Comparative Study on Provincial E-Government Service Platform Construction under the Strategy of Optimizing Business Environment

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Abstract: In the context of creating a first-class business environment, e-government service platform has become an inevitable trend of government services. As an important window of government services, the construction quality of provincial e-government service platform is directly related to the optimization effect of business environment. In this paper, the provincial e-government service platforms of five provinces and cities, namely Beijing, Shanghai, Zhejiang, Guangdong and Heilongjiang, are selected for an in-depth comparative study. Based on a variety of research methods such as comparative analysis method, research and survey method, text analysis method, etc., this paper summarizes the advantages and shortcomings by comparing the differences between platforms in terms of construction, functional characteristics, service quality, etc., and explores the development trend and optimization direction of the provincial e-government service platforms under the strategy of optimization of the business environment, so as to provide reference suggestions for the construction and optimization of digital government service platforms.

1. Introduction

The report of the 20th Party Congress emphasized that "it is necessary to create a first-class business environment that is market-oriented, rule of law-oriented, and internationalized" and "it is necessary to accelerate the construction of digital China". In the context of building a first-class business environment and a strong digital country, government services have become the focus of optimizing the business environment, and increasing the effectiveness of the digital government has become an inevitable requirement to comply with the new development [1]. The World Bank's business environment evaluation system includes ten important indicators, eight of which are closely related to the "one network". Therefore, the continuous improvement of the provincial digital

government platform construction is very important for optimizing the business environment [2]. However, at present, the digital construction of provincial government services in China is still in the primary stage, and the overall development is relatively lacking [3]. How to build a good provincial digital government platform, enhance the effectiveness of digital government, so as to build a first-class business environment, has become an urgent problem to be solved.

The purpose of this paper is to comparatively study the construction of provincial e-government service platform through online survey and analysis of different provincial digital government websites, to explore the development trend and optimization direction of provincial e-government service platform under the logic of optimizing business environment, and to provide reference suggestions for the construction and optimization of digital government service platforms in order to achieve a more efficient, convenient, and reliable government service, so as to help the goal of building a first-class business environment to be Realization of the goal of building a first-class business environment.

2. Overview of China's provincial e-government service platforms

According to statistics from the China's State Information Center, as of December 2022, 31 provincial-level government service platforms have been built nationwide, and more than 30 State Council departments have built and opened departmental government service platforms. Among the 22,152 provincial administrative licenses provided by the 31 provincial platforms, 16,168 items, or 72.98%, have been equipped with online online appointment pre-trial function, and the average processing time limit has been compressed by 24.96%. According to the Digital China Development Report (2021), the national integrated government service platform has been basically completed, and more than 90% of provincial administrative licensing matters have realized online acceptance and "running at most once", with the average time limit of commitment compressed by more than half. The national "Internet + Supervision" system (Phase I) project has been completed, realizing the docking and connection with the "Internet + Supervision" systems of 31 provinces (autonomous regions and municipalities), and 42 departments of the State Council, and initially establishing dynamic management of supervisory matters, supervision, data convergence and sharing, and risk clue dissemination. It has initially established a working mechanism for dynamic management of regulatory matters, convergence and sharing of regulatory data, and feedback of risk clues.

At present, China's provincial e-government service platforms have been gradually built. Each province has introduced different service models according to its own actual situation. For example, Zhejiang Province has a "government affairs service hall" and Beijing Municipality has a "Beijing government affairs service network". These platforms mainly provide services such as government services, information disclosure, online work and e-mail, providing diversified service options for enterprises and the public [4]. However, at present, the construction of provincial e-government service platform in China is still characterized by problems such as the lack of comprehensive platform content construction, the fact that digital government services in some provinces have not yet covered all industries or fields, the repetitive and single function settings of e-government service platform, the uneven quality of platform information, and the obvious differences in the quality of platform services [5].

3. Comparative Analysis of Provincial e-government service platform in China--Taking "Beijing, Shanghai, Zhejiang, Guangdong and Heilongjiang" as an Example

According to the "2019 General Report on the Assessment of China's Digital Government Service Capacity" released by the China Software Evaluation Center, in terms of provincial government service capacity, Beijing, Shanghai, Zhejiang, and Guangdong provinces are in the first echelon of

the country, with an "excellent" capacity, and they have accumulated a wealth of platform construction, functional design, service innovation, etc. They have accumulated rich experience in platform construction, function design, service innovation, etc., which has an important demonstration and leading role for other provinces; while Heilongjiang Province is still in the initial stage, but the challenges and deficiencies it faces are of great reference significance for platforms that are also in the initial stage or in need of improvement. Therefore, this paper selects the e-government service platform of five provinces and cities, namely Beijing, Shanghai, Zhejiang, Guangdong and Heilongjiang, as the research object, and analyzes the strategies, effectiveness and problems of different provinces in the construction of e-government service platform through comparative research, so as to provide useful references and inspirations for other provinces, in order to jointly push forward the optimization and development of the provincial-level digital government service platforms across the country.

3.1 Comparison of construction situations

As can be seen from Table 1, the provincial digital government platforms of the five provinces and cities differ in terms of construction time, platform form, service scope, functional characteristics, and technological innovation. For example, the digital government platforms in Beijing and Zhejiang started earlier and have more complete functions; Zhejiang's digital government platform excels in "running at most once"; Guangdong's digital government platform features "Guangdong Provincial Affairs" and provides rich government services.

The digital government platform in Heilongjiang has been effective in "cross-provincial common services".

Table 1: Comparison of the construction of digital government service platforms at the provincial level

Category	Beijing	Shanghai	Zhejiang	Guangdong	Heilongjiang
Construction time	2017	2018	2014	2018	2019
Platform form	Website + Mobile Application	Website + Mobile Application	Website + Mobile Application	Website + Mobile Application + Self-service Terminal	Website + Mobile Application
Government Services Mobile	Jingtong wechat mini program	Suishenban Citizen Cloud APP Suishenban wechat mini program	Zheli Office APP, wechat mini program	Guangdong Provincial Affairs APP, wechat mini program	Heilongjiang province affairs APP, wechat mini program
Scope of Services	Municipal, district	Municipal, district	Five levels of provinces, cities, counties and villages	Provincial, city, county, town and village levels	Five levels of provinces, cities, counties and villages
Functional Features	One-stop service, intelligent guidance	One network, e-certificates	Doing things at most once and in the palm of your hand	Guangdong Provincial Affairs and Government Services Supermarket	Counting run Longjiang, cross-provincial through the office
technological innovation	Big Data, Artificial Intelligence	Cloud computing, blockchain	Mobile Internet, Internet of Things	Blockchain, Artificial Intelligence	Cloud computing, big data, blockchain

3.2 Comparison of Platform Functions

Under the major decision of "accelerating the construction of digital China", the function construction of provincial e-government service platform is particularly important [6]. In this section, we will compare the provincial e-government service platform of five provinces and cities, namely Beijing, Shanghai, Zhejiang, Guangdong, and Heilongjiang, in terms of basic functions and extended functions (see Tables 2 and 3 for details).

3.2.1 Comparison of basic functions

Table 2: Comparison of basic functions of digital government service platforms in five provinces and cities

functional category	Beijing	Shanghai	Zhejiang	Guangdong	Heilongjiang
Information Release	Provide timely dissemination of information on policies, regulations, announcements, etc.	Integration of various types of government information to realize one-stop inquiry	Intelligent information push to meet the user's personalized needs	Multimedia information dissemination for enhanced interactivity	Simple and clear release of government information
Online Consultation	Establishment of an online question-and-answer system to provide real-time advisory services	Provide 24-hour online customer service to answer user questions	Intelligent customer service combined with manual customer service to provide efficient service	Introducing AI technology for intelligent Q&A	Provide online counseling services during weekday hours
Clerk's Guide	Detailed procedures, list of materials and notes, and display of sample results	Clear guidelines on how and where to do business to provide convenient services	Clearly show the process of doing business, declaration materials	Interactive clerical guide with online booking available to enhance user experience	Introduction to basic office procedures

In terms of basic functions, the provincial e-government service platform of the five provinces and cities all provide basic functions such as information dissemination, online consultation, and office guide. Among them, the e-government service platform in Beijing, Shanghai, Zhejiang and Guangdong are more complete in terms of function coverage and user experience, especially in Zhejiang Province, where intelligent guidance and personalized recommendations have greatly improved the user experience. The digital government platform in Heilongjiang Province, on the other hand, is relatively simple in the construction of basic functions, but it can also meet the basic needs of government services.

3.2.2 Comparison of Expanded Functions

In terms of expanding functions, Beijing, Shanghai, Zhejiang and Guangdong are at the forefront of expanding functions, improving the efficiency of government services and promoting the digital transformation of the government through mobile applications, data sharing and intelligent supervision. Among them, Zhejiang Province's digital government service platform has realized efficient and convenient government services through one network and data integration. And although Heilongjiang Province is relatively lagging behind in expanding its functions, it is also gradually

promoting the construction of data sharing and smart supervision, etc., in an effort to improve the level of government services.

Table 3: Comparison of Expanded Functions of Digital Government Service Platforms in Five Provinces and Cities

functional category	Beijing	Shanghai	Zhejiang	Guangdong	Heilongjiang
mobile application	Provision of rich mobile government service applications	Integration of various government services to mobile	Promoting the concept of "one-stop-shopping" and realizing mobile services	Building a "Digital Guangdong" Mobile Government Platform	Promoting the Heilongjiang Provincial Affairs App to provide convenient services
data sharing	Realization of cross-sectoral and cross-regional data sharing	Building a government data-sharing platform	Deep integration of data resources to increase the value of data utilization	Building a data-driven government and promoting data integration and communication	Progressively promoting data sharing to enhance service efficiency
intelligent supervision	Introducing Big Data, Artificial Intelligence and other technologies for smart regulation	Intelligent regulatory system comprehensively covers all areas	Creating a new model of "Internet + Supervision"	Intelligent regulatory tools to enhance regulatory effectiveness	Gradual introduction of smart regulatory tools

3.3 Comparison of service quality

The service quality of the digital government platform is also an important indicator, which will directly affect the user's experience. The following is a comparative analysis of the service quality of the platforms of five provinces and cities in four dimensions: service response speed, service content coverage, intelligent Q&A accuracy, and mobile user satisfaction. (See Table 4 for details)

Table 4: Comparison of service quality of digital government service platforms in five provinces and cities

Category	Beijing	Shanghai	Zhejiang	Guangdong	Heilongjiang
Service response time (seconds)	Average response time ≤ 3 seconds	Average response time ≤ 3 seconds	Average response time ≤ 5 seconds	Average response time ≤ 5 seconds	Average response time ≤ 7 seconds
Coverage of services (number of matters)	3082 items	3622 items	3638 items	3932 items	1547 items
Smart Answer Accuracy	Highly accurate and detailed information with direct jumping links	Accuracy is high, but there is repetitive redundancy in the recommended responses	Highly accurate, jump link to do it online, more detailed answers	Highly accurate, comprehensive and detailed recommendations. You can also make an appointment online for offline business	Less accurate, requires multiple clicks to jump, cumbersome and complex operation
Mobile user satisfaction (out of 5)	4.4 points	4.3 points	4.6 points	2.4 points	1.3 points

In terms of service response speed, the opening time of the platforms in five provinces and cities

is basically within 7 seconds, which is far lower than the standard of website opening speed of less than 15 seconds required by the "Inspection Indicators for Government Websites and Government New Media". Among them, the average response speeds of Beijing and Shanghai are faster, both within 3 seconds, followed by Zhejiang and Guangdong, which are controlled within 5 seconds, while the average response time of Heilongjiang Province is longer, but also basically controlled within 7 seconds.

Most of the pages of the digital government service platforms in five provinces and cities can be opened, but there are still some pages that cannot be accessed successfully. Some platforms occasionally fail to open on the home page, such as the "One Network Office" in Xuhui District, Shanghai; some have breakpoints, no response or error prompts when jumping from page to page, such as the city of Guangdong Province, where "404" prompts appear after clicking on a page link.

In terms of service content coverage, Guangdong Province is the most outstanding, with more than 3,900 items of government services covered, showing the advantages of its digital government service platform in terms of functional richness and comprehensiveness of services. Shanghai, Zhejiang and Beijing also have higher service content coverage, with more than 3,000 items, which can meet the needs of most users.

Heilongjiang in the access to the number of government service matters is slightly inferior, only 1,000 + items, most of the functions of the query can not be or can only be handled offline, but also need to expand the content of the service and enhance the depth of the service to increase investment.

In terms of the accuracy of intelligent Q&A, this study conducted a comparative analysis of the same question "How to apply for business subsidies". Among them, the performance of Beijing and Guangdong is better. In the Beijing platform, the intelligent service assistant can directly guide users to the detailed office guide page, realizing the efficiency and convenience of online processing; Guangdong's intelligent consultation can accurately recommend matters and directly jump to the online processing page, and it also supports offline reservation service. Zhejiang's government service platform also performs well, providing online processing links and detailed information on government services through intelligent Q&A, with a better user experience. Shanghai's intelligent customer service provides relevant recommendations, but there are many repetitive items, jumping complex problems, still need to be handled offline, the user experience is slightly cumbersome. The Heilongjiang platform in recommending government services has the problems of repeated recommendations and cumbersome jumping, and the user experience is not good.

In terms of mobile user satisfaction, this study selected the APP user ratings of each province and city in the app store as reference, and the data in the table shows that the mobile apps in Beijing, Shanghai and Zhejiang perform well, with ratings of more than 4.0, while the ratings of Guangdong and Heilongjiang are lower, at 2.4 and 1.3, respectively.It is reported that the lower rating of Guangdong's Guangdong Provincial Affairs APP is mainly due to the fact that Guangdong focuses on the development of of 'Guangdong Provincial Affairs' mini-programs, and most of the functions in the APP need to jump to mini-programs in order to realize them, thus causing users' dissatisfaction; while the problem of Heilongjiang's Provincial Affairs APP is more serious. In order to explore the reasons for Heilongjiang's low user satisfaction on the mobile side in depth, this article captures the public's comments on "Heilongjiang's Provincial Affairs APP" in social media platforms.

After cleaning the comment text, including removing meaningless words, deactivated words, and high-frequency words in topics such as "province-wide affairs" and "APP", we get the word cloud of Heilongjiang province-wide affairs APP comments (Fig.1). As shown in the figure, the text is the high-frequency keywords appearing in the public opinion evaluation, and the larger the text is, the higher the frequency of the keywords appearing.

Figure 1: Review word cloud of Heilongjiang province affairs APP

The chart shows that "Authentication" appears most frequently, followed by "Registration Failure", while "Elderly", "Password", "Unsuccessful", "Trouble", "Doesn't work", "Longjiang social welfare", etc. are also quite high frequency. Users pay more attention to the qualification certification function of retiree treatment, but generally encountered registration failure, the overall process is considered inconvenient for the elderly to use, users have complained that "too much trouble", and strongly requested to restore the "Longjiang People's Social Service APP". This shows that the mobile application of government services in Heilongjiang Province needs to be improved in terms of user experience.

This shows that there is an urgent need to improve the user experience of the mobile application of government services in Heilongjiang Province.

Through a comparative study of the digital government service platforms of five provinces and cities in three dimensions: construction, platform functions and service quality, we find that the e-government service platform of each province have been relatively perfect in overall construction, and the platform functions have been gradually enriched, but in terms of the actual service quality, there is still a certain gap from the real convenience of the people. Specifically, the following problems exist.

1) Some platforms still have deficiencies in content construction, such as insufficiently in-depth policy interpretation, insufficiently detailed service guides, and overly complex operational processes, all of which affect user satisfaction with the platform.

2) The accuracy of the intelligent answering system is not high enough to meet the precise needs of users. Not only the late-starting Heilongjiang platform, the popular Shanghai government service platform also still has problems such as repetitive answers, still needing to be handled offline, and a more cumbersome user experience.

3) There are certain problems with the quality of the system, and the system stability of some platforms is insufficient, prone to problems such as lagging and crashing, and even in Guangdong, which has achieved leading results in "digital government" reform, there are still cases of webpage jumping with a breakpoint, which affects the normal use of users.

4. Countermeasures and Suggestions for Promoting the Construction of Provincial Digital Government Platform in China under the strategy of Optimizing Business Environment

4.1 Promote information technology application and innovation and deepen digital transformation

The core of the construction of the digital government platform is the application and innovation of information technology. Government departments should strengthen digital transformation, improve their ability to apply digital technology, build digital management and service systems, and promote the construction of digital government service platforms.

4.2 Strengthen platform content construction and promote intelligent upgrading of government services

Provinces should further improve the digital government service system, cover more industries and fields, introduce some new types of digital services, and improve the level of platform content construction. Provinces should further improve the quality of digital government services, focusing on the timeliness and convenience of the services, and at the same time, improve the openness of information on the platform and strengthen the disclosure of various types of government information. They have strengthened the standardization and classification management of government information to ensure the standardization and readability of information release; they have focused on user experience, and through diversified ways of presenting and interacting with information, they have made it possible for users to obtain the information they need in a convenient and quick manner.

4.3 Optimize the functional features of the platform and improve the quality of digital services

Provinces should continuously improve the functional features of e-government service platform, focus on the integration of online and offline services, improve the operability and service quality of the platforms, and reduce service dropouts and failures. It provides convenient online application services, including online application, online examination and approval, online processing and other links, realizing the onlineization of the entire process of government services; it provides online announcements, notifications and feedback functions to enhance interaction and communication between the Government and the public; and it provides data-sharing and collaborative office functions to open up information barriers between various departments, realizing the sharing of data resources and collaborative office work.

4.4 Strengthen system quality management and promote the standardization of digital government affairs

Local government departments should strengthen the security and reliability of the digital government platform, improve the operational framework and operational mechanism of the service system, and enhance the stability and security of the platform. It has established a perfect platform management mechanism, strengthened the daily maintenance and management of the platform, and ensured that the platform's information is open and transparent, and the data is accurate and reliable. Through the supervision and assessment mechanism, it promotes the standardization, unification and standardization of the construction of the government affairs service platform and promotes the standardized development of the construction and use of the government affairs service platform.

4.5 Strengthening service awareness and capacity to promote the optimization of the business environment

The construction of the digital government platform aims to provide efficient and convenient government services, so the government and relevant organizations should further strengthen the cultivation of service awareness and the enhancement of service capacity to provide users with a higher-quality service experience.

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