

Study on the innovative integration of "waiting" and "demand" for urban public facilities——Take Changchun for example

Zexin Wu

Jilin Animation Institute, Changchun, 130000, China

Abstract: *More and more cities are beginning to pay attention to the development of public transport systems, and bus stops are one of the key elements. Improving the quality of bus stop services will not only improve the well-being of the city but also unlock the value of this link. The market for a comprehensive and extensive design of public facilities that "integrate waiting and demand" is huge, because as long as there is a city, there is traffic, there is a bus station, there is a bus stop, and there is a need for such solutions. By investigating the current situation of urban public facilities, expanding the functions of bus stops and public toilets, and realising the organic combination of bus stops and public toilets, a set of data-detailed design solutions for urban public facilities "combining waiting and demand" will be developed, with comprehensive design and wide application, thus providing powerful data for the development of urban public facilities. This will facilitate the development of urban public facilities and provide a rationalisation of objectives and planning directions for the construction of urban public facilities.*

Keywords: *city card; "combining waiting and demand "; public facilities planning*

1. Introduction

With the development of the economy and the gradual improvement of people's quality of life, urban public service facilities are also changing, and the service contents and needs of people for some public service facilities are also changing. Most of the existing urban public service facilities, such as bus stops and public toilets for residents to travel, are still in a state of a single form, simple structure and serious homogenisation, and can only provide simple service contents. This research focuses on how to integrate the 'waiting and demand' aspects of urban public facilities, i.e. the organic combination of 'waiting' and 'demand' services. It also provides a set of design solutions for the integration of 'waiting and demand' in urban regeneration. It truly guides the renewal and development of modern urban public facilities and effectively addresses the integration and improvement of the two functional modules of 'waiting' and 'demand' for residents to go out. At the same time, it proposes a complete construction and production concept, effectively improving the efficiency of the production, transportation, construction, assembly and use of the facilities.[1] We fully exploit the actual needs of the travelling residents and provide a people-oriented, green and low-carbon solution.

2. The cultural content and uniqueness of Changchun

2.1 The connotation of Evergreen culture

Sculpture culture: the World Sculpture Congress in Changchun has a "global" impact. Automotive culture as a major platform to promote global exchange and cooperation in sculpture, and as a major window to promote Chinese civilisation and enhance global understanding of China. Changchun FAW Historical and Cultural District reflects the origins and process of the development of China's automotive industry. Its values present diversity, science and integrity, reflecting the development of China's automobile manufacturing industry and the initial footprint of the automobile industry production.[2]

2.2 The uniqueness of Changchun culture

The basic characteristics of film and television culture: film and television culture have open, related

and extended content and extension. Therefore, when the development and radiation from the industrial city life are more adapted to the social reality of Changchun, the film culture industry can better express the film and television complex of the entire population and the large collection of film and television consumption consciousness; the characteristics of architectural culture: Changchun has a large number of architectural-historical relics, special urban spatial layout and industrial relic characteristics, and a rich intangible cultural heritage; the cultural uniqueness of FAW: FAW is the pioneer and leader of China's automobile industry.[3] FAW is an indelible monument in the history of China's automobile industry, a pioneer and leader in the industry. Its history is valuable and irreplaceable by other industries; on the basis of the original Changchun World Sculpture Park, the Changchun Municipal Government has absorbed domestic and international sculptures through various measures and continues to expand the collection of sculptural artworks, establishing a number of sculpture parks around the world, such as the Changchun International City Sculpture Park and the Shuangyang International Sculpture Park, and has absorbed a large number of high-quality sculptural artworks.

3. Changchun Regional Public Facilities Study

3.1 Analysis of the original mode of operation of the bus station

Thanks to the rapid development of modern cities, people have ample time to devote to public goods projects and public facilities are increasingly linked to society. It can often characterise the social life of the time from one side or another. Changchun City bus stops are currently dominated by traditional platform bus stops, the main street stops are slightly more invested in, secondary street stops are basically based on a simple guidance role, there are also a large number of simple stops even no platform and other facilities. The main function is only to provide guidance on boarding and alighting and site enquiries, and lightbox advertising is the main profit-making function of the bus station. Parking is inadequate, with planning and construction lagging behind and no source of input. There are over 4,180 buses in Changchun. According to national public transport regulations, each parking space should be one hundred square metres in size. Changchun needs to build approximately 420,000 square metres of parking spaces, including 57,000 square metres of car parks and garages, accounting for 13.67% of the total demand.

The sustainable development of the city consolidates the foundations and solves the problems that exist. At present, a master plan for the development of public transport in the city has been prepared, and all special plans need to be further refined, taking into account factors such as the current situation and the needs of the epidemic. It is important to lay the foundation stone for the sustainable development of the city and to solve the problems that exist. The focus is on building the city's transport nodes, business centres, logistics centres, cultural and educational centres and distinctive central areas. Currently, a master plan for the development of public transport in Changchun has been developed and each special plan needs to be further subdivided.

3.2 Analysis of the original mode of operation of public toilets

Public toilets are the main urban public facilities that can gradually change the city, and enrich and enhance its functions. According to the regulations of the relevant state departments on the layout of urban parks, in busy areas with a large flow of people, one should be set up at around 300m-500m; a block with a dense flow of people should be less than 300m, or one block every 750m-1000m, and public green space should be set up every 10,000 square metres, or every 500m. Public toilet construction projects can reflect the development level of a city from the side and can pay attention to the daily needs of the public, the public as the core to carry out construction.

Before the construction of public toilets, comprehensive preparations and plans should be made in advance so that the construction of public toilets is more scientific and reasonable, adapting to the needs of the public and meeting the construction objectives of the new era. The design of public sanitary facilities should take full account of the environment in which they are used. Therefore, squatting toilets in general public toilets are relatively hygienic, while sitting toilets are the main type of relatively high-level toilets, which need to be combined with more needs such as barrier-free and third toilets. A more high-tech, comfortable and intelligent public toilet service in combination with the modern 5G era is the goal going forward.

3.3 Analysis of the current situation of bus stations

People expect a better quality public environment. As a major part of public art, public facilities are attracting more and more attention because of their artistic and functional nature. It follows that prioritising the development of public facilities is an important way to improve the quality of the public environment. There are still many simple stop signs on secondary streets, some on trees, some on poles, made of tin and paper shells, which hardly serve as pointers. There is a strong reaction from the people and improvements are urgently needed. And the current variety of bus stops in Changchun, the form and style of different areas are not iconic and do not highlight the characteristics of the city well. Like the metro stations, many are evolved from Changchun city flowers.

Improving the construction of infrastructure is the fundamental guarantee to improve the level of public transport services. In the construction of urban transport development, the awareness of the priority development of public transport should be raised. As Changchun City owes more investment in the construction of public transport infrastructure, so the development and construction of public transport should be placed in a key position.

3.4 Analysis of the current situation of public toilets

Many residents no longer choose to use public toilets because of the poor hygiene conditions, which is fundamentally at odds with the original objective of government funding for public toilets. Many of the toilets are also simple dry toilets, which require regular cleaning, especially in summer, due to the conditions of the different sites.

The main problems with the current public toilets are: firstly, unreasonable layout and lack of planning; secondly, inadequate supporting facilities; and thirdly, inadequate operation and management and poor environmental hygiene. Many public toilets also require staff management and are not open 24 hours a day. This causes great inconvenience to residents who travel at night. Although the Public Toilet Alliance is now in operation, the operation is limited and more people still tend to choose places such as shopping malls or convenience store chains to solve their problems.

A study of the spatial layout and internal design of public toilets, based on a public opinion survey of Changchun citizens, identified deficiencies in both the spatial layout and internal design of public toilets in Changchun and provided relevant solutions. The study has identified deficiencies in the spatial layout and internal design of public toilets in Changchun and has provided solutions. The functions are interchangeable and complementary. A station does not have to have a lot of squatting spaces, even if it is just a toilet module, it can be effective, widely distributed and convenient.

4. Design of bus stops and public toilets under the service design concept

4.1 Analysis of the current situation of public toilet development and its problems

Survey and analysis of public toilets and their facilities: the number of public toilets is small, the layout is unreasonable, the location is hidden, and the indication signs are not visible; there are problems such as insufficient comfort, incomplete supporting equipment, failure to do a good job in the toilets in terms of water resistance and odour control measures; and problems with design and construction, public toilets fail to install hand-washing stations, vanity mirrors, toilet hooks and other equipment, causing a lot of trouble for people to use them normally.

4.2 Analysis of the design of public toilets and their facilities

Analysis of the process of using public toilets: using the toilet, washing hands. Women can put on make-up, smoke, provide accessibility and a third toilet.

Key points in the design of public toilets and their facilities: the internal facilities of public toilets are complete and humane; in the design of prefabricated public toilets, attention is paid to details and humaneness. By increasing the number of female toilet seats, establishing a separate room for mothers and babies, and providing special help alarm buttons for disabled toilet seats, it is convenient for everyone; public toilets should use "calcium algae green functional material" as raw material, which is not only "warm in winter and cool in summer", but also It can continuously decompose and purify the odour, smell and gas molecules caused by various pollutants.

Digital information technology: the cloud era allows you to effectively check the location, distance, availability and what services can be provided through the mobile phone and other information is displayed.[4]

5. Research on the design of urban public facilities under the concept of "combining waiting and demand"

The "combining waiting and demand" design for urban public facilities offers new guidance and exploration for the integration of urban multifunctional development. The original single service function can be explored by classifying, simplifying, merging and integrating related functions or spaces of facilities. In today's constant development, every day brings innovation and every day should be eliminated. "combining waiting and demand" in public transport travel is a must.

The functional improvement design of bus stations can mainly start from the emergency needs of city residents, such as the emergency charging needs to be brought about by the demand for mobile phone scanning codes anytime and anywhere during epidemics, big data information terminals such as timely positioning and determining the flow of people, people's internal emergency needs, the need for shelter from wind and rain in bad weather, etc., and the traffic guidance needs of tourists, to effectively solve various problems of residents' travel from the perspective of citizens' interests.

The implementation of the "combining waiting and demand" design of urban public facilities provides an effective solution for the form, structure, production and installation of urban public facilities, which can not only be adapted to local conditions and needs but can also be installed and removed quickly. Improving the quality of service at bus stops will not only improve the well-being of the city but also unlock more economic value in this sector.

The focus is on how to find the perfect solution for the waiting process and related needs at bus stops. The four seasons of waiting - spring, summer, autumn and winter - as well as different climatic conditions such as wind, rain, snow and haze, pose various difficulties for people travelling and waiting. How can bus stops be made 'warm' to provide shelter for travellers and become a better quality urban public service? Needs include many people-related needs that are limited to the process of waiting for a bus, but just because the process seems to take a few minutes does not mean it is not important or urgent. For example, in the current sweeping payment and epidemic situation, a sudden power failure to pay or provide a health code for a mobile phone is an urgent charging need a mobile phone; for many people living in fast-paced cities, a sudden internal emergency while waiting for a bus is also a common situation. At this point, there is a public toilet or shopping centre nearby. These are two prominent requests, and there are many more like them that could improve quality.[5]

6. Conclusion

In short, urban regeneration with the "combining waiting and demand" bus stop will not only improve the public environment and the quality of service but will also expand the scope of business. The value of a traditional bus stop is only reflected in the form of publicity and advertising, which is a single form and rigid means. By integrating demand, it can provide more services that people need, such as shared charging, shared umbrellas, active pushing and intelligent advertising, which not only provide services but also generate economic value. This kind of promotion has important social value for improving the urban service system. The urban network connected by bus stations will enable public facilities and services to be widely covered, timely provided and easy to use. The construction of a new era bus station with Changchun's characteristics, humanity, convenience, efficiency and 'wait and need' integration, will not only be Changchun's calling card but will also improve the happiness of the public and effectively consolidate the purpose of serving the people wholeheartedly. These "wait and need" integrated stations are not only bus stops but also "small windows" for social services. They are a network of thousands of "information monitoring points" that provide citizens with an efficient, safe and happy journey

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