Underutilization of Multilevel Car Parking- A Case Study of Kankaria Multilevel Car Parking, Ahmedabad

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Abstract

Vehicle ownership in India is increasing at fast rate and by year 2030 it will cross 2 billion mark. With such huge influx of vehicles, parking problems will also rise. Parking lots and underground parking facilities are already crowded and due to less space available new solutions were suggested. Among all solutions multilevel car parking system was implemented in many cities of India, but the end results were disappointing due to lukewarm response from car users. Lack of proper enforcement and minimal awareness are one of the major reasons. It is therefore necessary to study these reasons and make suitable changes in existing facility. This paper discusses underutilization of multilevel car parking facility in Ahmedabad and its various reasons along with suggestions.

Keywords- Enforcement, Implementation, Retrieval Time

I. INTRODUCTION

India, the second most populated country in the world houses more than 40 million vehicles. Since it has strong domestic market, the growth is expected to be sustainable and increase over the next few years. However infrastructure available for vehicles like roads and parking spaces have been a challenge in most of the Indian cities. Country faces severe problem of congestion due to growth of personalized vehicles. The traffic management in the many cities is marked by introduction of a series of one-way traffic system. The one–way traffic system has, however, implications on pedestrian safety and fuel consumption. One-way traffic is generally desirable when there are complementary roads and the additional traveling distance is not more than 300m. Hence, whenever such systems are introduced, the interests of public transport modes and pedestrians are duly addressed. Demand for parking in the CBD areas of Indian cities is twice the supply. Acute shortage of parking supply is witnessed in commercial areas and indiscriminate parking impedes free flow of traffic and cause accidents.

CONCEPT OF MULTI LEVEL CAR PARKING

Multi-level car parking system is to maximize car parking capacity by utilizing vertical space, rather than expand horizontally. However, with land in metros and 'A' grade cities becoming scarce and dearer, and plots getting smaller, conventional parking is proving infeasible. Sometimes it is found that the ramp or car lifts eat up much parking area that no increase in parking capacity is possible. In such case, mechanized car parking systems make creation of extra parking capacity feasible. In multi-level car parking system cars are driven at only one level for parking or retrieval. Cars are parked in steel pallets and a target pallet comes up or down to the driveway level at the press of a button, for parking or retrieval.

Technologies used for automated parking systems are of the following types:
1. Puzzle Type or Modular
2. Elevated Type or Tower
3. Multi-Level Floor Parking
4. Multi-Level Circulation Automated Parking System
5. Rotary type
6. TD (Stacker) System

Automatic multi-storey car parks provide lower building cost per parking slot, as they typically require less building volume and less ground area than a conventional facility with the same capacity. However, the cost of the mechanical equipment within the building that is needed to transport cars internally needs to be added to the lower building cost to determine the total costs. Other costs are usually lower too, for example there is no need for an energy intensive ventilating system, since cars are not driven inside and human cashiers or security personnel may not be needed.

Automated car parks rely on similar technology that is used for mechanical handling and document retrieval. The driver leaves the car in an entrance module. It is then transported to a parking lot by a robot trolley. For the driver, the process of parking is reduced to leaving the car inside an entrance module.

At peak periods a wait may be involved before entering or leaving. The wait is due to the fact that loading passengers and luggage occurs at the entrance and exit location rather than at the parked stall. This loading blocks the entrance or exit from being available to others. Whether the retrieval of vehicles is faster in an automatic car park or a self-park car park depends on the layout and number of exits.

II. NEED OF STUDY

PROBLEM STATEMENT
Many Indian cities are opting for multi-level structured car parks to meet the insatiable demand of parking. Parking deficit is cited as a reason to argue for more multilevel parking structures. At national level the Union Ministry of Urban Development has charted infrastructure development plans under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and included multi-level car parks in its menu of action. In the conventional planning process, it is accepted that parking demand will continue to grow as vehicles grow in numbers and therefore more parking spaces are needed. Most city governments are finding it difficult to make the multi-level cars parks work and deliver benefits. Abundant and cheap parking outside reduces its utilization. In Ahmedabad due to lack of awareness and enforcement the parking structure remains empty even after two years of inauguration.

III. OBJECTIVE OF STUDY

Kankaria multi-level car parking is in working condition from past two years yet it is not utilized to its full capacity. It is necessary to study the reason for its failure and underutilization.
- To evaluate different aspects of multi-level car parking system,
- To identify reasons of failure,
- To provide solutions and increase efficiency,
- To bring awareness about the facility in citizens.

IV. SCOPE OF STUDY

- Review literature for different existing multi-level car parking system in different cities.
- Studying different aspect of multi-level car parking.
- Enumerate different reasons of underutilization.
- Analyse study area location and existing problems.

V. STUDY AREA

Kankaria Lake is one of the most popular recreational spot in city of Ahmedabad. Every day proximately 30,000 people come to Kankaria lake while on Sundays more than 60,000 people throng it. A seven story multilevel parking for two-wheelers and four-wheelers was inaugurated on 10th June 2013 near the lake to eradicate parking woes. The building is replete with traffic barriers, ticketing machine, LCD displays and signage showing available parking space on each floor. A swipe card facility is also available. The parking facility initiated by AMC (Ahmedabad Municipal Corporation) can accommodate about 250 four-wheelers on one to seven floors, while 250 two-wheelers can be parked in the basement and ground floor. The parking complex is standing over 3900 sq.m. plot with 6650 sq.m built-up area. There are two lifts for vertical movement and 4 shuttles for horizontal movements. A parked car is brought to the exit gate in 3-4 minutes. Traffic barriers, ticketing machine, display of vacant slots, automatic parking system, and swipe

Card, reader etc. are used as technology support mechanism. The facility is being maintained by Gannon Dunkerley & Co

Figure 1. Multi-level car parking, Kankaria

VI. EXISTING PROBLEMS

The multi-level parking facility created at a cost of Rs. 28 crore near Kankaria lakefront has failed to serve its purpose due to lack of enforcement of its own notification by the traffic police.

Badly underutilized: It is unacceptable that a 28 crore structure remains grossly underutilised. While the structured parking remains nearly empty, the surrounding surface parking are choc-a-block with cars, two wheelers and auto-rickshaws. The new parking structure has simply failed to attract people. It has not helped in reducing parking congestion in Kankaria area.

Approach to the structured parking is narrow: The approach road to the multi-level car park is very narrow and has little navigation space. There is a lot of delay in approaching the structure, and in parking time. People feel comfortable parking their vehicle on the outer roads instead. As the multi-level parking is located very close to the lake front, people visiting the lake front mostly prefer to park their vehicles along the road. The perception is that parking inside will be chaotic and they may get stuck finding a parking space. [1] This discourages users from going inside the structure. This is also contributing to its suboptimal use.

Delays due to long retrieval time: It takes more time to park and retrieve the car from the multilevel car park. People report that inside the structure it takes 10 to 20 minutes to park. Retrieval is another 10 minutes. [1] The users who are still not used to the system get impatient about waiting for the retrieval of the cars and avoid parking in it. Thus under-utilisation of the multi-level car park continues.

Technical Hurdles and delays: Sometimes due to technical fault the system stops working, due to which people are unable to retrieve their vehicles. Such hurdles spread negativity and thus people avoid parking in multi-level building.

Lack of enforcement: People who park their vehicles on road say the traffic cops who have a picket just about 60 yards away never stop them from doing so and they don't even know if the multi-level parking facility is functional.

Figure 2. Empty Multi level car parking

Figure 3. Roadside encroachments &
Illegal Auto rickshaw parking

VII.   RECOMMENDATIONS

Kankaria lake front is a hotspot among tourists as well as citizens. Every year in December it hosts carnival which attracts people from all over the state yet the multi-level car parking is not utilised to its full capacity. The main problem is lack of enforcement and awareness. Following are some recommendations which can ease out existing problems.

   a. Clear roadside encroachments and introduce "No Parking Zone" on alternate days.
   b. Make changes in parking charges and implement smart card system
   c. Bring awareness about multi-level car parking system.
   d. Traffic cops should strictly follow rules and insist visitors to use the facility.
   e. Discourage on-street car parking and list out benefits of multi-level car parking.
   f. Introduce attractive schemes for two wheelers.
   g. Educate users about the multi-level car parking mechanism and its key concept.
   h. Regular monitoring of the system.

VIII.   CONCLUSION

Multi-level car parking system is suitable for the Indian environment as the number of cars is increasing day by day. Hence it is adoptable as this system provides maximum density by storing large number of cars in the particular area. With the rising population and the number of cars, more intelligent ways need to be devised to combat the present problems. Such parking systems are seen as the best solution in the present day scenario for multi-storied buildings due to their unique feature of increasing the parking space by almost 17 times. Some of the problems in this system is the absence of a regular body for monitoring the quality of such systems, lack of skilled labour to assemble them or factors like poor after-sales services and technical snags that limit market growth. Kankaria multi-level car parking can ease out parking problems in the area if the facility is fully utilised after considering different recommendations.

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