

Research on Urban Transportation Planning Strategies in China Under the “New Normal”

Can Chen*

Chongqing Energy College, Chongqing 402260, China

*Corresponding author: Can Chen, 422209918@qq.com

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Abstract: In order to explore the development direction and strategy of China’s urban transportation planning, drive the development of urban transportation and urban economic progress, as well as respond to the changing trends and challenges of the market under the “new normal,” this paper first analyzes the current situation of China’s transportation industry under the “new normal,” investigates the relationship between transportation and urban planning, and then proposes strategies for China’s urban transportation development and planning as reference.

Keywords: New normal; Urban traffic; Transportation planning

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1. Introduction

Transportation is the pillar of China’s economic development, and it is also the guide of future economic development in many aspects. The main contradiction in the society is now the contradiction between the yearning for a better life and the disproportionate and insufficient development. Transportation is an important measure to improve the disproportionate development. In the new era, building an efficient transportation system is conducive to the development of all walks of life ^[1-6]. The concept of innovation is the impetus for development. Combining innovation with transportation planning not only improves the quality and efficiency of transportation, but also promotes the development of all levels. Therefore, the innovative development of transportation planning is crucial for China. The significance of the future development of the country lies in improving the national transportation system and the operation efficiency of urban transportation.

2. Current situation of China’s urban transportation industry under the “new normal”

As shown in **Figure 1**, the market scale of China’s transportation industry from 2019 to 2021 is basically stable. China’s transportation industry has been affected by the overall environment to a certain extent. Over the past three years, the market scale has remained the same, with 436 million yuan in 2019, 394 million yuan in 2020, and 441 million yuan in 2021.

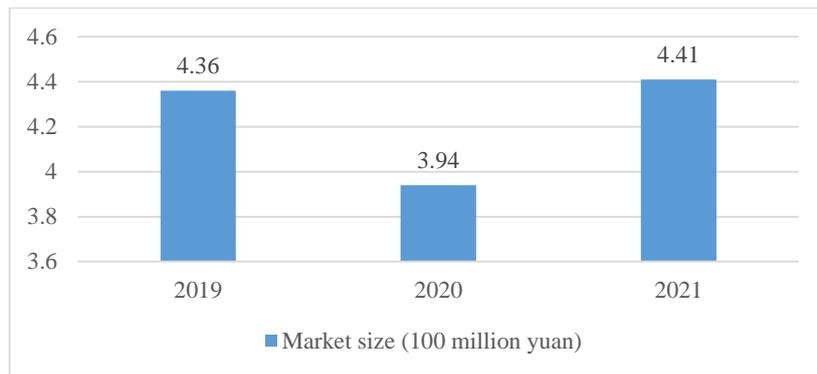


Figure 1. Market scale of China's transportation industry from 2019 to 2021

3. Relationship between urban transportation and urban planning

3.1. Brings better traffic conditions to the city

In the future, urban development will advocate smart transportation, improve traffic conditions and people's travel efficiency through the interconnection between urban planning and transportation, increase the efficiency of traffic collection and distribution on the basis of normal traffic operation, as well as promote the development and economic prosperity of the city by developing and improving the surrounding environment ^[7]. The next phase of urban planning will focus more on transportation planning, promoting the development of intelligent and convenient transportation, as well as the development of various industries, realizing the integration of urban planning and transportation, and strengthening the connection between roads. Likewise, the network and transportation mode of urban traffic development are being optimized. Traffic has injected new vitality into urban development and brought changes to traffic movement. The optimization of urban planning also ensures the rationalization of traffic planning.

3.2. Promoting the development of other industries

Transportation is the pioneer of urban development planning. The development of the transportation sector has the potential to shape urban industrial patterns, maximize the benefits of urban locations, and spur economic development ^[8]. In transportation planning, the industrial layout must be considered, while grasping the transportation dependence of the industry, emphasizing the regional value through reasonable layout, and maximizing industrial advantages, such as the integrated development of the tourism industry. The improvement and promotion of the transportation system as well as the increased efficiency of the operation will promote transportation economy, which will drive the improvement and development of the industrial chain of urban enterprises and eventually the prosperity of urban economy.

3.3. Promoting the development of transportation economy

Urban transportation presents a diversified trend. Flexibility and convenience are the definite traits of transportation, and they are crucial to economic growth. It is necessary to strengthen transportation economic management and provide resource guarantee for transportation. Therefore, it is necessary to establish comprehensive means of transportation, whose management system plays a crucial role in urban development planning, saving resources, protecting the ecological environment, and improving the level of urban transportation.

4. Development strategies for urban transportation planning in China under the "new normal"

4.1. Taking urban environmental carrying capacity as the basic premise in urban transportation planning

Environmental carrying capacity refers to the maximum development of society without affecting the

ecological environment. The urban development process will inevitably affect the environment, especially urban traffic, to a certain extent. Car exhaust emissions including carbon monoxide and hydrocarbons adversely affect urban air quality and endanger the physical and mental health of city residents. Under the “new normal,” urban transportation planning must adhere to the coordination between automobile traffic and environment as well as limit the further development of automobile traffic within the maximum allowable transportation capacity^[9]. In addition, in order to avoid serious environmental pollution caused by vehicles, transportation planning must be coordinated in the process of urban low-speed mode, so as to prevent excessive traffic congestion in the region and a downgrade in the quality of urban life. Urban environmental carrying capacity is the premise of urban transportation development and planning. The interaction between environment and transportation is an important factor that affects urban development and prosperity.

Traffic prediction and management planning should be taken as the basic means for the realization of urban transportation planning based on environmental carrying capacity. Transportation planning is mainly based on the basic standards of urban scale, environment, and fleet management, while the total number of vehicles in the city is controlled according to certain indicators, such as road capacity and social demand in the city. The latter serves as an indicator and guide in urban transportation development and planning. It effectively coordinates social demand with the urban transportation system and guides the city’s future development. It is necessary for the overall flow to be fully controllable^[10]. Other than that, it is also necessary to strengthen the management of urban transportation hubs and other core areas, guide and bypass highly congested roads through a variety of management methods, reduce regional air and noise pollution, as well as improve the overall living environment.

4.2. Urban transportation planning based on low pollution and low energy consumption

China’s urban development mode of high energy consumption with high pollution has had a negative impact on the sustainable development of cities. At this stage, the Chinese government is gradually recognizing the importance of low energy consumption and low pollution. The low pollution urban construction mode also embodies the Korean urban development. Under the “new normal,” urban transportation planning must adhere to the basic principles of low pollution and low energy consumption and integrate the low-carbon development model into future urban construction. First, it is crucial to strengthen the research and development of clean energy vehicles, increase the mileage, and meet the basic needs of the people for long-distance travel. The second is to build a comprehensive three-dimensional transportation system, encourage citizens to focus more on walking, cycling, and clean energy transportation, reduce vehicle exhaust emissions, and minimize energy consumption^[11-14]. In order to promote the development of a comprehensive three-dimensional transportation system, it is necessary to realize the integration of the public transportation system and the slow traffic system in accordance with the primary goal of effective travel mode transformation. In particular, it can realize the effective connection between different systems according to specific traffic layout, movement route, and network environment, resulting in the formation of a relatively complete network transportation system. The development of urban infrastructure is inseparable from the transportation planning system. The improvement and optimization of the urban transportation network will lead to an increase in the number of vehicles. Therefore, in urban transportation planning, the design should be based on the basic principles of low energy consumption and environmental protection, so as to prevent urban congestion and the mismatch between supply and demand.

4.3. Focusing on public transport and central freight transport

With the continuous expansion of the city scale, the urban population and the number of traffic trips are

increasing, which will eventually lead to traffic congestion. Encouraging public transport is an important means to solve traffic congestion. Based on the experience of Japanese transportation planning, with the increase of urban population, urban transportation began to stagnate in the 1970s, but the Japanese government effectively solved this problem through a good public transportation system. Therefore, if convenient and high-quality public transportation services are provided to the citizens through urban transportation planning, the citizens will inevitably choose public transport as their primary mode of transportation^[8]. The freight industry can also encourage container-based intensive freight transport. In order to achieve this goal, it is necessary to ensure the systematic planning of the urban railway system, the public transportation system, and the passenger logistics system. Since the construction of the rail transit system requires a large sum of investment and has high operating cost, if the city is not large enough, the construction has no intrinsic significance. Therefore, in China, it is stipulated that the one-way peak passenger flow must reach 30,000 people prior to the construction of urban railway. During the construction and planning of a rail transit system, it is necessary to make full use of the fundamental characteristics of the passenger flow distribution of the rail transit hub, in order to realize the comprehensive development of urban rail and road network. In addition, in the process of transportation planning, it is necessary to consider the position of logistics transportation in urban development and its significant impact on urban development, formulate corresponding logistics transportation policies, develop logistics transportation hubs, and reduce logistics transportation costs. The urban transportation development center should focus on public transport and large-scale freight transport. The main purpose is to meet the daily travel needs of the public and drive the development of urban economy, which is also the purpose of urban transportation development and planning.

4.4. Improving the construction and management of urban intelligent transportation network

Traffic congestion in big cities not only makes it difficult for residents to commute to work, but also affects their happiness and satisfaction in life. Furthermore, it hinders the development of cities. Numerous intelligent technologies are already being used in urban transportation, but there are still certain drawbacks. Therefore, it is necessary to further strengthen intelligent management, develop and make full use of existing technologies, as well as technicalize and intelligently manage urban transportation.

(1) Improve vehicle positioning accuracy

Road conditions should be updated in real time through satellite cloud images. The intelligent guidance system assists drivers and pedestrians identify the best travel routes almost immediately, so as to prevent more congestion on roads and the inconvenience caused by travelling under bad weather, such as rain and snow.

(2) Improve the quality standard and coverage of electronic eye monitoring equipment

Through intelligent monitoring equipment, barbaric traffic behaviors such as traffic violations and signal violations can be prevented, and the cooperation with manual law enforcement agencies can be achieved, thus bringing about a virtuous cycle of urban traffic.

(3) Improve the traffic accident handling capacity

Intelligent equipment and management means can be used to warn and prevent accidents, so that the transportation department may be able to handle and prevent minor accidents via remote command over on-site accidents. Traffic congestion and major accidents can be dealt with; in addition, casualties and economic losses can be reduced.

Urban traffic management is also an important component of urban transportation development and planning. Building an intelligent urban traffic management system is the main measure to drive urban economic development and improve traffic operation efficiency. With urban information sharing, traffic sharing, and public transportation development, a complete urban traffic information management system

is built. The urban intelligent transportation service management system is based on a top-level design, with the purpose of realizing information sharing, optimizing operation efficiency, stimulating urban economic domestic demand, and promoting urban-rural integrated development. The transportation information service management system has several characteristics, including integration and intelligence. It effectively improves the operation efficiency of urban transportation and further integrates urban development and urban transportation [10-16].

4.5. Promoting urban-rural cooperative development under the “new normal”

The harmonious development of urban and rural areas under the “new normal” is the essential requirement of future urban development, in which transportation planning should also be included, emphasizing the “people-oriented” concept of urban development. At present, the administrative division management brings about the artificial division of traffic and an obvious difference in the level of inter-regional traffic and infrastructure construction, especially the uneven distribution of urban and rural traffic resources. Urban and rural areas should be jointly developed, while breaking the urban-rural boundary, removing administrative restrictions, promoting rural transportation development, and providing convenient transportation services for local residents. The development of road transport network and public transport system should be taken as the premise, the driving role of towns should be clarified, and the construction of regional traffic infrastructure should be improved for the coordinated development of urban and rural areas in transportation planning. It is imperative to strengthen the optimal allocation of resources, narrow the gap between urban and rural areas, as well as arrange the layout of urban and rural road network in a comprehensive manner. Based on the principle of adjusting measures to local conditions, the urban traffic integration should be coordinated. In a city, traffic is the lifeline of urban development, and there should be a complementary relationship between a city and its traffic. People should begin considering urban planning as a comprehensive concept of urban development from a long-term perspective, adjust measures to local conditions, and accurately grasp the concept of population mobility in accordance with the geographical environment of the city. Furthermore, it is necessary to identify the soil conditions, climate, and ecological chain, as well as formulate scientific and comprehensive planning for the urban transportation network hub, while reasonably planning and designing the road layout, completing the layout of urban functional areas, and facilitating transportation.

5. Conclusion

In conclusion, in the process of urban transportation development, urban transport has engendered better traffic conditions for urban development and driven the development of urban industries, urban transportation, and urban economy. In the “new normal,” in order to better realize urban transportation design and planning, urban transportation planning should assume the urban environmental carrying capacity as the basic premise, low pollution and low energy consumption as the basis, and public transport and central freight transport as the focus. The construction and management of intelligent transportation networks will be improved, urban-rural cooperation will be promoted, and the integrated development of urban transportation and urban planning will be achieved.

Disclosure statement

The author declares no conflict of interest.

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