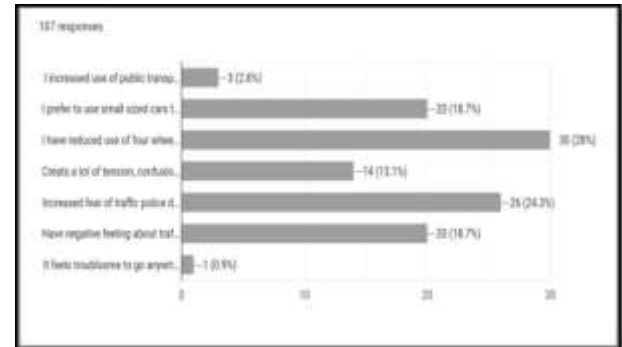
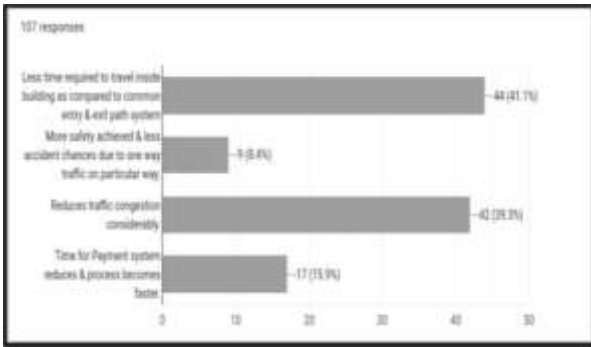
Total number of responses indicate are as follows:

Sr. No.	Distances	Contribution
1	Up to 50 meters from destination place	22.4%
2	Up to 100 meters	26.2%
3	Up to 250 meters	16.8%
4	Up to 500 meters	27.1%
5	Up to 1 km	3.9%
6	More than 1 km	3.6%



H) This question was framed to know that entry way & exit way of multi-storeyed parking system should be different and its reason.

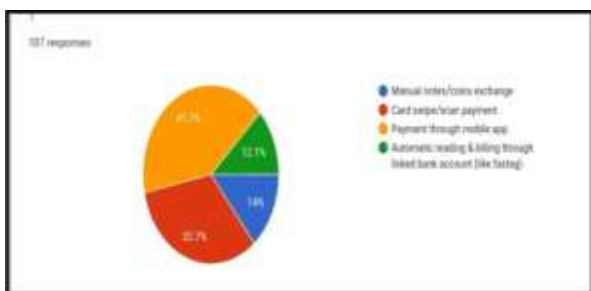
Total number of responses indicate are as follows:



I) This question was framed to know that which method is suitable for payment of parking system.

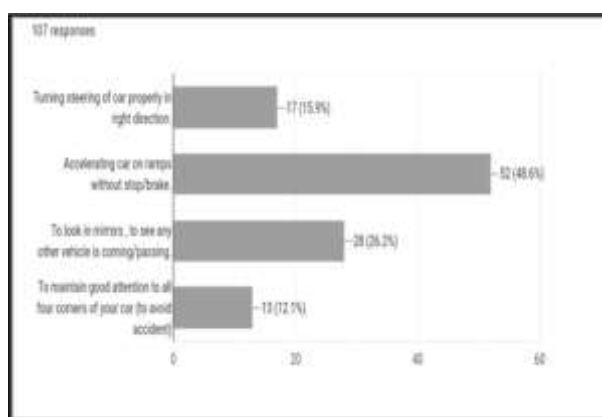
Total number of responses indicate are as follows:

Sr. No.	Payment Method	Contribution
1	Manually	14%
2	Card swap/ scan	32.7%
3	Mobile apps	41.1%
4	Automatic reading & Billing (like fastag)	12.2%



J) This question was framed to know that which action is more difficult at the time of parking.

Total number of responses indicate are as follows:



K) This question was framed to know that what are the frequent parking unavailability issues.

Total number of responses indicate are as follows:

CONCLUSIONS

1. For short term measures pay and park method will be done at peak hours to control and regulate parking.
2. For long term measures off street parking have to be provided near areas, within radius of 1km.
3. For less crowded cities perpendicular (90-degree) provides better safety
4. For large populated areas, use angle parking because a greater number of vehicles can be parked
5. Allocated parking spaces should cater for the average parking requirement based on size, provide for at least 20% additional spaces. Especially malls, gardens, public buildings & commercial properties.
6. Estate should be more effectively integrated into their surroundings by creating clear, eligible safe routes to avoid blockages.

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