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A Quantitative Analysis of the Impacts from Selected Variables upon Parking System

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Abstract: *Parking is characterized as the demonstration of uncoupling and halting autos and leaving those jobless. For Proper great transportation framework legitimate plan of the stopping is significant. In the event that there is deficiency of parking spot it will be a problematic circumstance for everybody.*

Be that as it may, the effective plan of parking spot isn't a simple undertaking. A number for of parameters are required for an appropriate plan of parking spot and discover them with any method with basic information. A methodical investigation of vehicle qualities and request and administrative measure to control cross might be helpful to leave designer and traffic organizer.

During the observation it is found that the parking bays are not marked at all observed sites. It is recommended that the parking bays should be marked properly so that the observed parking space can accommodate maximum numbers of vehicles at a given time.

I. INTRODUCTION

Parking count was conducted, noted the number of parked vehicles in each parking area under study. Whole survey time is divided into 30 minutes interval in order to determine the length of time for which the vehicles stay at each parking area.

During the actual survey, the parking data is collected through license plate method is very convenient method for parking data collection.

This method is helpful in characterising the type of vehicle such as commercial vehicles and personal vehicles. Data collected manually on tally sheet for arbitrary five working days i.e. Monday to Friday, because during week days numbers of trips attracted rather weekends are more.

II. LITERATURE REVIEW

Qin, Xiao, Gan & Pan (2001) Beijing key laboratory of traffic engineering, Beijing University of technology, Beijing, China. (journal).

Chakrabarty et. al. (2010) the article shows various behavioral characteristics related to parking demand, location, and urban areas.

Kolhar (2012) Management Plan off street parking for the city of Dharwad, Karnataka, India.

Olugbenga et al. (2015) found that demand for vehicular parking spaces has hardly been given proper attention in the dynamics of physical and land-use development alongside demographic and socio-economic development of communities and cities.

Pratik D Vagadia (2015) has discussed that most of vehicles are parked during peak hours, because of trade and some other regions.

Shejun Deng (2016) Analyses the main influence factors of the vehicle in the process of entering in the parking lot.

Mahak Dawra in the case of India, the main focus should be on distributing the parking spaces, rather than restricting the parking spaces that is major attraction points which cannot be done.

III. RESEARCH METHODOLOGY

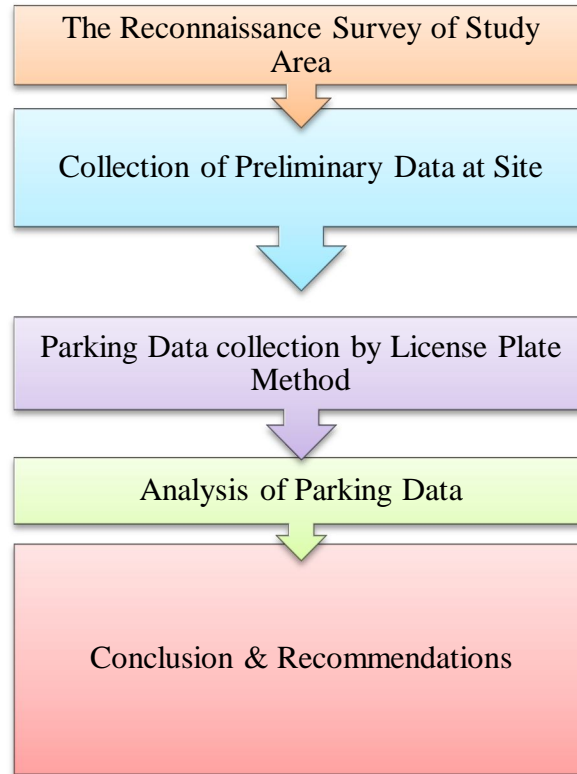


Fig.1: Research Methodology.

IV. STUDY AREA

Haryana is a state in northern India. It is the most crowded state in India with around 200 million occupants. Rohtak locale is to a great extent rural region of Uttar Pradesh state in northern India of national capital district having territory around 1,179 meter square. According to the evaluation 2001 the number of inhabitants in the city 32.91 lakh while in 2011 is 46.82 lakh.

Study area of this work is under bridge parking of HAPUR ROAD at OLD BUS STAND Rohtak. This parking area having many public and semi-public offices or sites like RDA office, Bus Stand, Hospitals, Hotels etc. adjacent to the parking lot.

This parking is consist of three parking, first is RDA staff parking (Two Wheeler),second is Auto Stand Parking-1 and third is Auto Stand Parking-2 and separated by median at underpass following are the three parking –

- A. RDA Staff Parking (Two Wheeler)
- B. Auto Stand Parking -1
- C. Auto Stand Parking -2

1) *RDA Staff Parking (Two Wheeler)*: This parking is authorized only for the RDA employees who has 2-wheelers. Table no. 2 shows the parking specification of RDA staff parking .the working days for RDA staff are Monday to Friday and parking lot having less parking demand on Saturday and Sunday.

Table 1:- RDA Staff parking specification.

RDA Staff Parking Specification	
Parking Dimension	25m×16m
No. Of Bays	76
Vehicle/Day (Appx.)	191

Parameters	Day1	Day2	Day3	Day4	Day5
parking volume (vehicles)	191	205	197	192	215
Average parking duration(min/vehicles)	109	117.21	112.08	123.125	116.37
Average occupancy (%)	63.18	65.87	65.43	64.81	68.56
Parking capacity(vehicles/hour)	608	608	608	608	608
Parking load(vehicles/hour)	48	50	49.7	49.25	52.125
Efficiency (%)	65.75	68.49	68.15	67.46	74.46

Result of RDA Staff Parking (Two Wheeler)

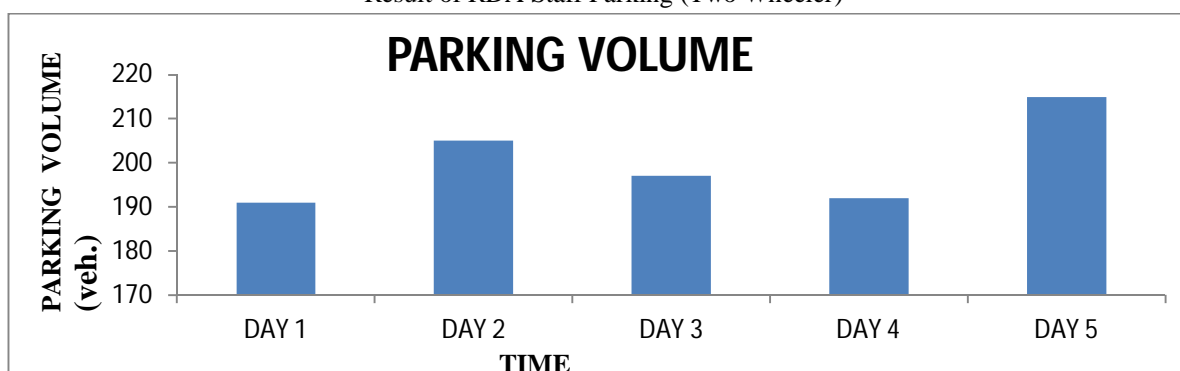


Fig. 2: Parking Volume result for RDA staff parking

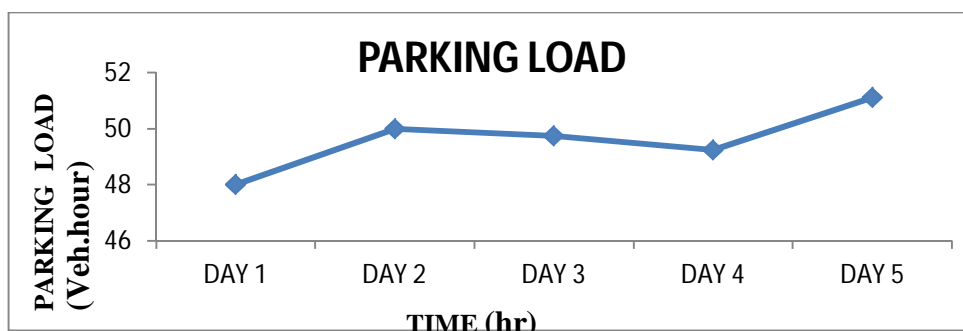


Fig. 3: Parking Load result for RDA staff parking

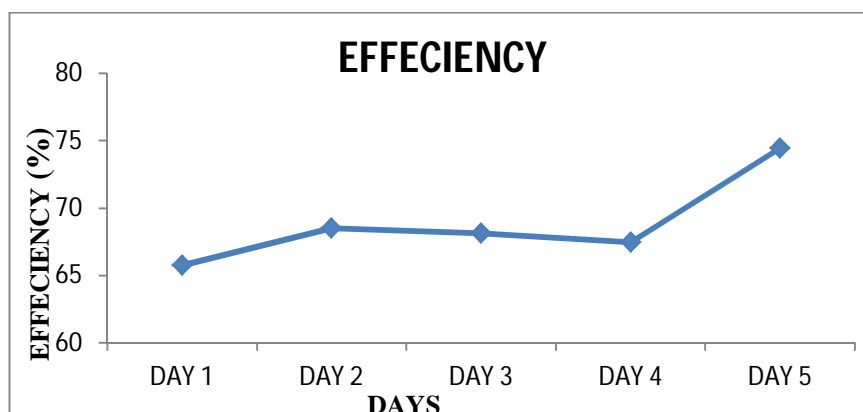


Fig. 4: Parking Efficiency result for RDA staff parking

2) Auto Stand Parking- 1 (Auto Stand): Auto stand for hire and go.

Table 2:- Auto stand parking -1 specification.

Auto Stand Parking -1 Specification	
Parking Dimension	21m×16m
No. Of Bays	40
Vehicle/Day(Appx.)	90

Parameters	Day1	Day2	Day3	Day4	Day5
parking volume (vehicles)	85	73	70	81	90
Average parking duration(min/vehicles)	159.88	165.20	170.57	170	147.33
Average occupancy (%)	70.78	62.81	62.81	64.06	69.06
Parking capacity(vehicles/hour)	320	320	320	320	320
Parking load(vehicles/hour)	28.98	25.12	24.87	25.93	27.62
Efficiency (%)	70.72	62.81	62.18	64.84	69.06

Result of Auto Stand Parking-1

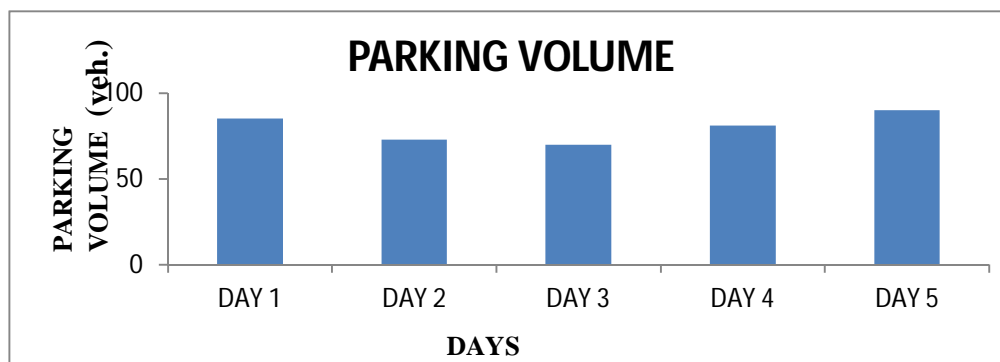


Fig. 5: Parking Volume result for auto stand parking -1

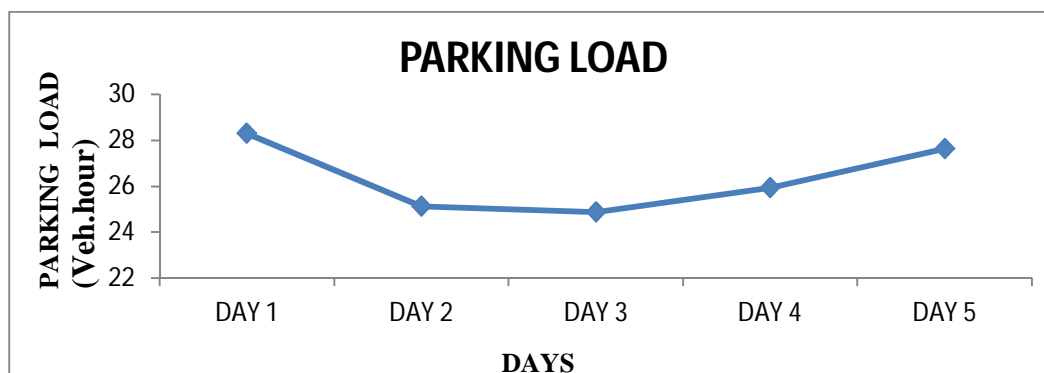


Fig. 6 : Parking Load result for auto stand parking -1

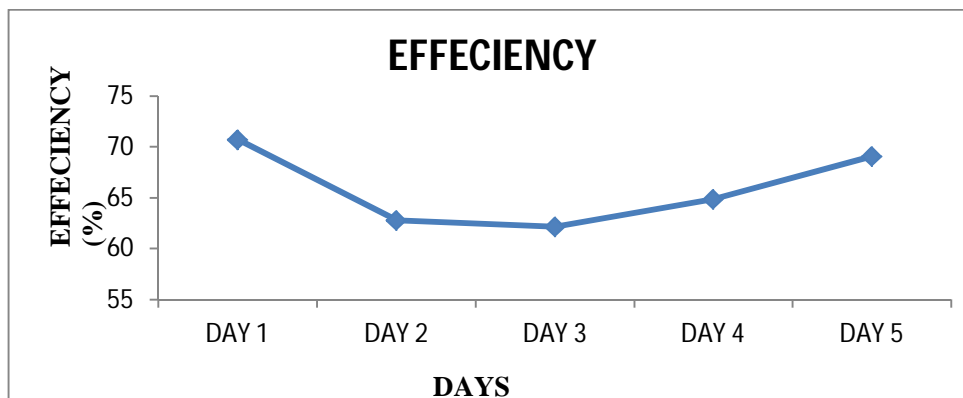


Fig. 7: Parking Efficiency result for auto stand parking -1

3) *Auto Stand Parking - 2 (Auto Stand):* Auto stand for hire and go.

Table 3:- Auto stand parking -2 specifications.

Three Wheeler Parking 2 Specification	
Parking Dimension	25m×16m
No. Of Bays	43
VEHICLE/DAY (Appx.)	71

Parameters	Day1	Day2	Day3	Day4	Day5
parking volume (vehicles)	63	71	58	65	61
Average parking duration(min/vehicles)	226.66	212.95	238.96	210.92	220.81
Average occupancy (%)	73.12	73.25	67.12	66.43	65.25
Parking capacity(vehicles/hour)	344	344	344	344	344
Parking load(vehicles/hour)	31.43	31.50	28.87	28.56	28.06
Efficiency (%)	73.11	73.25	67.13	66.41	66.26

Result of Auto Stand Parking -2

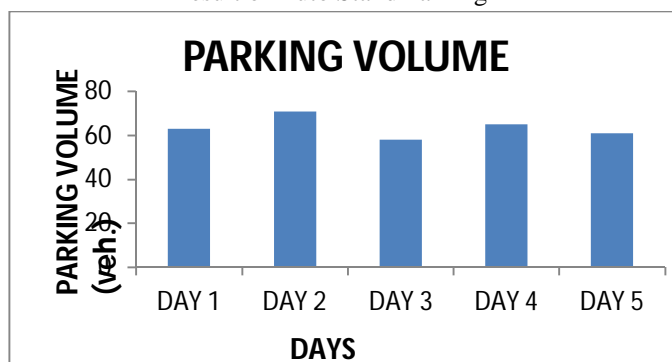


Fig.8: Parking Volume result for auto stand parking -2

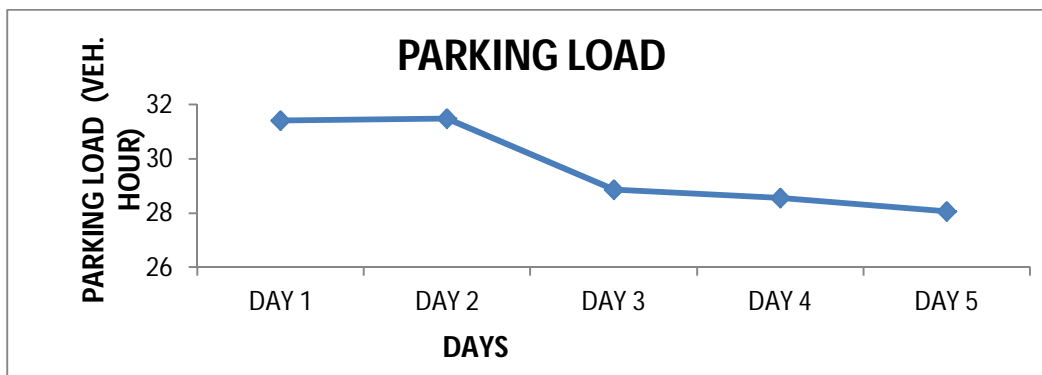


Fig. 9: Parking Load result for auto stand parking -2

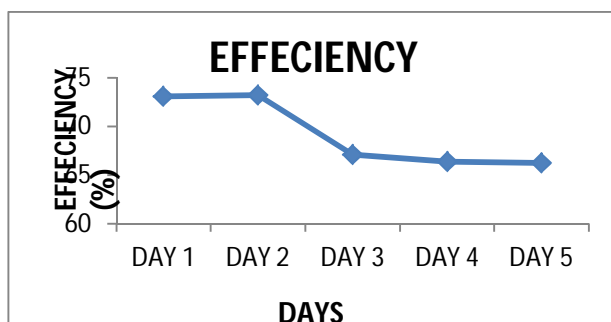


Fig.10: Parking Efficiency result for auto stand parking -2

V. CONCLUSION

- A. During the analysis it is found that the overall average parking efficiency of five days comes out to be 68.75 % for parking 1(two wheeler) and efficiency for parking (2) & parking (3) are 65.22% and 69.22% respectively, which can be considered as satisfactory parking efficiency. Though parking 1 is designated for RDA staff and the number of working staff at RDA is fixed, so parking lot for RDA staff parking is likely to be less fluctuated in future.
- B. During perception it is discovered that the vehicles are left in aimless way at leaving 2 and leaving 3, which causes reduction in parking efficiency. It is recommended that the parking entry or exit should be provided at mid of U –turn under the bridge.

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