Strategic research based on the integration of rail transit and urban space

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Abstract. At present, from the situation of most cities in China, the development trend of rail transit is very rapid, and based on the closely combined situation of rail transit and urban space development, it has provided a great role in promoting the modernization of our country. It is worth noting that under the background of the gradual development of urban rail transit, some problems are becoming more and more prominent. Only by effectively solving a series of practical problems can we provide impetus and sufficient guarantee for the realization of the strategic goal of the integration of rail transit and urban space.

1. Introduction

The urban space, which is closely related to the production of people's daily life and the development of social economy, is often the full embodiment of a kind of artificial space, which is often influenced by the people living in a specific natural space. Traffic travel, which plays an important role in people's daily life and social and economic development, affects urban space to a certain extent. Among them, one of the transportation modes with large carrying capacity, punctuality and low carbon environmental protection is rail transit. In order to ensure that rail transit and urban space can influence each other, promote each other and develop in a coordinated way, it is necessary to deeply explore the relationship between them, analyze the existing problems in their integrated development process on this basis, and then focus on discussing their integrated development strategy.
2. Analysis on the Relationship between Rail Transit and Urban Space

2.1. Rail transit and land use
In order to effectively coordinate traffic construction and urban space development, it is necessary to make rational use of land resources and avoid the phenomenon of land overload. Land development is the basis for the construction and development of urban rail transit, and under the background of efficient development and utilization of land resources, urban economic benefits can be gradually improved. Land use is an important position in the construction of rail transit and urban space. Under the background of the gradual development of rail transit and the further acceleration of land development and utilization, it can promote the change of urban spatial pattern, and under the background of large-scale development and utilization of land resources, it can gradually increase the passenger capacity of rail transit, which will inevitably further develop rail transit [1]. As the result of development and utilization of land resources in the region, the phenomenon of population density is bound to be gradually formed. At this time, the carrying capacity of rail transit is difficult to meet the increasing travel demand, which will cause some obstacles to economic development. In the face of this situation, once the rail transit is not expanded in time, it is difficult to ensure the convenience and safety of people's travel, and the problem of traffic jam will be caused, and the overall economic benefit of urban space will be gradually reduced. In recent years, the continuous development of urban transportation in China has greatly satisfied the living needs of residents. With the promotion of national policies, China's urban rail transit has made great progress. Urban rail transit in China can be divided into seven types, namely, subway system, light rail system, monorail system, tram system, maglev system, automatic guide track system and municipal rapid track system. This is what the graph below shows New operating mileage of Urban rail transit in China from 2013 to 2019.

| Year | New operating mileage (KM) |
|------|---------------------------|
| 2013 | 460                       |
| 2014 | 427                       |
| 2015 | 445                       |
| 2016 | 535                       |
| 2017 | 880                       |
| 2018 | 734                       |
| 2019 | 968.77                    |

2.2. Rail transit and urban reconstruction
In the process of the gradual development of urban rail transit, the characteristics of more convenient transportation will inevitably appear. Based on the effective establishment of transportation hub, it is inevitable that urban population will gradually increase, and then gradually develop and spread logistics and commercial trade. In addition, with the gradual development of integrated rail transit hubs, rental stations and parking lots. It is inevitable to coordinate and unify the aboveground and underground functions and constructivization of urban space [2]. This will further affect urban construction and transformation. The emergence and development of buses, subways and taxis in cities reflects the law of development that rail transit develops synchronously with urban construction and reconstruction.
Although this process does not produce obvious high land utilization rate around the urban center, it can support the combination of rail transit and land development with sufficient conditions under the background of rebuilding the old city and gradually expanding the city. In the case of comprehensive development and utilization of the two, the pace of urban reconstruction will be gradually accelerated, and the population in the urban center can be effectively evacuated, which finally relieves the urban pressure gradually. Therefore, in the process of urban construction and reconstruction, it is necessary to plan and control in advance the comprehensive development of overground and underground spaces connected with some transportation hub nodes to avoid unreasonable situations. From the perspective of rail transit development, there is a certain connection between urban rail transit and urban construction and reconstruction, and urban rail transit can also provide a promoting role for the reconstruction of old urban areas and the development of new urban areas [3].

3. Problems in the Integration of Rail Transit and Urban Space

3.1. Land ownership
Strict is the remarkable characteristic of our country land policy management. In the concrete planning city construction process, usually will explicitly request the land use nature. But in the development rail transit process, the rail transit, each kind of building, the public transportation will certainly carry on the common use to the land, therefore should not carry on the explicit stipulation to the land division, therefore the present question is the land ownership question. The problem of unclear land ownership directly affects the integrated development of urban space, and solving this problem is an important premise to promote the integrated development of rail transit and urban space.

3.2. Integration and management
In order to effectively implement the integrated development strategy, it is necessary to combine a large number of management departments, based on the effective integration of management and implementation, to ensure the full satisfaction of the needs of integrated development. However, it is worth noting that, according to the actual situation of rail transit and urban space related departments, affected by traditional management models, departments often exist in their own way and are rarely linked, so it is difficult to cooperate with integration construction and management together [4]. Each department may handle well in its own field, but the cooperation between departments is not efficient. The difficulty of cooperation is bound to go against the integrated development of cities. The significance and importance of integrated construction and management for urban spatial integration are self-evident. The implementation of integrated construction and management has become an urgent need to solve one of the problems.

3.3. Technical difficulties
The realization of the goal of integrated development must rely on a variety of professional technologies. At this time, it is difficult to support the integrated development of rail transit and urban space only relying on simple majors. This also requires the economic introduction of other relevant professional technologies, such as transportation and rail, large-scale construction and so on. In some complex situations, it is also necessary to be involved in interdisciplinary majors. However, the lack of comprehensive talents in this field in China will hinder the effective development and continuous promotion of the integrated development strategy. In particular, higher education has little effect on the cultivation of such talents, and the attention paid to the practical training of professional talents within colleges and universities needs to be improved. There is still a gap between China and developed countries in terms of personnel training and existing technology.
4. Strategy of Integrated Development of Rail Transit and Urban Space

4.1. Simultaneous Urban Space and Traffic Planning and Intensive Land Use

The purpose of urban planning is to promote the orderly urban development and efficient utilization of urban land resources. The generation of traffic demand in the process of urban development is the purpose of traffic planning, which can play an important supporting role in urban development. Therefore, as an interactive and organic integration of the overall rail transit planning and urban planning, it should ensure the simultaneous implementation of the two. Thus, the scientific planning goal can be well realized and the land ownership problem can be effectively solved. In the process of urban planning, comprehensive planning is carried out centering on urban space utilization, urban construction and rail transit. It is inevitable to start from the perspective of common use of land resources, so that the phenomenon of clearly defining land division and land use nature in the past can be effectively avoided [5]. In some urban planning process, urban development and rail transit development are not closely combined. At this time, it is not only difficult to ensure the efficient use of land resources and public transport to achieve zero, but also will cause some constraints on the operation of the transport system. Based on these conditions, urban planners must closely integrate rail transit construction and land use. In the process of making traffic planning, the relationship between the two aspects should be fully considered. To ensure the rational use of urban land resources, urban rail transit can be effectively organized to provide promotion for balanced development of the city [6].

4.2. Systematic layout of rail transit and improvement of urban transport facilities

Diversification is a remarkable feature of traffic travel mode. Under this background, in the process of layout of rail transit, there will inevitably be a diversified road situation. In the process of arranging the main and secondary roads, branches and expressways, we should also ensure the effective formation of the network layout mode. At this time, the total amount of rail transit should be consistent with the standard of traffic healthy development, and the corresponding traffic functions should be well undertaken for different levels of urban roads. The planning rules focus on the non-interference of each mode of traffic in the city, so that the traffic jam in the city can be effectively alleviated and the probability of urban traffic accidents can be effectively reduced[7]. At the same time, the main and secondary roads and branches of the system are actively and sound, based on the rational layout of road network density, around the necessary diversified traffic organization to provide adequate protection for the balanced distribution of rail transit traffic. In addition, in the process of systematic and networked layout of rail transit, it is necessary to actively improve the static traffic facilities in the city and consider them based on the actual situation. For some necessary social parking and gas stations in the city to carry out sound configuration. It is worth noting that the systematic and networked layout of rail transit requires the active participation and coordination of the relevant departments of the city, and through the joint implementation of management and construction, In order to provide a great promotion and adequate guarantee for the integrated development of urban space and rail transit [8].

4.3. Increasing investment in science and technology and promoting modernization of rail transit management

Under the background of gradually expanding the scale of urban transportation, the construction process of rail transit must be strengthened continuously in the aspect of scientific and technological input, and then it can promote the development of rail transit and urban space integration[9]. First of all, the relevant departments should strengthen the introduction of scientific and technological personnel, based on the active introduction of comprehensive, high-professional and technical personnel, to provide technical support for rail transit construction, while ensuring that urban spatial planning is more scientific and reasonable. Secondly, aiming at the existing personnel to actively carry out training and education work, as far as possible from the rail transit construction and urban spatial planning related to a variety of disciplines as a starting point, to ensure that a sound, all-around talent team can be gradually built [10]. Finally, we need to invest more in science and technology. Based on the introduction and use
of advanced traffic management equipment and methods, the rail transit gradually tends to the
development of modern management direction, so as to respond well to the constantly expanding traffic
system. To be specific, this link should be based on the real-time monitoring and command system of
urban traffic, so as to ensure the level and ability of relevant departments and personnel to monitor rail
transit operation and respond to emergencies are gradually improved. On this basis, the information
system of rail transit is actively established, and the command level with initiative is gradually improved
to provide an effective role for the evacuation of rail transit.

4.4. Pay more attention to technical personnel and increase the training of professional personnel

Only by increasing the number of reserve talents in relevant majors can we further guarantee the
development and integration of urban rail transit. The government should join hands with colleges and
universities to increase the recruitment of relevant professionals and create possibilities for the increase
in the number of talents. Considering that urban rail transit and urban integration development is a
difficult task, colleges and universities should add practical links in the educational work so that students
can exercise their skills through practice. Teachers need to adjust and renew teaching activities to ensure
the modernization and advancement of teaching under the actual situation of changing and developing
times. For example, teachers can introduce the latest technology into the classroom teaching process. In
the actual work, it may be necessary to use knowledge of multiple subjects, which requires colleges and
universities to make reasonable arrangement and planning for the structure and proportion of courses in
order to enrich students' learning content as much as possible and ensure that students can absorb enough
knowledge to cope with future work. It also requires teachers to keep learning and constantly improve
their knowledge reserve, so as to guarantee the normal development of teaching activities. Since we
need to strengthen the training of technical personnel, we cannot do without the financial support and
scientific and technological support from the government, which, to some extent, is consistent with the
third point. In order to attract more people to study related majors and expand the talent team of the
industry, government departments can further improve the policy support for relevant professionals,
provide them with a good learning environment and internship opportunities, and comprehensively
stimulate students' enthusiasm and enthusiasm for learning. It is believed that with the joint efforts of
schools, governments and other relevant industries, the number of professional talents in urban transit
rail construction will definitely increase and become more and more excellent. The goal of integrating
urban transit and space is within reach.

5. Conclusions

In the context of the rapid growth of China's national economy, the environmental awareness of the
broad masses of the people has been significantly improved. At the same time, the choice of people's
travel mode has begun to focus more on low-carbon environmental green travel. Based on this, urban
rail transit is becoming more and more important in the transportation system. Through the construction
of rail transit, people's travel efficiency can be improved effectively, and the energy consumption of
people's travel process can be reduced gradually. In order to make rail transit adapt to the urban
environment for better development, it is necessary to coordinate rail transit and urban space. Based on
the good realization of the strategic goal of integrated development, it provides the basic guarantee for
urban development and economic growth.

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