

Research on the Construction Dilemma and Path of Digital Governance Platform under the TOE Framework—Based on the Comparative Analysis of Sichuan and Guizhou Provinces

Min Pan^{1,a}, Zewang Cimu^{1,b}, Jing Li^{1,c,*}, Jinluan Gao^{1,d}, Lu Wang^{1,e}

¹ Southwest Minzu University, Chengdu, Sichuan, 610207, China

^a3544475122@qq.com, ^bzwcm161129@163.com, ^clj13314428924@163.com, ^d2981859699@qq.com, ^e2724748359@qq.com

*Corresponding author

Abstract: The "14th Five-Year Plan" proposes that "digital technology will be widely used in government management services and the level of digital government construction will be improved". A digital governance platform is a key means of driving grassroots digital governance. Today's discussion focuses on how to effectively use digital technology to enable the digital empowerment of grassroots governance in China. Based on the TOE framework, this paper analyzes the current problems of digital governance platforms in grassroots governance through the construction and research of digital governance platforms in the Sichuan and Guizhou provinces. And use this to explore its optimization path to promote the development of the digital governance platform and promote the digital transformation and upgrading of grassroots governance.

Keywords: Digital governance platform; Digital grassroots governance; TOE framework; Question of reality; Path exploration

1. Introduction

Grassroots governance is an important aspect of national governance, and the effectiveness of grassroots governance is related to the goals and impact of national and societal governance and the people's vital interests [1]. With the advent of the digital age, the CPC (Communist Party of China) Central Committee attaches great importance to the construction and development of digital China and introduces technologies such as the Internet, artificial intelligence, big data, and blockchain into the grassroots government. The report of the 20th National Congress of the Communist Party of China emphasized building a "digital China", which is an important part of building a modern socialist country in an all-round way. In February 2023, the CPC Central Committee and the State Council issued the "Overall Layout Plan for the Construction of Digital China", which clarified that building a digital China is an important engine for promoting Chinese-style modernization in the digital age, and it also is strong support for building new advantages in the national competition and accelerating the construction of a new development pattern [2]. Grassroots digital governance is an integral part of "Digital China" construction, using digital technology to empower and promote the development of grassroots governance in the direction of digitalization, intelligence, and precision. Under the background of deepening digital transformation, Sichuan Province and Guizhou Province have achieved certain results in constructing and applying digital governance platforms and have played a good demonstration role in the country. This paper combines the practical exploration of the construction of the digital governance platform in the two provinces, analyzes the problems existing in the current digital governance platform, and provides practical suggestions for improving and promoting the digital transformation and the construction of the digital governance platform. And help promote the modernization of the national governance system and governance capabilities.

2. The Status Quo of Digital Governance Platform Construction in Sichuan and Guizhou Provinces

Considering the difference in the efficiency of construction and development of the foundation and the difference in regions, Economy, geography, and humanities. The author chooses the following three

research sites as a reference to ensure the typicality and science of the sample. First, its service capabilities have a certain leading and exemplary role in the country, and the selected samples are innovative and advanced; The second is the sample coverage, and different geographical regions are selected; The third is that relevant digital platform data is open, and information can be obtained through the Internet and related channels. According to the above standards, the following research and analysis data are derived from the relevant digital governance platforms in Sichuan and Guizhou provinces, such as government apps, government portal websites, and media and network paper libraries. This article attempts to compare and analyze the development status of the digital governance platforms in the two places based on the analysis of the existing sample data and literature and explore the optimization path based on discovering the shortcomings.

2.1 Consolidate the Top-level Design, Provide a Solid Guarantee

Sichuan and Guizhou Provinces have achieved certain results in digital transformation and the construction of digital governance platforms, and they ranked high overall in the assessment of online government service capabilities of Chinese provincial governments in 2019. Its digital service capabilities have a certain leading and exemplary role in the country. In particular, Guizhou province, as an economically underdeveloped western province, can rank among the first echelon of China's provincial "digital government". Its experience is worth learning. The two places have attached great importance to top-level design, that is, policy coordination. In recent years, they have also gradually improved existing policies to provide reliable support for the construction and development of digital governance platforms, as shown in Table 1:

Table 1: Summary of related policies in the two provinces

Provinces and models	Relevant policy documents
Sichuan province "Digital government"	Sichuan Province to accelerate the ' Internet + government services ' work program
	Sichuan province 's action plan for deepening the reform of " decentralization, administration and service " and optimizing the business environment (2019-2020)
	Implementation opinions of Sichuan Provincial People 's Government on accelerating the development of big data
	The implementation rules of Sichuan government information resource sharing management (Interim)
Guizhou province "Above clouds Guizhou"	Comprehensively deepen the "Chongqing Yun Chang Zhi" Work Plan
	Guizhou government information system integration and sharing work plan
	Notice on further strengthening the openness of government affairs, portal website construction, e-government network application work
	Detailed rules for the implementation of provincial government affairs cloud resource management in Guizhou Province
	The Guizhou Province implementation plan of big data ten projects in 2017

2.2 Develop Multiple Platforms, Provide Convenience Services

The two provinces have fully grasped the advantages of the digital governance platform in their social governance, developing digital applications and improving the service functions of the online platform in line with the actual situation in the region, and certain results have been achieved. Regarding the development of digital APPs, Sichuan and Guizhou "each has its own merits", through the collection of data materials, the author summarizes the specific digital APPs and their service ratings in the two places, as shown in Table 2:

Table 2: Statistics of digital APP in the two provinces

Province	Name of government APP	Huawei App Store	VIVO App Store	OPPO App Store	iPhone store	Average score
Average score	"Duocaibao" App	4.5points	4.7points	4.9points	4.6points	4.7points
	"Gui Ren Service" App	4.0points	3.7points	1.7points	/	3.1points
	"Guizhou Tong" App	1.0points	2.8points	3.9points	/	2.6points
Sichuan Province	"Tianfu Tongban" App	2.4points	1.7points	1.4points	4.1points	2.4points
	"Tianfu Citizen Cloud" App	1.9points	4.5points	3.9points	4.0points	3.6points
	Sichuan earthquake early warning	2.3points	3.4points	2.8points	/	2.8points
	Emergency earthquake information	/	2.5points	2.8points	/	2.7points

According to the data in the table above, the apps currently being promoted in the two places are "Duocaibao" in Guizhou Province and "Tianfu Citizen Cloud" in Sichuan Province. Its overall user ratings on major download platforms are high, which is enough to show that the digital service functions of the two apps have achieved certain results. The two places have also developed related digital apps, such as "Guizhou Tong" and "Tianfu Tongban". Based on this, the author has collected more related usage and download of digital applications, as shown in Table 3. Users of "Duocaibao" account for 41.3% of the total population of Guizhou Province, while "Tianfu Tongban" and "Tianfu Citizen Cloud" exceed the total population of Sichuan Province in 2022 by 83.74 million. From the number of downloads, we know that such platforms' promotion utility is relatively high. Although the overall user downloads are large, further exploration is needed to achieve full coverage.

Table 3: Digital APP usage in two provinces

Province	Name of government APP	Huawei App Store	VIVO App Store	OPPO App Store	Sum
Guizhou Province	"Duocaibao" App	494 million	460000	280 million	931.9 million
	"Gui Ren Service" App	3million	22thousand	10000	662thousand
	"Guizhou Tong" App	2590million	6550	973million	10113million
Sichuan Province	"Tianfu Tongban" App	6868million	171million	1922million	8961million
	"Tianfu Citizen Cloud" App	5836million	914million	1502million	8252million
	Sichuan earthquake early warning	582million	6010	269million	6861million
	Emergency earthquake information	/	25thousand	339thousand	64thousand

2.3 Innovate Service Functions, Create Platform Features

The innovation of relevant digital governance platforms in the two provinces is more prominent, and they have fully created their own characteristics in the actual development and construction process. Digital APP has complete service functions, pursues the "multi-function + one platform" model, and strives to integrate various services on various digital platforms. The "Ducaibao" APP in Guizhou launched convenient functions such as "traffic travel", "exit and entry", and "life services". In addition, the "Ducaibao" APP is used to publish emergency management news information, popular science knowledge, security tips, and other content to achieve functional innovation beyond government services. Sichuan's "Tianfu Citizen Cloud" APP includes various special services such as social security,

environmental weather, and legal services. The services are diverse and convenient for the public, providing a powerful platform for local grassroots governance.

2.4 Construct Emergency Platform, Strengthen Governance Efficiency

In addition to social governance services focusing on responding to public emergencies, Sichuan and Guizhou provinces have also made relevant achievements in constructing emergency department portals. According to the functional analysis of the portal website of the two provincial emergency management departments, the basic service functions of the two provinces are perfect, such as information release, data disclosure and so on. Among them, compared with Sichuan province, Guizhou province launched the "Party Building" column, highlighting the emergency mechanism led by the Party Building. Sichuan Province's emergency website also has unique strengths, which implement the "direct service" function on the emergency site, and optimizes vertical links, providing an efficient platform for giving full play to the joint role of departments to deal with public emergencies.

3. The Construction Dilemma of Digital Governance Platform

With the wide application of big data and other information technologies in the field of grassroots governance, digital governance platforms are playing an increasingly important role in grassroots governance, the ability of digital governance is gradually improving, and the governance system is constantly improving. According to the analysis and comparison of the construction and use of the digital governance platform in the two provinces based on the survey data obtained, it can be seen that both the service function of the digital governance platform and the governance effect it brings will be positive and considerable in the future [3]. However, it is worth noting that the development of digital governance platforms across the country has not reached universality, and there are certain problems in its construction and application, which restrict and hinder the development of grassroots digital governance. It is necessary to explore its optimization path further to achieve innovative breakthroughs.

3.1 Technical Aspect

3.1.1 Poor Technical Support and Weak Infrastructure

The advancement of technology and the completeness of infrastructure are the basis for the digital governance platform to be used. Inadequate technical support for digital governance platforms is reflected in the lack of technical capacity to apply relevant technologies and use technologies to achieve resource integration [4]. In other words, having tech support is the hardest part. In addition, the infrastructure of the digital governance platform has problems, such as high construction costs and long recovery cycles. There is a lag in the layout of relevant facilities, resulting in a difficult situation where digital governance platforms are difficult to implement in some areas.

3.1.2 Not Perfect Platform Function and Weak Information Integration Ability

Since the current digital governance platform planning is mainly classified according to government departments, the information integration capability is still relatively weak, and the exclusive customization model of "public-centered" guidance services has not yet been established [5]. The provision of basic public services (basic education, medical care, social security, etc.) supported by basic digital platforms is still very much lacking, the degree of development is low, and these should become an important part of constructing grassroots digital platforms. In addition, the existing functional module settings of the platform ignore the key content of governance and thus lack the data basis for integrating resources. Therefore, the participation of the grassroots and the supply of basic public services should be highlighted.

3.2 Organizational Aspect

3.2.1 Insufficient Coordination among the Various Entities on the Platform and Asymmetric Information Resources among Departments

The effective use of the digital governance platform requires the joint efforts of local governments, enterprises, and other social organizations. The lack of coordination among the various subjects of the digital governance platform is reflected in the fact that it is difficult to effectively incorporate multiple subjects, such as the market, society, and the public into digital governance. In other words, playing the

alternate role of multiple subjects in governance is difficult to achieve flexibility. In addition, due to the phenomenon of "compartmentalization" and "selfish departmentalism" among departments, there are "information barriers" between departments horizontally and vertically across levels, which leads to problems such as poor information communication, insufficient information sharing, and lack of trust between government departments, government and enterprises, government and other social organizations, and government and villagers in the digital governance process, then furthered hinders the development of grassroots digital governance.

3.2.2 Outdated Concept of Digital Governance and Lack of Technical Talents Support

Digital governance is an important prerequisite for advancing the digitization of grassroots government. On the one hand, due to the lack of digital awareness of grassroots staff, a professional construction team with solid professional knowledge, strong information technology, and high service awareness has not been established. Therefore, the ability to use digital technology to manage the business is not high, there is a lack of awareness of monitoring the development of the latest digital technology, and strategic understanding of digital governance is not high. On the other hand, the service object digital concept quality is not high. Even if the construction of a digital governance platform theoretically increases the channels for the public to participate in public services, the residents' awareness of digital service utilization and the poor ability to use information has caused the enthusiasm of the people to participate not high, which in turn affects the effectiveness of the digital governance platform [6].

3.3 Environmental Aspect

3.3.1 Uneven Economic Development and Large Digital Divide among Populations

The degree of economic development directly affects the construction of a digital governance platform. The imbalance of regional development, the differences in economic development level, the distribution of information resources, the distribution of natural resources, and other conditions in each region determine different degrees of digital governance across regions [7]. However, the long-term existence of the urban-rural digital divide has led to a certain degree of lag in the degree of digital governance in rural areas compared with urban areas. At the same time, vulnerable groups in society are marginalized due to a lack of digital skills, and the digital divide among groups is widening. Digital government governance is shrinking, and more and more grassroots governments are using online government service platforms, which is eroding the initial offline resources that groups are digitally disadvantaged. It's easy for people not to keep up governance transition, leading to systematic social exclusion.

3.3.2 The Impact of the Existence of Information Technology Risks on Personal Information Security

The normal operation of a digital governance platform requires big data support, and public decision-making is based on big data. On the one hand, due to technical problems, the risks of information leakage or misuse of the information in data collection and storage links, data use, and biometric information updates cannot be ignored. Personal data such as fingerprints and faces are frequently used, increasing the risk of disclosing and misusing personal data [8]. On the other hand, the lack of security awareness of information management personnel, non-standard information use, and untimely information update feedback also increases the risk of public decision-making, leading to information security anxiety.

4. Path Optimization of Digital Governance Platform Construction

4.1 Technical Respect

4.1.1 Cultivate Big Data Technology Capabilities, Optimize New Infrastructure Construction

Technology is the core support, and facilities are the guarantee for operation. The use of digital governance platforms can be understood as applying technologies such as the Internet and big data to governance. Therefore, attributing and cultivating local big data technology skills, processing large amounts of data in real-time, and applying the unique capabilities of big data technology to create new data value to the digital governance platform will be the foundation of a sophisticated society. It can be an important support for the realization of base government. In addition, ministries need to perform their functions actively, give full play to their leading role in building the foundation, and increase capital investment to construct facilities related to the technical management platform. And create an excellent

basic environment for developing a digital governance platform. For example, by vigorously developing the big data industry, Guizhou Province has broken the limitations of natural conditions and development foundations to achieve leapfrog transformation development.

4.1.2 Highlight the Platform Service Function, Expand the Space for People to Participate

The main service objects of the digital governance platform are highly overlapped with the people in the jurisdiction, so the platform should emphasize its regional and local characteristics more. The first is understanding the needs of the people in the local jurisdiction. The needs, characteristics, and concerns of the local people should be actively studied. Regarding platform module setting, it is necessary to provide targeted and precise government services for residents in the region. The second is to give full play to the knowledge collection function of the platform and "enable" platform data integration. Through the digital platform, timely obtain the problems that arise in grassroots governance and the understanding and opinions of the grassroots people on the problems, and use this information as the basis for problem-solving, and then gather the suggestions and wisdom of the people to stimulate the creativity and vitality of grassroots residents.

4.2 Organizational Respect

4.2.1 Optimize the Relationship between the Main Bodies, Promote the Sharing of Departmental Data

To promote the sound development of the digital governance platform, all parties involved in the platform need to cooperate. The first is to play the leading role of the government. The role of the government is "helmsman" rather than "paddler". Its main role in digital governance is coordinating all parties' forces, accelerating the transformation of functions, and building a digital governance platform for multi-subject cooperation. The second is to encourage government agencies to open up their data and improve the mobility of data information within their organizations [9]. Do a good job of data concentration and sharing platform, cooperate with data interaction, integrate resources into the same platform, further reduce the information asymmetry between departments, and strengthen data exchange and data fusion.

4.2.2 Cultivate the Concept of Digital Governance, Strengthen Team Building

The digitization of governance fully expresses the positive role of digital technology in the field of grassroots governance, promotes the concept of digital governance, strengthens the capacity of digital governance, and promotes the transformation of grassroots governance to digital technology thinking direction. On the one hand, it is about attracting digital technology talent. In the digitalization of grassroots governance, it is necessary to strengthen the digital governance concept of grassroots cadres, expand the scope of digital technology talent training, form a multi-field and multi-level talent team, and cultivate compound digital governance talent. On the other hand, local governments should use existing channels to disseminate digital knowledge and guide people in various ways to have a correct understanding of digitalization, improve their digital skills, and increase the applicability of digital technology.

4.3 Environmental Respect

4.3.1 Develop the Economy according to Local Conditions, Increase Financial Support

Gathering various resources, optimizing industrial layouts and driving digital resource development will help drive value transformation and improve resource categories, enrich the disposable income of local finance and ensure the economic basis for the efficient operation of the digital governance platform. On the one hand, the government will strengthen policy incentives for rural areas in developing regions, reduce regional development imbalances in telecommunications infrastructure construction, and actively cooperate with companies and other non-governmental organizations in providing investment subsidies, tax incentives, and other policies to adjust market supply and demand. On the other hand, increasing capital investment in digital construction in remote areas will help optimize and upgrade digital infrastructure in rural areas, strengthen the construction of infrastructure information databases and narrow the urban-rural digital divide.

4.3.2 Construct a Data Security System, Enhance Digital Information Security

We need to establish a corresponding data security system to eliminate digital anxiety. For example, setting up a special fund for rural digital governance technology to encourage high-tech talents to participate in the development and optimization of the platform to make up for the defects of information

technology, improve the security system and increase the safety factor of information. In addition, through publicity and training to enhance data protection awareness, data security risk awareness, and data security protection capabilities, from the four stages of data collection, data storage, data use, and data update feedback to reduce the risk of information leakage or improper use, to balance information sharing and information security issues.

Acknowledgement

This work is supported by the Innovation and Entrepreneurship Training Program of students of Southwest Minzu University.

Research on the Resilience Empowerment Path of Digital Governance Platform under the TOE

Framework - Based on the Comparative Analysis of Sichuan and Guizhou Provinces(Fund number: 202310656030).

References

- [1] Zhai Yun, Cheng Zhu, He Zhe and so on. Co-ordinate and promote the construction of digital China to lead the new era of digital intelligence in an all-round way- ' overall layout planning for the construction of digital China ' [J / OL].E-government : 1-21 [2023-05-25].
- [2] Liang Sumei, Li Ning. Preliminary exploration and deepening of the standardization of digital governance in grassroots society-Taking Zhejiang Province as an example [J].China Standardization, 2022 (15): 141-145.
- [3] Fan Bo, He Chunhua, Bai Jinyu. Why digital governance platforms fail in the context of public emergencies: an analytical framework of ' technology application-resilience empowerment ' [J]. Journal of Public Administration, 2023,20 (02) : 140-150 + 175.
- [4] Guo Tao, Wang Xiaoqian. The influencing factors and promotion path of the government 's integrated government service ability under the TOE framework [J / OL].Journal of Kunming University of Science and Technology (Social Science Edition) : 1-9 [2023-05-25].
- [5] Chen Liru. Research on the improvement of government APP service power-based on the comparative analysis of government APP in four provinces and cities [D].Jiangxi : Jiangxi Normal University, 2020.
- [6] Zhou Jiahong. Research on the optimization of rural governance platform in the digital age-Taking the digital rural platform of Guizhou Province as an example [J].Southern Agricultural Machinery, 2023, 54 (02) : 117-119.
- [7] Liu Shun. The realistic dilemma and promotion path of digital rural construction under the background of rural revitalization [J]. Shanxi Agricultural Economy, 2021, No.310 (22) : 36-37 + 40.
- [8] Gu Limei, Li Huanhuan. Comparison of three typical models of urban digital transformation in China - Taking Shanghai, Shenzhen and Chengdu as examples [J / OL].Public Management Journal : 1-19 [2023-05-25].
- [9] Liang Zhihao. The influencing factors and promotion path of ' Internet + government service ' ability under the TOE framework [D]. Guangdong University of Technology, 2022.