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Analyzing the Issue of On-street Parking in Commercial Areas: A Case Study of the City of Hyderabad, Pakistan

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Abstract

In developing countries, rapid urbanization has created an enormous pressure on land use, infrastructure and transportation. The fast growing ratio of motorized vehicles in urban areas is the main cause of environmental degradation. Almost 80% of the greenhouse gas emission is from vehicles in cities. In the city centers, on-street parking is considered the major cause of traffic congestion. The aim of this study was to evaluate the problems of on-street parking and disorderly parking at Central Business District (CBD) of Hyderabad city. The field survey methodology was adopted to perceive the current traffic problems in the city center and traffic count survey was carried out in both peak and off hours. The data was analyzed using descriptive statistics frequency analysis technique with the help of Statistical Package for the Social Sciences (SPSS). The findings revealed that increasing number of vehicles, on-street parking, improper parking, encroachment, inadequate parking space and poor condition of roads are the main causes of traffic congestion. The study bridges up the research gap of determining public views about on-street parking challenges in the context of Hyderabad, Pakistan and provides statistical results which may equally be adapted by policy makers and transportation planners in order to improve the traffic situation.

Keywords: on-street parking, traffic count survey, urbanization, traffic congestion.

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Introduction

Transportation plays an important role in daily life and without it the requirements of well-being would be difficult to attain (Asiyanbola & Akinpelu A.A., 2012). Transportation systems provide access to land and influence growth patterns by generating economic activities which help in shaping an area's economic health and quality of life (Transportation Planning Capacity Building Program, 2007). Sustainable development goals also address the issue of transportation and access to healthcare, education and other human needs (Institute for Transportation and Development Policy, 2015). Transportation has a direct and indirect involvement in fulfilling our daily needs; likewise, it also has some negative effects on our lives (Asiyanbola & Akinpelu A.A., 2012). The acceleration of urban motorization leads to worsening the urban traffic environment (Yan-ling, Xin, & Ming-chun, 2016). A fast-growing number of vehicles and limited parking lots form a sharp contrast and cause the phenomenon of "parking difficulty and parking disorderly" (Yan-ling et al., 2016). Parking facilities are also considered the indicator of sustainable and livable transport planning (Litman, 2015). The adaption of parking supply and demand management strategies offer solutions to the many problems faced by a sustainable transportation system, including transit performance, delay reduction, travel time reliability and capacity utilization (Steiner, 2012). Urban centers which include a variety of spaces such as markets, offices, churches, shops, and other similar spaces often create massive parking demands which, when unmet, become the major reason of on-street parking due to the unavailability of required parking space (Aderamo & Salau, 2013). Indeed, parking problems are among one of the most discussed topics by the general public (Liu et al., 2012). The main problem, therefore, is that the available parking capacity could not cater for the peak demand; hence, waiting and delay times, which are products of traffic congestion, are inevitably prolonged (Ogundare & Ogunbodede, 2014). This situation causes environmental issues such as pollution and affects the socio-economic life of the residents (Olorunfemi, Adebola, Edwin, .E, & Stephen, 2014).

Thwala et al., (2012) examined the causes of traffic congestion in the city of Ibadan and found on-street parking to be one of them. They used questionnaire survey to collect data and utilized descriptive statistics to get the desired results. In another study conducted in urban Ghana, lack of parking management systems and insufficient area for parking was found to be the major cause of traffic congestion. This study also adopted descriptive statistics with the aid of Statistical Package for Social Sciences (SPSS) and suggested to improve the prevailing traffic situation. Parking difficulties are considered as the most notable of urban transport problems (Thwala et al., 2012), a source of causing short or long run traffic congestion (Organisation for Economic Co-operation and Development (OECD) & European Conference of Ministers of Transport (ECMT), 2007) and closely related to environmental pollution (Liu et al., 2012). Therefore, the study examines the existing parking conditions of the study area and resident's perceptions about the parking conditions.

For the current study, Resham Gali, CBD of Hyderabad city was selected for a case study keeping in view the time and economic resource constraints. It

is considered as an old and longstanding market of Hyderabad, as some of its buildings were built in the pre-partitioned era (Rehman, 2016). Hyderabad city is the second largest city of the Sindh province (Parmar & Jalbani, 2005) and ranked as the eighth most populous city in Pakistan (Pakistan Bureau of Statistics. Government of Pakistan, 2017). On the globe, its position lies in between 25º 22´ 45" North and 68º 22´ 6" East (Korai, Mahar, & Uqaili, 2016). It is almost 150 km away from Karachi, the capital of Sindh province (Korai, Mahar, & Uqaili, 2014). Its geographical map is given below in Fig 1.

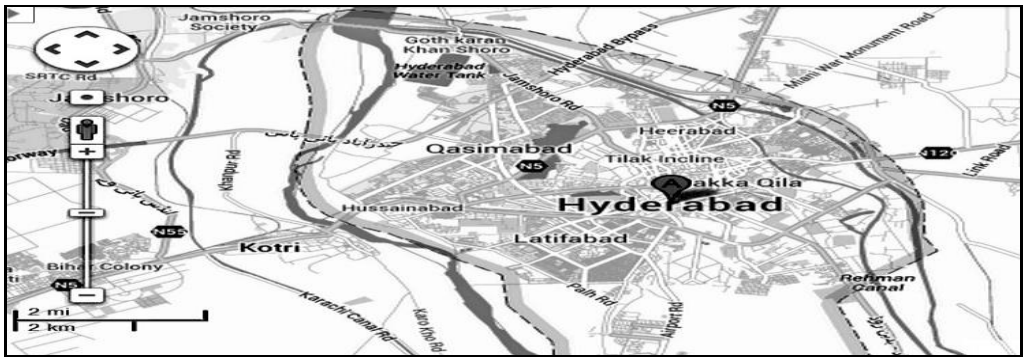

*Figure 1.*Geographical location of Hyderabad City (Korai et al., 2016)

In urban centers, on-street parking makes traffic situation chaotic. Sometimes, urban centers have narrow access roads with insufficient off-street parking services that may result in on-street parking. As Resham Gali is an urban center of Hyderabad city; thus, on-street parking may become inevitable which causes traffic congestion and travel time delay (Olorunfemi et al., 2014).

Keeping in view the present situation of the study area, the aims of this research was to determine the on-street parking problem and its challenges for travelers and common people. The hypotheses were developed considering the descriptive nature of the study.

H_0 = There is no parking problem leading to traffic congestion in study area
H_1 = Parking problem exists and leads to the traffic congestion in study area

2. Methods

In order to identify the presence of parking problems and traffic congestion, traffic enumeration exercise accompanied with questionnaire survey was carried out at some selected points (Osoba, 2012). Congestion points were identified through field observations in the study area. Field survey was done during the peak hours, that is between 07:00 AM and 10:00 AM and also between 04:00 PM and 07:00 PM as per the local area context, where people go to work in the morning and come back in the evening (Ogundare & Ogunbodede, 2014).

The study adopted convenience sampling technique for collecting information from the respondents (Asiyanbola & Akinpelu A.A., 2012). Convenience sampling allows researchers to select a sample of convenience in which subjects are selected as sample from the target population on the basis of

their accessibility or convenience to the researcher (Ross, 2005). Questionnaire was developed with inputs from academia and face to face interviews were conducted to fill up the questionnaire. The area selected for the current study was commercial and most of the people were not ready to give answers because of their busy schedule and because they were in a hurry to go to work/home. In order to cope up with this limitation, 100 questionnaires were filled during questionnaire survey and this decision was made due to the fact that the lowest number used in data analyses is 100-150 (Mahmoudi, Ahmad, & Abbasi, 2015). This small sample was considered suitable due to the homogenous surroundings of the selected commercial area. The collected data were analyzed using descriptive statistical techniques (Asiyanbola & Akinpelu A.A., 2012). In-out survey was also adopted for defining parking statistics effectively (Mathew, 2014).

3. Results and Discussion

The study area is a locus of various commercial activities. Therefore, it is imperative to understand the traffic situation of the area. The current research accepted the traffic enumeration exercise method for collecting data about the traffic flow. Peak and off hours were defined through survey and traffic counts were presented in graphs.

3.1. In-out Survey (01:00 PM to 02:00 PM)

The researcher conducted the traffic count survey to take a view of the ongoing traffic condition. The time between 01:00 PM and 02:00 PM was considered as an off-hour considering the traffic flow. According to the traffic count survey, 16 cars and rickshaws, 9 motorbikes and 5 Suzukis were observed to enter into the study area 'Hyderabad Market' (Resham Gali) during the given time period as shown in Figure 2. Through the traffic count survey, it was also observed that 2 Cars, 9 rickshaws, 4 motorbikes and 2 Suzukis exited from the study area (Resham Gali) as illustrated in Figure 3.

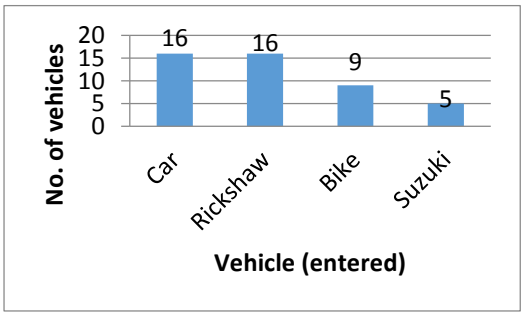

Figure 2. Vehicles entered in selected area

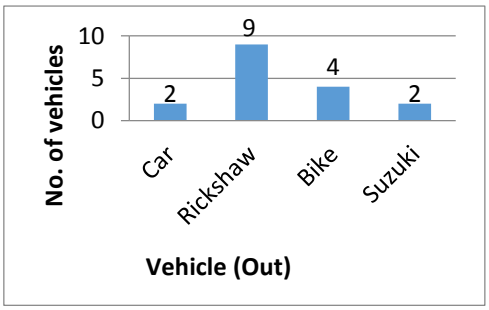

Figure 3. Vehicles exit from selected area

3.2. In-out survey (05:00 PM to 07:00 PM) Traffic count survey at peak hours, that is 05:00 PM to 07:00 PM, showed that 59 cars, 70 rickshaws, 21 motorbikes and 3 Suzukis entered into the selected area as shown in Figure 4. However, 46 cars, 65 rickshaws, 3 motorbikes and 2 Suzukis also left the selected area at peak hours, that is, 05:00 PM to 07:00 PM. The difference in the number of

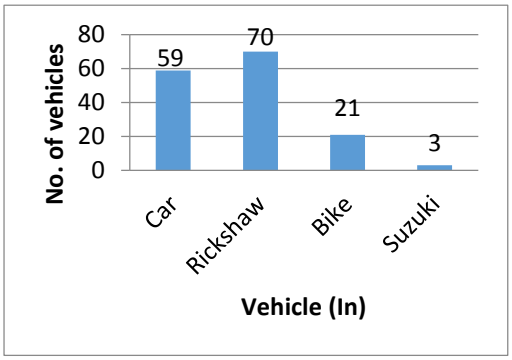

Figure 4. Vehicles entered in selected area

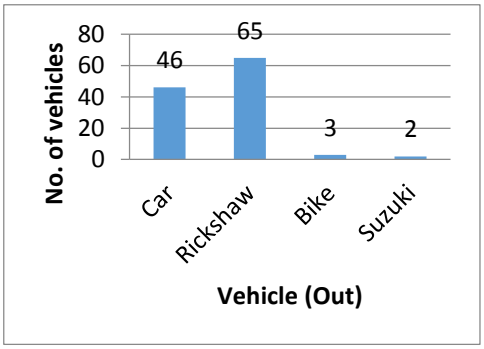

Figure 5. Vehicles exit from selected area

vehicles entered and exited means that some vehicles were parked on the road which is already very narrow causing traffic congestion and travel time delay.

3.3. Respondent's perceptions

Respondent's perception regarding on-street parking was recorded through questionnaire survey and data were analyzed to get the desired results. Only 17% of respondents said that there was no unfair parking in the selected area. However, a majority of them claimed facing unfair parking as 83% of them mentioned it as a problem as shown in figure 6. Nearly 33% of respondents

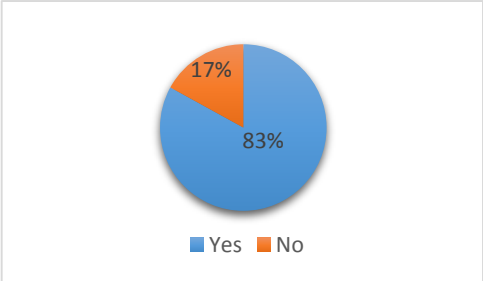

Figure 6. Presence of unfair parking on road

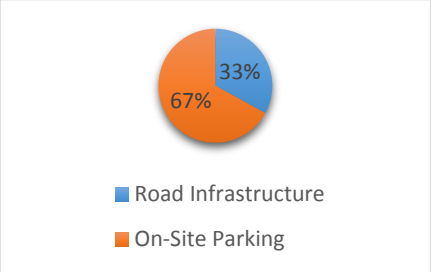

*Figure 7.*Cause of congestion in respondent's opinion

mentioned poor road infrastructure as another source of congestion. However, 67% of respondents considered on-site parking as a major cause of traffic congestion as illustrated in Figure 7.

Figure 8 indicates that 40% of the respondents faced 05-10 minutes delay, 35% of the respondents experienced 10-15 minutes delay and 25% of the respondents suffered a delay of 15-20 minutes. Responses were also recorded for public satisfaction with the current parking situation as presented in Figure 8. It can be seen that approximately 74% of respondents faced a difficult parking situation while only 26% did not face any difficulty in parking and they were

satisfied with this parameter. It was observed that the majority of respondents were dissatisfied with present parking conditions as shown in Figure 9.

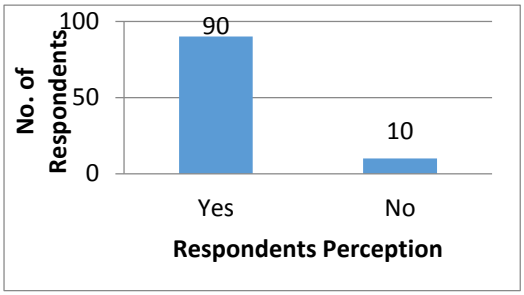

Figure 8. Traffic time delays due to traffic congestion

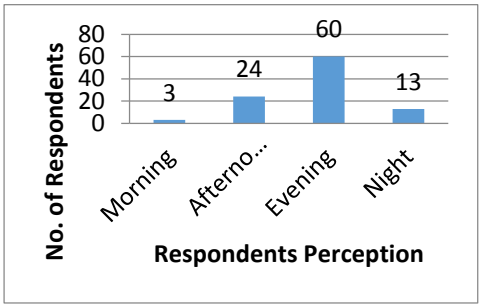

Figure 9. Public satisfaction about the present parking situation

Respondents were also asked about the difficulty of finding a parking place. Figure 10 shows that 90% of respondents usually faced difficulty in finding a parking place and only 10% easily found a parking place. It shows the miserable parking conditions in the selected area. Respondents were also asked about the time of the day when they faced maximum parking problems, as the all of the respondents were residents of the selected area. Figure 11 shows that 60% of respondents observed maximum parking problems in evening which was considered peak hour. Only 3% of them observed parking problems in morning, 24% observed parking problems in the afternoon and 13% also observed parking problems during the night. From these statistics, it can be said

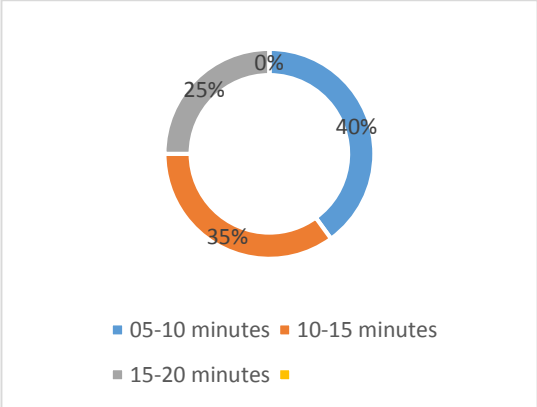

Figure 10. Have you been facing difficulty in finding parking place?

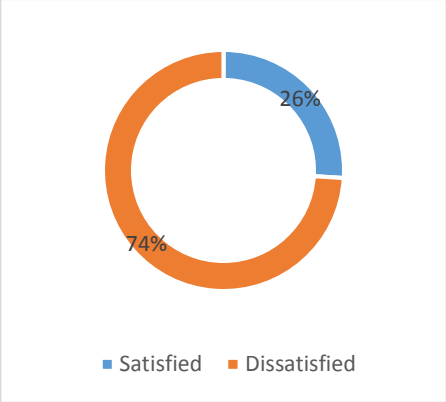

Figure 11. Observed time in which you face maximum parking problems?

that the selected area has insufficient space to park vehicles which yields into traffic congestion and parking management problems. The findings of the current study replicate the situation discussed by Asiyanbola & Akinpelu A.A., (2012) to some extent and highlight the need to solve this issue. Meanwhile, the findings of this research make explicit the parking issue in the local context of Hyderabad City which was neglected in past studies.

4. Conclusion

The research addressed on-street parking problems in an urban center. The results indicated that on-street parking was considered the major cause of traffic congestion and time delays by the respondents. In-out survey results provided a better understanding of current traffic situation in the study area. At the same time, public perception about the parking facility in CBD of Hyderabad city indicated that existing roads are not wide enough to entertain on-street parking. Most of the residents feel difficulty in finding the space to park their vehicles which results in the dissatisfaction of public about the parking situation. The study analyzed the existing conditions of parking at an urban center and argues that it is imperative to provide an information base for parking management authorities and concerned agencies. This study may also help the policymakers to understand the parking requirements and management during peak hours. Considering the parking situation at the city center, it is recommended to shift on-street parking to off-street parking to allow the public to park their vehicles more safely. A proper site should be designed for off-street parking nearby the city center. Moreover, to curb on-street parking, taxes should be increased and efforts should be taken to promote pedestrian movement. Alternate routes should be designed to stop allowing vehicles to go through the city center. In future, a detailed study should be conducted to eradicate the traffic and parking problems. A detailed survey should be conducted with experts (academia and professionals) and their suggestions should be incorporated in the policy documents to improve the overall parking of the CBD.

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