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CAR PARKING PROBLEMS IN CITIES, CAUSES AND SOLUTIONS

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ПРОБЛЕМЫ С ПАРКОВКОЙ В ГОРОДАХ, ПРИЧИНЫ И РЕШЕНИЯ

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ABSTRACT

In the article, parking problems in the city, its various causes and approaches that have not yet been successful are reviewed. Modern technologies and techniques in this regard have produced various new solutions. The article examines new planning trends and technological solutions to help ease the strain of the problem. Because the car parking spaces are not a solution in themselves, but a means to reach the wider community. The article discusses the of improving urban transportation, making cities more livable and efficient, considering the environmental impacts, and proposing solutions.

АННОТАЦИЯ

В статье рассмотрена проблема парковки в городе, ее различные причины и подходы, которые пока не принесли успеха. Современные технологии и приемы в этом отношении дали различные новые решения. В статье рассматриваются новые направления планирования и технологические решения, помогающие снять остроту проблемы. Потому что парковочные места сами по себе не являются решением, а средством охвата более широкого сообщества. В статье обсуждаются вопросы улучшения городского транспорта, повышения уровня жизни и эффективности городов с учетом воздействия на окружающую среду и предложения решений.

Keywords: car parking, planning, design of parking area.
Ключевые слова: автомобильная стоянка, планировка, проектирование парковочной зоны.

Research problem

People want to own personal cars because cars offer an unmatched combination of speed and time. But the truth is that there is no personal vehicle that is in constant motion. Most private vehicles are used during business hours or at night and spend most of their time at leisure. It follows that the city should have at least two parking spaces for each car. Two places should be proportional to the place of work and residence of people.

Urban parking problems are increasingly becoming a global problem worldwide and are one of the most discussed topics in the larger society today. Imbalance between parking supply and parking demand was seen as the main cause of parking problems. In addition, the parking system plays an important role in the world's transportation system, and its lack is associated with traffic congestion, traffic accidents, accidents, air pollution, and the impact on the climate. Although a planned parking system in the upper system can not only improve the quality of life of residents, but also improve urban transport and the urban environment, the issue of cars and parking is an often neglected aspect of urban planning and transport. Urban planners need to look for smarter, more efficient and innovative solutions to the problem of management, planning and perfect parking.

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Research objectives

This article examines the problem of parking in cities and towns in order to develop general principles and guidelines for solving parking problems. Decisions made to improve the quality of life for citizens must take into account aspects of planning, design, management, technology and the environment. The research objectives are as follows:

- Determining the causes of the parking problem and its negative consequences.
- Learn how to effectively and comprehensively solve parking problems according to clear and general instructions.
- Study various conventional but unsuccessful approaches presented for planning and problem solving.
- Explore innovative and smart solutions that use modern technological tools or take into account environmental and urban design aspects in both planning.

Research methodology

This study developed an analysis methodology based on extensive literature on parking problems in cities and urban areas. The article analyzed the data collected to achieve the goal and classified them according to the types of parking solutions at the level of planning, management and design. And again, it includes mechanical and technological innovations, as well as the development of solutions taking into account the preservation of the environment. The conclusions and recommendations of the study are presented.

Causes of Parking problems

In countries all over the world, car ownership and the demand for parking spaces have become a conflicting and confusing situation for people.

Parking problems at the airport, bus stations and shopping malls happen every day. A lack of parking can hurt local businesses and reduce the quality of life for residents. Because of the importance of parking, cities are constantly studying and analyzing parking programs and performance.

The parking problem in cities and towns is actually between the demand for parking and the supply of parking spaces, i.e. the number of parking spaces that are sufficient for the cars that need parking means that there is a difference. This gap occurs for several reasons:

- In the ancient world, many ancient and historic cities, especially capitals, were planned with narrow streets and had horse-drawn carriages rather than cars. Also, the difference between the population density of these cities at that time and the current density of those cities and districts is quite large. These narrow streets are inconvenient for all types of vehicles with high traffic and parking density. This exceeds their planned capacity;
- Due to the sharp increase in car ownership in new cities and newly planned urban areas, especially among the high and middle income population, the demand for parking spaces in these areas is expected to be miscalculated. This is due to the disruption of the proposed mass transit system in the new areas;
- Excessive automobile use. Car addiction imposes many costs on society. These include increased user costs, increased travel choices, increased car and residential parking costs, and increased risk of accidents. External costs include increased road and parking costs, congestion, uninsured accidents, environmental degradation, adverse land use impacts and reduced mobility for ordinary citizens.
- Parking spaces that are an inconvenience to nearby residents and businesses, Businesses, organizations and large shopping complexes may have difficulty retaining customers if they do not have well-planned parking, and residents may have trouble finding parking close to their homes;
- The requirement for disabled parking spaces. These areas should generally be located as close as possible to both garages and above-ground lots, entrances and exits, and sidewalks;
- Loading, unloading and large truck areas. Lack of parking space for loading or unloading commercial vehicles causes them to get stuck in traffic, waste a lot of time and block their roads;
- pricing methods. Most require drivers to pay in advance for the maximum amount of time they can be in a parking lot and for using a specific parking space. As a result, drivers often end up paying for time they don't use, and are fined if they miscalculate;
- Insufficient parking at event venues. A lack of parking at special public events, concerts, and similar public gatherings can disrupt traffic flow and put crowds at a disadvantage. Each event can present its own unique traffic challenges.
- Low level of parking in the parking lot. This can happen when cars are parked in one place for at least 4 hours (on average).

Negative impacts of Parking problems

Parking problem spoils the look and design of the city. Increasing on-street parking at or near each building pushes buildings further apart and increases the distance between buildings, requiring more street space and making walking more difficult. Rows of parking spaces in front of buildings alter pedestrian access routes to these buildings, altering their access routes in a designated manner. Due to the lack of sufficient spaces for parking, open spaces such as public spaces, public squares, public gathering places are being converted into parking spaces over time and under the pressure of this problem. Parking lots are generally the least attractive and most environmentally damaging land use. As a parking solution, the use of surface lots and multi-story parking plans is often seen as the optimal solution. Because of the costs, parking lots are also rarely done at a level of detail that matches public spaces. Therefore, it is preferable to separate the surface plots located behind the buildings or to block and surround the presence of these plots with fences, walls or fences.

Roadside parking means that cars occupy several lanes of the road and thus increase the load on the rest of the road, which sometimes becomes a single lane, which exceeds the design capacity of the roads. It leads to traffic jams. Also, in order to limit parking spaces without obstructing the flow of traffic, especially on narrow streets or in the city center, local authorities should create these lanes at the expense of the width of the roads, which makes them non-standard. will do. Also, the use of these sidewalks by pedestrians will be difficult, inconvenient and unpleasant.

Solutions of Parking Problem

Parking spaces can be provided in three forms; parking on the street (parking), off-street parking (parking) and parking that can be of two types; as a one- or two-story or separate structure (multi-story garage) forming the basement (if underground) or podium (if above ground) of the building. Each parking lot has several types of vehicle circulation and is arranged to maximize the number of cars that can be parked in it.

Each machine system in each of the previous three forms has three main parts; quantity, quality and management. Conventional parking lot planning focuses primarily on quantity. It assumes that more is always better and that there can never be excess. This type of planning relies primarily on minimum parking requirements and the provision of ample parking. Parking planning takes into account the quality of parking spaces, for example, the convenience and safety of walking from the parking place to the destination, the attractiveness and safety of parking spaces, and the environmental requirements of parking spaces. Parking management is aimed at achieving the best economic performance of parking spaces, especially in parking lots or marginal parking lots. It is aimed at a management system suitable for each situation and the correct application of the price policy. A combination of planning and management solutions ensures that the demand for parking is measured according to the actual needs of the development and its operating conditions, rather than specific general standards. It also saves financial costs, user time and convenience, green infrastructure necessary for ecological balance.

Another way to solve parking problems is to develop and implement smart parking. Smart Parking is a garage/system that uses several technological methods to help organize the car port properly. Electronic parking uses sophisticated technology to reduce booking costs and facilitate payment solutions. Using this process, some taxi drivers can negotiate a fare, get a parking spot for a proposed location, and pay as soon as they leave. Drivers can usually view the result via phone and the world wide web. Nevertheless, standard sensors play a very important role in helping to locate nearby vehicles. Also, the car must be ready to find customers and their vehicles through shared bookings, allowing access to regulated spaces. This parking lot id approach can use a mobile phone access verification code for the site visitor.

Innovative design solutions to solve the parking problem are mainly implemented through the automation of multi-storey parking lots. Mechanical parking systems allow vehicles to be automatically stopped by computer-controlled hydraulics in spaces several centimeters wider than other vehicles. These systems offer a much higher volume of desirable land, but the capital cost limits acquisition mainly in urban centers and areas with high land values. In high-density residential areas, mechanical parking is an important tool for increased use. Public and private spaces also play an important role in delivery. Design options range from systems that place two cars vertically in a single lot to systems that can fit cars horizontally between dozens of spaces without the width of a carriageway between cars. Many individual approach car facilities; non-automatic or automated, designed with only function and cost aspects in mind, ignoring any contextual and aesthetic considerations. In terms of architecture and urban design, they can be very innovative, intelligent systems, high-tech, beautiful and can act as landmarks in the urban context of a city. Smart Parking is the world's most accepted, fastest growing and currently widely used smart parking system. Airports, universities, large shopping malls, and city garages are some of the main facilities that are beginning to take advantage of the significant benefits of automated parking technology. Smart Parking enables users to use low-cost sensors, real-time data and applications to monitor available and unavailable parking spaces. Its main goal is to automate and shorten the search for the optimal parking place and vacant lots without spending too much time. Some solutions include a complete set of services such as online payments, parking time notifications and even vehicle tracking functions for very large areas. A smart parking solution can bring great benefits and revenue to both the drivers and the space owner.

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