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Parking Challenges Facing Urban Cities in Tanzania: Evidence from Dar es Salaam City

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Abstract
This paper examines the parking challenges in urban cities of Tanzania with a view to provide effective suggestions to overcome the challenges. It is an explicit reality that the effectiveness of the parking policies is compromised with the perceived tension of three objectives which are governed by parking including; regeneration, restraint and revenue. This study suggests that municipalities and council authorities have an obligation to provide education to people pertaining the cost of driving within the city and encourage non-motorized system to road users such as walking, cycling etc.; to ensure that any additional parking revenues are invested in developing the infrastructures; provide reliable information to inform people where they are allowed to park; to employ professionalism particularly parking attendants, applying friendly technology to charge parked cars and the cost of doing business within the city center should be elaborated to population. Finally, this study suggests that in order to reduce traffic congestions and delays at road intersections or junctions in the city such as on-street parking should be discouraged and adequate off-street parking facilities should be provided.
Keywords: parking, challenges, transport, Tanzania

1. Introduction

With certainty, parking is a major problem in urban cities which has been increasing challenges both in developed and developing countries since it interlinks the transportation infrastructures and land use management. It is clear that almost every car trips are dominated by two trips parking acts (parking taking place in the origin and destination) and those cars spend over 80% of the week parked (RAC Foundation, 2004). The transportation research on commuting has invested effort on investigating the problems of congestions, safety and environmental caused by vehicles in motion while ignoring the important part of parking challenges. Despite the application of parking pricing and supply restrictions to be the best technique widely accepted and readily accepted method of limiting car use (IHT, 2005) but the methods has not managed to eradicate the parking challenges occurring in many growing cities all over the World. Parking in cities of Tanzania is already pronounced to be one of the sources of mobility conflict and travel inefficiency and the parking policies established in the country significantly has widen the consequences. It calls for urgent action to address its own acute problems. There are sharp contrasts among the available approaches and the implications of motorization trends, traffic development, transport equity, urban development patterns, public space and emissions of the local air pollutants and greenhouse gases. Although, the parking policy to be recognized as an essential component to overcome the challenges when implemented and thoroughly managed, it presents the dangers for its potential role in entrenching unsustainable pathways of development. In many growing cities it is common to see Commercial Street clogged with motor vehicles, cars parked along roadside, across curbs and footways and dusty verges and some cars double parked. In city centers it is not surprising to see parking attendants collecting small cash payments from motorists parked along the footways or double parked meanwhile, basement parking lots of many buildings along the street are half empty. These lots charge a modest fee for parking aim to recoup some of incurring costs during the construction and these fees are slightly higher than that charged in the streets which accelerates to the on-street parking.

Municipal regulations require these parking spaces to be provided as one of the main condition during the application of building permit. However, some owners have changed the use of the space from parking to shops, the reason behind is that retail offers much higher returns than parking as a result with low parking spaces the mobility in the city center has been the major problem growing every year. In some areas, the owners of the building have been claiming that the downward ramp was not planned for parking space even when the building permit state clearly the purpose of the basement spaces. On the other hand the building inspectors have been blinded by corruption in which very occasionally to see them taking action in demolishing the basement shops due to these violations. The government authorities have been attempting to build parking structures but these

projects are very expensive with low return. There are plans and efforts to overcome the challenges caused by parking but budget have stalled the plan. The latest plan is to let the private companies to build 10 floors of office space in return for creating five stories of public parking. Parking emerged to be a serious problem in Western Europe in 1950s, in Japan from the mid-1960, in Hong Kong and Singapore in the early 1970s and in the Republic of Korea, Malaysia and Thailand in the late 1970s and 1980s.

However, with strong management and the involvement of various stakeholders the strategies to avoid underpricing and oversupply, many European cities have transformed parking situation (at any rate in inner cities) which was saved at high cost into an economic opportunity and valuable asset for local communities (de Wit, 2006). It is also important to widen the context of studying the parking challenges because its effect does not harm the central business district (CBDs) but across all growing cities in the whole country.

As it has constantly been mentioned, the increase of the illegal parking and roadside in urban cities of Tanzania has shrunken the traffic corridors and increase to traffic congestions which in turn reduce the movement of the automobile and increase to travel delay and costs. In Dar es Salaam, parking is among the notable problem that is exacerbated by few designed parking spaces proven to be inefficient. Unauthorized and indiscriminate parking along the street within the urban core is a serious barrier to smooth urban mobility and is an indicative of inadequacy management and policy enforcement in the aspects of transport. The objective of this study is to examine the challenges of parking in urban cities of Tanzania, with the view to provide suggestions for tackling the urban transportation problem.

2. Review of the Literature

Parking is one of the comprehensive components in land use appearing in residential, shopping and industrial areas, and is related to all kinds of trips occurring in commuting, shopping and leisure trips (Mersden, 2006). The challenges of parking spaces seen in urban cities are claimed to be caused by urbanization, rapid increases of car dependence, high densities of the city and economic transition. In literatures there are several theoretical studies about road pricing and road space than those of parking pricing and supply management. Although road pricing can be used to influence a wider range of trips characteristics than parking policies can; such as trip length, time of driving, route of choice and type of vehicle used, there is inadequate in tackling the full range of externalities (Verhoef et al., 1995). Despite the disadvantages (Verhoef et al., 1995) noted under the right conditions, parking policies can be used to reduce the congestion problems as stated in the study conducted by Calthrop, Proost and van Dender (2002). In most cases however, the right conditions where everyone pays the true cost for their parking do not exist (Shoup, 2005a; IHT, 2005). Parking policy at best is an opaque balance between revenue raising activities to local authorities and desire to avoid discouraging visitors, to maintain the urban vitality and capacity to handle the increase of transport demand. There are an enormous theoretical literatures investigating the challenges of parking supply and management, as well as empirical studies which hypothesized parking including those studied conducted by Coombe et al., (1997); Bates et al., (1997), Dasgupta et al., (1994) and Young, Thompson and Taylor (1991).

Shoup (1999, 2005a) reviewed to some extent the challenges of parking and stated that the parking policies have and will continue to exacerbate the sprawl by requiring the over provision of parking spaces, lowering the resultant density of commercial and residential development and encouraging further car use. With this realization the inability of the cities to cope with unrestricted increases in car traffic planners have emerged to reconsider the degree of parking policy required to contribute to the economic, environmental and social policies in towns and cities (Valleley et al., 1997). It is argued that the good design of the parking policies in various ways contributes to smooth the transportation networks, lowering emissions, high densities and better more of urban mobility (IHT, 2005; Shoup, 2005a; Stubbs, 2002, Valleley et al., 1997) while poor design of the cities tends to act otherwise.

Shoup (2005b) conducted a study in 11 international cities. The study found that on averages 30% of traffic is cruising looking for parking spaces with the average search time being 8.1 minutes. Recent research organized by the RAC Foundation (2004) found that 48% of respondents acknowledged that have parked illegally. Residential areas in parts of many cities are overwhelmed with parking cars (Balcombe and York, 1993) that there are no informal safe crossing points for children. Parking policy should not be developed in isolated but as part of local and region spatial and transportation planning processes (Marsden and May, 2005).

Litman (2011) conceptualized the parking problem in terms of a paradigm shift which describes a fundamental change in the perception of the problem and solutions evaluation. Parking problems and solutions can be viewed in terms of a shift from the old paradigm to the new one. The old paradigm assumes that parking should be abundant and free at the destinations. It attempts to maximize supply and maximize the price (Willson and Shoup, 1999). The paradigm also assumes that parking lots should almost never be filled and that parking facilities cost should be incorporated into the costs of buildings or subsidized by governments and that every destination should be satisfied with its own parking needs. The old parking paradigm asserts that parking

requirements should be applied rigidly without exception or variations and that parking management should be considered as a last resort to be used only if increasing supply is infeasible. The new parking paradigm on the other hand aims to provide optimal parking supply and price. It considers too much supply as harmful as too little and price that are too low are as harmful as those are too high. The new paradigm strives to use parking facilities efficiently.

It takes the full lots to be acceptable, provided that additional parking is available nearby and any spillover problems are addressed. It emphasizes sharing of the parking facilities between different destination favors charging parking facilities costs directly to users and providing financial rewards to people who reduce their parking requirement. While the old paradigm tends to resist change and places a heavy burden of proof on innovation, the new paradigm recognizes that transport and land use conditions evolve in the parking planning practices which frequently must be adjusted (Cuddy, 2007).

Feeney (1989) identified several features that simplified the interpretation of parking studies which was problematic, particularly the determination of elasticity estimates including; inconsistent definition of the demand variability (e.g. the total car use or parking at a specific site); possible substitution between different elements of parking demand (short vs. long stay), the consideration of the non- monetary costs of parking, the money and time for competing travel options and possibly supply effects where there are reasonable competing alternatives. The US Transit-Cooperative Research program recently updated its publications on the input of parking costs and fees (TCRP, 2005) and parking management and supply. The review of parking pricing found that empirically derived, as well as modeled parking demand elasticity (number of cars parked) for a wide area changes in parking price general range from-0.1 to -0.6 with -0.3 being the most frequently quoted value (TCRP, 2005). This review is consistent with Feeney's which concluded that out of vehicle costs, whether time or money are substantially more important in determining mode choice (Feeney, 1989).

Rye, Cowan and Ison (2004) examined the potential impacts of expanding the controlled parking zone around the city of Edinburg, Scotland streets within a mile to a mile and a half radius of the City Centre have been a point of a controlled parking zone since 1947. Residents buy permits to park with other on-street parking in the areas being pay and display. A survey of uncontrolled parking areas closest to the city centre (a 20-25 minutes of walk) found that on average 28% and in some areas up to 42% of those parked during the daytime arrived at around 08:30 and left around 1700 -1800, indicating that they are likely to be commuters.

Van der Schaaf (2001) studied the challenges of parking in Amsterdam and reported on a major implementation of city center parking restrain which forms a part of a large area wide mobility management plan. Most of the areas inside the inner ring road are now subject to significant parking restraint. Car mileage is the historical core which has been reduced and public transport trips to the center have increased. Furthermore, noted that the congestion problem has migrated to areas outside the ring road, in part, to the absence of strong land use policies and parking restraint in these areas. It is suggested that some employment has left the urban areas to peripherals although empirical supporting data are not provided and this phenomenon may be the result of the other non-transport factors described by Gerrard et al., 2002. Enoch (2002) provided several examples of parking cash-out schemes applied in a UK context. Still and Simmonds (2002) reviewed the empirical and modeling evidence on the relationship between parking restraint policies and urban vitality. The study did not find substantial direct evidence of the impacts of the parking policy on land use of which such responses are only likely to be seen in the long-term and parking restraints policies also have never been previously implemented with consistency and longevity. The authors found that behavioral and attitudinal studies tend to conclude that strong relationships exist (between parking provision and economic vitality). Aggregate statistical studies on the contrary find only a very weak relationship. The study suggested that where strong parking policies are imposed the city center should be applied to the place concerned but not elsewhere in the city otherwise this can have negative impacts on the city center.

Research in North American has highlighted the extra costs that requirements for the provision of off-street parking to at least minimum standards, housing costs and on the resultant social inequity that these extra costs bring in non-car owning households (Sharp, 1995; Jia and Wachs, 1999; Litman, 2004). The management of residential parking has been highlighted as a priority area of the concerns to transport planners particularly in inner-city and some suburban area (Balcombe and York, 1993; Topp, 1991).

Balcombe and York (1993) examined parking behavior in eight sites in the Southern of England that experienced parking problems in the early 1990s. All sites reported that at least 10% of the car owners normally are parked more than 50 m from their home with this being above 30% at three times. The constraint on availability of parking spaces had several impacts, the distances that vehicles were parked from the home appears to deter the purchase of the better vehicle with 22 to 54 percent of residents saying that they did not buy a better vehicle due to fear of vandalism. Concerns over losing a parking space and the inconveniences of finding another also appears to discourage car owners from making some trips, particularly short trips by car with over 50 percent of owners of the six other sites stating that they occasionally walked instead of using their car in order to reserve

their parking spaces. Stubbs (2002) stated that the conflict arising between car ownership levels and urban planning aspiration that seek to provide maximum parking standards. Research conducted on behalf of the government department with planning responsibilities found that a perceived conflict between the designs of housing with restricted parking levels in order to provide more livable communities and consequent risk of on-street and fly parking (ODPM, 2002).

Hensher and King (2001) conducted stated preference study of casual visitors to the CBD in Sydney. They noted that there is a dearth of information, locally, nationally and internationally to respond to changes in parking pricing, supply, security, access rules and in particular on their decision to select retail center to visit. In the study, different options were presented to respondents on where they might park (close to, infringe or outside CBD), whether they would park and change mode or not travel to the CBD at all. A range of parking prices as presented to the respondents for the close in fringe and outside CBD options as were arranged of restriction options (after 06:30, after 09:30 or 24 hour parking). Different walk times were also assigned as an alternative parking options. These results are based on around 660 responses, around 200 of which were public transport users on the day. The authors found that an increase in tariffs normally leads to the notable relocation of parkers from close to CBD and park elsewhere.

Conventional parking standards are based on parking demand surveys but the analysis does not usually take into account geographical, demographic and economic factors that can affect parking demand such as whether a site is urban or suburban, and whether parking is free or priced. These standards err toward over supply in many ways. They are derived from parking demand studies that were mostly performed on car- dependent locations. Applying these standards results in far more parking supply than is usually needed at most destinations, particularly where land use is mixed, there are good travel options, parking is managed for efficiency or priced (Bradley, 1997).

For the past of thirty years the negligence of enforcing parking regulations in the Dar es Salaam city in Tanzania has caused the problems of mobility and unnecessary chaos almost everywhere in the municipalities and the problems have been repeated over and over. For example in Kariakoo area which is the hub to other regions and neighboring countries in supplying goods and providing services has been proven to be the worst area in providing parking facilities. In this area the planners have failed to enforce the parking regulations that require each building to dedicate at least one floor for parking. A similar situation has been experiencing in other cities within the country and will continue to be the challenges in many cities all over the country in the near future (Daily News, 2011). The objective of this paper is to examine the parking challenges facing cities of Tanzania with the aim to provide suggestions for tackling the urban transportation problem.

3.1 Challenges of Parking in Dar es Salaam

Dar es Salaam city located along the Coast and is among the most important commercial city with a highly concentrated population in Tanzania. Recently, study shows that the morphology of the city has changed very rapidly beyond the ability of municipalities to recover its original status. For example, the construction of offices and hotel premises in Kariakoo and Kivukoni areas attract more people with a private car who often visit the areas for leisure, employment and other services. On the contrary, parking spaces available are not enough to accommodate the number of clients visiting the areas. Parking challenges occurring in the central city of Dar es Salaam will continue to be the major problem due poor parking policies, poor planning of the city, population growth, increase of car to mention in a few (Bundara, 2010).

Rapid Urbanization: The population in Dar es Salaam has been changing very rapidly in the past thirty years. For example, according to census reports of human settlement and population indicates that in 1978 the population was estimated to be 8.5 million people while in 2012 the population has reached 4 million people in the city and will continue to rise in the near future (Lupala and Kiunsi, 2011). This increase does not correspond to the capacity of the municipalities in providing reliable service such as parking facilities which has a tendency to reduce the traffic congestion and smoothen the travel time in the city. The increase of the population also will continue to exert pressure on parking spaces and other social and economic services unless deliberate efforts are made to address the problems particularly in the poor parking facilities and policy development.

Increased number of Cars: The number of vehicles in the country is estimated to be 1.5 million of which 80 percent are in urban cities, particularly in Dar es Salaam which constitutes a large number of the vehicles which is about 70 percent. The growth rate of the vehicles in Dar es Salaam has reached 8 percent of all the vehicles registered by the Tanzania Revenue authority in 2012. According to Kiunsi in 2013 the vehicles in Dar es Salaam has reached 700,000 while the total parking spaces available are about 13800. It is necessary to evaluate the increase of vehicles in the broader context in the central business areas, residential areas and industrial areas of the city. The new ideas must reflect the technique to handle the increasing demand for parking by constructing new structures for parking, new parking standards (including a parking at own property), new parking policy regarding short term and long term parking (where parking involves costs) and promotion campaign

(information). It is also important to promote the introduction of parking agents whose times for parking depends on parking supply and the resultant must be equally distributed with the parked cars. Thus, in the absence of adequate policy and effective measures to enforce the stakeholders to comply with the regulations for parking, the increase of vehicles will result to congestion and delays, serious accidents and intense pollution.

Inadequacy of parking spaces: Roadside and illegal parking are common phenomenon in Dar es Salaam especially in the CBD, this implies that there are limited spaces for parking. The roadside parking narrows the road, cause unnecessary congestion and accidents in the city (Kiunsi, 2011). The ineffective regulation of parking has accelerated poor mobility in the city. In the CBD parked vehicles increase to land consumption and reduce the municipality's income from park revenue since most of the parked vehicles are paid on a monthly basis which is less than the daily collection. In the city center one quarter of the parking spaces are reserved even when the occupancy has travelled or is not using the space for an extended duration. This scenario is common in all places in the city even when the sharing parking spaces are unavailable.

Demand for right of way: Streets in Dar es Salaam are used in different ways but mostly for movements/mobility (cars, passenger vehicles, pedestrians and motorcyclists), exchange (social interaction and street vending) and storage (parking). Many streets in the CBD, does not freely allow right of way to accommodate all the functions. It is clear that spaces dedicated to parking are unavailable for movement or exchange office.

Pedestrian safety and comfort: On some street illegal parking in the CBD hinders the movements of vehicles and walkway which is important for pedestrian comfort and safety. Poor parking on the walkway on pedestrian crossings forces pedestrians into the roadway and affects visibility. This does not attract people to use non-motorized facilities to travel in the city of Dar es Salaam.

Traffic Congestion: Dar es Salaam street network has a finite capacity, poor parking planning and inadequacy of the policy developed to coordinate the decision on roadway capacity. If no new roadway capacity is planned to the CBD, as seem likely, and therefore it is ultimately futile to the construction of more parking for all day commuter use in the CBD. This parking would only add to existing congestion and undermine the ridership.

3.2 Possible Solutions for Parking Problems in Tanzania

Many studies on the parking problems have managed to capture information concerning the challenges facing transportation problems occurring in the cities of Tanzania. Some studies have attempted to stipulate the wide range of parking problems but the extent and the scope has overlooked effects in relation to mobility within the city. Parking challenges in the city cannot be solved as a piecemeal rather combined and inseparable effort of policy makers and municipality officers in developing the policies and guidelines in the city have shown success when applied.

In Tanzania, a major cause of the parking problems in cities is accelerated by the design of the city, the dominance of the automobile, the structural pattern of the roads and inadequate of parking facilities, especially in the traditional areas of the city and the unplanned growth, uneven distribution of the land use which imposes constraints on movements and to the facilities provided (JICA, 2008). The need to tackle the problems of parking is very important in order to reduce the chaos occurring in the urban cities of Tanzania. The following are some specific solutions suggested

1. ***Shared parking***: The parking facilities can be utilized by multiple users or destinations. Motorists can share parking space available, rather than being assigned as a reserved space. For example, 100 employees usually can share 60-80 parking spaces since at any particular time some are on leave, commuting by alternative mode of travel, on the field or working another shift. Hotels, apartments and dormitories can share parking spaces among several units; the number of vehicles per unit varies over time. Shared parking in the destinations should be encouraged such a technique are very effective in the office building which can share parking with restaurant or theaters since the peak demand for offices occurs during the weekday and on weekend evenings for restaurants or theater. Public parking including on-street, municipality's off-street and commercial parking (for profit) facilities generally may serve multiple destinations. The developers must donate funds to build public parking facilities instead of providing private facilities which served as a single destination. This technique tends to be more cost effective and efficient when implemented accordingly.
2. ***Parking regulation and policies***: This controls who, when and how long vehicles may park at a particular location in period of time, in order to prioritize parking facility use. For example in the limited parking space it is important to classify duration in intervals of time (e.g. 5 minutes in road zones, 30 minutes adjacent to shop entrances, 1 or 2 hours shopping malls). Prohibit occupancy at certain times such as before 10am, to discourage employees use or between 10pm and 5am to discourage residents use and prohibit on-street parking on arterials during peak periods to increase traffic lanes.
3. ***Parking maximum***: The excessive parking supply should be discouraged by reducing the parking supply, imposing a special parking tax, by applying a regulation that limits temporary parking facilities. Maximum

is applicable and effective for certain type of parking such as long-term, single use, free or surface parking depending on the planning objectives.

4. ***Remote parking and shuttle service***: This is off-site parking facilities which involve shared facilities, such as office workers, parking at a restaurant parking lot during the day, in exchange for restaurant employees using the office parking lot evening and weekends. It can involve the use of public facilities such as commercial parking lots. Remote parking can also necessitate the use of parking facilities located on the peripherals of a business district or other activity center and use of overflow parking during a special event that draws large crowds. Special shuttle buses or free transit service may be provided to connect destinations with remote parking facilities, allowing them to park their cars in the public parking design to reduce chaos occurring in the cities. Park and ride facilities are another type of remote parking often located on the urban fringe where parking is free or significantly less expensive in cities.
5. ***Smart growth***: This will be supported by parking management by reducing the amount of land required for parking facilities, in turn will reduce the automobile use and increase an affordable public transport. The land use patterns which reduce the vehicle dependence will also reduce the parking requirements. These will encourage people to shift to alternative modes of transport.
6. ***Parking pricing***: The motorists must pay directly for using parking facilities. This may be implemented as a parking management strategy to reduce parking problems, as a mobility management strategy to reduce transport problem, to recover parking facility costs or to raise revenue for any purpose (such as funding local transport programs to improve parking facilities). Currently, most of the parking is inefficiently priced, it is provided for free (especially in shopping centers), significantly subsidized or bundled with building purchases and rents forcing consumers to pay for parking facilities regardless of whether or not they want it. When motorists pay directly for parking, it is often a flat annual or monthly fee in cities which provide little incentive to apply an alternative mode occasionally. Rates should be set to optimize parking facility use. In Dar es Salaam it is estimated that 15 percent of parking spaces in most of the time are vacant and available at any time.
7. ***Improving parking pricing methods***. The methods used to compute and/or to adjust the parking price must be amended in order to subdue the resistance of parking pricing. These methods are very important to predict how long the motorists will park with nonrefundable if the motorists leave earlier than anticipated. Newer electronic systems are more convenient, accurate, and flexible and increase cost effectiveness. The systems can accommodate various payment methods (bill, credit and debit cards etc.) charged only for the amount of the time parked incorporate multiple rates and discounts, automatically vary rates by day and time and are convenient to use. The new system also can produce printed receipts and record data for auditing which prevents fraud and increase convenience for customers, operators and local government. In addition, automatically record data utilization and turnover will improve planning and administration.
8. ***Parking tax reform***. This includes the tax policies that support parking management such as commercial parking taxes (a special tax on parking rental transaction) per space parking levies. This helps to reduce the parking supply and increase parking costs, as well as providing revenue for public programs.

4. Conclusions and Discussion

The importance of parking policy grows and will continue to grow over the coming decades as car ownership continues to rise even if the parking charges are presented in small and large urban cities and effective parking policies are well coordinated by management and government of the city. In Tanzania, the residential parking policy suffers from biggest dearth of research evidence. In many urban centers of the country there is rising a pressure on-street parking space, particularly in areas with high concentration of housing construction since the 1980s and 1990s when car ownership begins to increase very rapidly. It is not clear the degree and extend to which minimum and maximum parking standards should be applied to smooth the mobility/movements in the cities. Other applications of minimum standards disadvantages those with no need for a parking space whilst under provision in areas poorly served by public transport produces overspill effects due to interaction between parking standards, resultant residential density and the viability of the alternative mode of transport.

Parking planning in the urban cities of Tanzania is currently being inefficient, resulting in economic excessive parking supply, increased traffic congestion and more dispersed destinations contributing to various economic, social and environmental problems. There are many reasons to apply suggested techniques which have shown to be more efficient to be used in parking resources in order to address parking problems without expanding supply. Parking facilities available in the cities that serve multiple goals and efficiently regulated or priced to favor higher value of uses tend to be more effective. On-street parking and commercial parking is particularly convenient for this type of management and it is important to encourage the use of the systems over unpriced and the off-street parking that serves a single destination should be controlled.

This paper proposes some possible solutions that result in more efficient utilization of parking resources. These

suggestions are technically feasible, cost effective and can offer many benefits to users and communities. Although, these suggestions have shown positive result in some situation, they are not being implemented as much as economically justified, due to various institutional barriers. Parking management implementation requires flexible technique which depends on parking problems and the expansion also depends on the range of alternatives and impacts considered during planning.

Most parking techniques implemented in the urban cities of Tanzania have modest individual impacts, usually to reduce parking requirements by 5-15% but their impacts are cumulative. A comprehensive parking management program which includes; an appropriate combination of cost effective strategies can reduce the amount of parking required at a destination by 20-40% while providing additional social and economic benefits.

The suggested solutions represented in this paper are effective to change current practices and so various obstacles must be targeted to overcome the parking problems in order to achieve the optimal point when implemented. Current planning practices are based on the assumptions that parking should be abundant and provided free, with little costs paid indirectly are incorporated into building construction costs subsidized by government. Moreover, parking standards tend to be inflexible with little consideration of the demographic, geographical and management practices that may affect parking requirements. Furthermore, in order to reduce the parking problems, the parking management requires changing current policy development, zoning and design patterns. To accomplish this, the public officials, planners and the public are required to establish the techniques depending on the parking problems, solutions after being familiar with existing parking techniques implemented in the city concerns and the benefits of the society after understanding the whole system. It is important to hold an institution which relates the other fields such as transportation management associated with activities to improve the enforcement and addressing potential spillover impacts.

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