Effective of Management Framework for the National Health Information Platform in Underdeveloped Regions of China

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Abstract

This study explored the optimal management of regional national health information platforms, focusing on the challenges faced by underdeveloped cities in China. Three core objectives guided the research 1) to identify the key components of an effective management system and understand how they interacted, drawing upon existing examples of platform development and implementation, 2) to construct a conceptual model, grounded in theories of multi-source flow, data lifecycles, and policy diffusion, and 3) to formulate testable hypotheses about the relationships between these components and empirically validate the model and hypotheses through rigorous data analysis. A quantitative approach was employed in this study. The target population consisted of hospital management, hospital information department personnel, medical informatization practitioners, and staff from health management departments at four hospitals in Baiyin City, Gansu Province. There were an unknown population number, data were collected from 900 completed questionnaires administered to personnel within these hospitals.

The study found that existing platforms revealed key elements crucial to a successful management system: the initial planning and construction phase, the ongoing operation and security management, and, critically, the management of data. Furthermore, the study uncovered significant interdependencies between these elements. A conceptual model could developed, integrating insights from multi-source flow theory, data lifecycle theory, and policy diffusion theory. This model proposed specific relationships between the identified key elements and overall platform success. The subsequent empirical testing of the model and hypotheses, conducted through data analysis, provided strong support for the hypothesized relationships. The quantitative analysis demonstrated statistically significant positive correlations between the key elements, thereby validating the conceptual model. These findings suggested that improvements in one area, such as data management, were likely to have a cascading positive effect on other areas, like operation and security, ultimately contributing to the long-term success and sustainability of the regional national health information platform.

Keywords: Effective, management, framework, national health information platform

Introduction

Information is crucial for societal progress, especially in our interconnected world. The

integration of data and technology drives innovation across industries, boosting production, efficiency, and market transactions. The healthcare sector is undergoing a similar transformation. Healthcare information resources are a key driver for improved quality and efficiency, supporting the evolution of service models, advancing structural reforms, and shaping global competition (Xu 2016). Strategic planning and development of these resources will significantly alter healthcare delivery, improving efficiency and quality, expanding resource availability, and driving further reform. This will also foster new business models and economic opportunities, ultimately better addressing diverse public health needs.

1. It is conducive to standardizing the construction and implementation management of regional public health information platforms. Establishing and improving the management standard system of the regional national health information platform is the need to promote the development of informatization, accelerate the construction and application of various application systems, realize the sharing and exchange of Health data from the Official Chinese government including National Health Commission of the PRC, National Bureau of Statistics of China, and China CDC (Center for Disease Control and Prevention), and facilitate the coordination of various departments in university management. Through the research, formulation, and application promotion of standards, continuous enrichment, improvement, and innovative development in practice, new experiences, methods, and technologies formed in specific practice and scientific research can in turn promote the improvement of existing standards and the research and formulation of new standards, guiding platform construction.

2. It is conducive to improving medical and health Chinese Big data governance capability. The application of the National Health Information Platform will promote the optimization and innovation of health business management models and processes, and overall promote the operational efficiency of health services in this city. In terms of medical services, reducing unnecessary medical procedures, guiding reasonable diagnosis and treatment paths, allowing medical staff to focus on the medical business itself, improving the efficiency of the diagnosis and treatment process, reducing patients' time in the hospital, and objectively reducing the operating costs of the hospital. In terms of public health, it is necessary to have a more comprehensive understanding of the business information of public health in this city, promote the optimization of public health management and service models, promote the scientific

formulation of policy mechanisms, enhance the overall energy efficiency of the city's public health system, thereby improving the prevention and control of group health, and accelerating the improvement of environmental factors that affect group health. In terms of comprehensive management, it is able to timely grasp health resource information, citizen health information, medical institution operation information, public health management information, etc., alleviating the traditional hierarchical reporting mechanism, reducing the tedious process of manual verification, improving the accuracy and timeliness of various indicators, and improving the efficiency of comprehensive management decision-making.

3. It is conducive to completing the task of national health informatization construction. Both the 13th Five Year Plan for Health China regard population health informatization as an important task, proposing the construction of a health informatization service system, relying on regional population health information platforms to achieve continuous recording of electronic health records and electronic medical records, as well as information sharing among medical institutions of different levels and categories. The national major e-government project has included the information technology project for national health security as an important task, proposing the establishment of a practical and shared comprehensive population health information system that integrates traditional Chinese and Western medicine, strengthening information standardization, and gradually achieving unity, efficiency, and interconnection. The 13th Five Year National Population Health Informatization Development Plan clearly requires the establishment of a unified and standardized national population health care Big data resource directory system, and in accordance with the principle of "one number, one source, and multiple verification", it will achieve centralized authoritative supervision of data, authorization, classification, and regional management, and steadily promote the sharing and opening of population health care Big data resources on the premise of strengthening safety protection and privacy protection according to law. The guiding opinions of the General Office of the State Council on Promoting and Standardizing the Development of Health and Medical Big Data Applications propose to fully rely on the national e-government extranet and unified data sharing and exchange platform, expand and improve existing facilities and resources, and comprehensively build a national, provincial, municipal, and county-level population health information platform that is interconnected and shared, and strengthen public health, family

planning, medical services, medical security, and drug supply Integrated management and other application information system data collection, integration and sharing, and business collaboration . The country attaches great importance to the construction of the National Health Information Project and conducts research on the platform standardization system. This is the foundation and prerequisite for achieving interconnection and data sharing, and also a requirement to respond to national policies and complete the task of national health information construction.

4. the common problem in various medical institutions is the lack of unified planning for system construction, the existence of a segmented structure and multi head management, and the difficulty in coordinating management and data application (Smith 2022, 42-41) caused by vendors with different capability dimensions, which does not meet the requirements of refined management. There is an urgent need to establish a unified data resource center and business application center, so that health and medical data can be fully circulated and effectively solve the problems of data silos and data corruption.

5. It is conducive to reducing the threshold for use and reducing operation and maintenance costs. At present, the large-scale national health information platform to be established has a wide range of data types, complex relationships, exchange types and exchange volumes. With the sharp increase of business forms and data volumes, the original high integration form has not adapted to the existing information System integration mode and the construction mode, and the system operation and maintenance work pressure has increased. Therefore, it is urgent to adopt appropriate construction mode and operation and maintenance mode, and reduce the threshold of application system construction, Reduce management and operational maintenance costs. Enable medical institutions to enjoy the most professional technical research and development, as well as the most professional operation and maintenance services, while effectively controlling costs, thereby reducing operation and maintenance costs, improving system standards, and obtaining high-quality services.

6. It is beneficial for improving application value. Provide improvement strategies based on comprehensive evaluation results from both supply and demand sides and SWOT analysis models for tertiary comprehensive hospitals to identify deficiencies in health management service capabilities, identify weak links in health management services, enhance health

management service capabilities, and play a leading role in regional demonstration (Hao Yan, Lu Jiafa, Liu Wenwen, 2017). Provide action plans for different levels of medical institutions in the national health information platform to find their own entry points or relay points in health management. Provide policy recommendations for relevant government departments to jointly introduce temporary regulations on health management services and promote the implementation of health management. A sound management standard system for the national health information platform is beneficial for truly meaningful, personalized, and continuous health management, providing a powerful platform that makes truly meaningful health management possible. We will promote the optimization and innovation of health business management models and processes, and overall promote the operational efficiency of regional health services. In terms of medical services, reducing unnecessary medical procedures, guiding reasonable diagnosis and treatment paths, allowing medical staff to focus on the medical business itself, improving the efficiency of the diagnosis and treatment process, reducing patients' time in the hospital, and objectively reducing the operating costs of the hospital. In terms of public health, it is necessary to have a more comprehensive understanding of the business information of public health in this city, promote the optimization of public health management and service models, promote the scientific formulation of policy mechanisms, enhance the overall energy efficiency of the city's public health system, thereby improving the prevention and control of group health, and accelerating the improvement of environmental factors that affect group health. In terms of comprehensive management, it is able to timely grasp health resource information, citizen health information, medical institution operation information, public health management information, etc., alleviating the traditional hierarchical reporting mechanism, reducing the tedious process of manual verification, improving the accuracy and timeliness of various indicators, and improving the efficiency of comprehensive management decision-making.

Research Objective

1) to identify the key components of an effective management system and understand how they interacted, drawing upon existing examples of platform development and implementation.

2) to construct a conceptual model, grounded in theories of multi-source flow, data

lifecycles, and policy diffusion.

3) to formulate testable hypotheses about the relationships between these components and empirically validate the model and hypotheses through rigorous data analysis.

literature and hypothesis development

The current well-known and widely used multi-source flow theory is the 3 source flow theory proposed by American scholar which includes problem source flow, policy source flow, and political source flow. It has important reference value in the process of norm-setting. Among them, the source and flow of problems mainly explore the problems from which a standard originates; The policy source is focused on issues such as feasibility and public acceptance; The political origin involves the influence of political factors on the formulation of norms. In recent years, some domestic scholars have also applied the multi-source flow theory to analyze China's transformation from the compulsory custody and repatriation system to the free relief system, to explore how to make adult education a more concerned policy field, and to analyze the policy process of Jiangsu and Zhejiang provinces in the inter administrative cooperation in water pollution prevention and control.

Drawing on the theory of multiple source streams, the three major source streams can be transformed into analyzing the development of regional national health information platforms and the problems and impact of current standards, as well as the support of relevant managers in the field of health and family planning for the proposed standards. This can then determine the necessity, feasibility, and urgency of developing relevant standards in the "Catalogue of Management Standards for Regional National Health Information Platforms" in this study. The source of the problem includes various problems that need to be solved by the government; The policy source includes various policy suggestions, propositions, and plans; The political source includes factors such as national sentiment, public opinion, power distribution pattern, and strength comparison of interest groups, which reflect the political situation and political background. Therefore, the intersection of the three sources implies an organic combination of specific issues, policy plans, and political situations. And this organic combination means that problems, policy plans, and political situations are compatible, rather than mutually exclusive. The policy stream is the process of generating, discussing, redesigning, and receiving attention to policy recommendations, typically occurring within a policy community composed of

professionals in a specific policy area. The political stream is independent of the problem stream and the policy stream, and flows according to its own dynamic characteristics and rules. Among them, consensus in the political stream is controlled through bargaining. This is different from the persuasive form of rational science in policy streams. These three sources are independent of each other, and their occurrence, development, and operation do not depend on other sources. At a critical point in time, when they come together, public issues will be put on the policy agenda, which is called the policy window. Usually, the changes in the political stream or a new issue that opens up the policy window have attracted the attention of government officials and those around them. The policy window is not often opened and the opening time is not long. Some opening is predictable, while others are unpredictable. When the policy window opens, Policy entrepreneur tend to quickly seize the opportunity to combine the policy suggestions, options and solutions floating inside and outside the government, and use political acceptability to propose problems and solutions. The combination of the three has opened the policy window, so that the problem is put on the policy agenda, which may eventually lead to the decision-making agenda.

The multi-source flow model believes that the development and operation of the three streams are independent of each other, and they combine with each other at critical moments. The three sources are independent and independent of each other. For example, in China, news and propaganda agencies are controlled by the ruling party, and the reporting of PX events is in line with the ideology of the ruling party, or most of them are actions tacitly approved by the ruling party. Even if it is not an acquiescent behavior, at least reporting similar issues does not pose political risks. In addition, when formulating policies, the last class teacher mentioned a method called the "closed door theory", which means that the public is not aware of it when making policies. There may be two situations: firstly, the ruling party feels it is necessary to make some policies on this event, such as the Western Development and satellite lunar exploration, Not widely known (the original intention of its policies may be the whims of the rulers, long-standing ideas, etc.); Secondly, find relevant experts, scholars, and research institutions to develop feasible solutions; The ruling authorities once again felt that the plan was feasible, so it became a policy. Secondly, scholars have discovered some of the problems they believe through the study of certain phenomena, and have put forward their own opinions

on these problems. They have submitted these problems and opinions to the policy decision-making department, and based on the analysis, the decision-making department has found that both the problem and the resolution bill are reasonable, so the suggestions have become policies. Since the introduction of the multi-source flow analysis framework into China, most research on the multi-source flow model in China has used it to explain some public policies. Some scholars have used the multi-source flow framework to analyze the process of China's public policy formulation, with research fields covering social security, education, food safety, and major regional public policies. These studies indicate that the theory has strong explanatory power for practical policies, opening up the black box of the policy-making process, which is beneficial for people to understand the process of social issues being put on the policy agenda and ultimately formulated as public policies. Meanwhile, pointed out that among the three streams, the issues raised on the agenda, the combination of alternative solutions and problems, and the formulation of policies all have randomness, and the political stream also has historical contingency. Therefore, the predictive power of the multi-source flow analysis framework for the future is very vague and invisible. The lack of predictability has become a flaw that the theory is difficult to break through.

The data lifecycle theory is a policy based approach used to manage the flow of data in information systems throughout their entire lifecycle. The entire lifecycle of a data center is divided into seven stages (Li Teng, 2018), and the closed-loop management process includes six stages. Through these six stages, the continuous availability and performance of the data center can be improved.

1) Planning stage: The first step is to determine important project parameters such as capacity, criticality, power density, efficiency, development planning, and budget, which are key factors determining the success or failure of the entire data center project. The second computer room of the department, which started preparing for construction in 2013, conducted detailed research on these key factors during the planning stage, and planned everything from a practical perspective. The first of these factors is the development plan, which aims to meet the space needs of the computer room for the next five years of information technology construction. This requirement is also consistent with the National Information Technology Development Strategy Outline The 13th Five Year Plan for Land and Resources

Informatization and the 13th Five Year Plan for Land and Resources Informatization in Henan Province are consistent, so the second computer room of the department has fully met the actual usage needs since its construction, and there has been no additional investment in infrastructure since its completion, achieving the planning goals.

2) Design phase: The core content of this phase is to convert the planning results into charts and construction documents. The second computer room in the hall requires large capacity, high rack power density, high availability level in terms of criticality, and energy conservation and environmental protection in terms of efficiency and environmental protection. These planning results need to be implemented in the design (Bao Yong, 2013). Therefore, a closed cold channel system has been adopted, which not only solves the capacity problem but also achieves energy-saving requirements; The high rack power density is mainly aimed at the requirements of the power distribution system. The second room of the hall adopts the power consumption standard of 6KW per cabinet. The main power distribution cabinet uses dual power supply, and the UPS uses the mode of dual independent operation. Each cabinet has two PDUs with independent power supply, which reduces the probability of Single point of failure to 50% and improves the high availability of the entire system; In terms of environmental protection and energy conservation, environmentally friendly decoration materials are mainly used, and ECC fans and energy-saving and environmentally friendly models using green refrigerants are proposed for the selection of precision air conditioners.

3) Construction phase: Data center owners and managers must pay attention to project progress, quality and performance and conduct risk analysis. Data center construction is a complex system engineering, involving basic decoration, fire protection system, load bearing, power supply and distribution system, air conditioning system, wiring system, security system, lightning protection Earthing system, environmental monitoring system and other aspects The high standard and scientific standardization of each specific detail construction process is an important manifestation of the high-quality construction of data centers. One is to fully leverage the role of the project supervision party, clarify target responsibilities, engineering quality standards, and standardize construction procedures and processes through contracts, refine and quantify their supervision responsibilities and scope, and supervise their construction process supervision in areas such as building material quality, construction

procedures, and equipment quality. The second is to adhere to the completion inspection system for individual projects, carefully review and preliminarily accept the completion inspection of individual projects according to the engineering design and quality standards, rectify the unqualified projects according to the initial inspection opinions, and leave the qualified projects for overall acceptance after the completion of the entire project construction. The third is to draft a sub item acceptance table for computer room construction projects, refine the engineering quality acceptance standards, ensure that there are rules to follow, and adopt a tripartite inspection and acceptance system and implement a joint signature system.

4) Evaluation stage: The detection of electrical equipment in the computer room is a very important link in the construction of a data center. As a data center, the primary requirement is the operational safety and high availability of the data center. When the data center is newly built, all electrical equipment, HVAC, refrigeration, and backup power are built in a single component combination. The overall operation inspection is only about powering on, starting, and shutting down. As an empty computer room, its actual operation situation is far from empty. Statistical data from data center validation testing shows that the quality issues of the newly built computer room can be reduced by 60% through third-party validation testing. After regular testing and evaluation of the computer room, the risk rate is reduced by 50%. Due to the fact that data centers must meet the requirements of various electronic devices such as computers and staff for temperature, humidity, cleanliness, electromagnetic field strength, noise interference, water leakage prevention, power quality, lightning protection, and grounding conditions. So a qualified data center should be a safe, reliable, energy-saving, efficient, and scalable computer room, because once a device carrying critical loads is put into operation, it is difficult to stop for maintenance.

5) Operation phase: Operation and maintenance management is the longest and dynamic stage in the entire lifecycle of a data center. The first computer room has been in operation for 12 years since it was put into use in December 2006, and the second computer room has been in operation for 3 years since it was put into use in March 2015 (Zhu Youyuan, Zhao Ying, Pan Yihui, 2015). The most common problems occur during long-term operation, especially for key equipment such as precision air conditioning and UPS. The service life of general IT equipment is 5 years, and the service life of these key equipment is 2 to 3 times that of general IT

equipment. Therefore, it is particularly important to detect and solve problems in a timely manner when key equipment occurs. This requires strict inspection and maintenance in accordance with the maintenance cycle of the equipment during the operation and maintenance phase, At the same time, timely detection of abnormal situations in the computer room through environmental monitoring software can reduce losses caused by equipment failures.

6) Optimization stage: With the continuous increase of application systems, the demand for data centers is also increasing day by day. It is necessary to optimize the data center infrastructure to meet the improvement of performance, increase in device density, and high-level services. This requires high-quality operation and maintenance tools, complete management experience and a large amount of basic data, to know exactly what is running on the Physical system, to analyze the current and future potential needs, so as to better actively allocate system resources and enable the data center to support more information systems in the future.

7) Aging stage: The standards for data center aging are inability to support growing demand, low energy efficiency, and high operating costs. This requires us to re plan the data center and use new technologies to rebuild or reshape it based on emerging standards. How to smoothly transition between old and new data centers in an orderly manner will become an important task. According to the theory of data lifecycle, combined with the characteristics of regional national health information platform data, the entire lifecycle of regional national health information platform data can be divided into the following stages: data collection, data storage, data update, data quality monitoring and evaluation, data exchange, data analysis and utilization, and data backup. Health information data management is a key focus of platform management.

Since the late 1960s, many foreign public policy scholars have begun to pay attention to the diffusion of policy concepts, policy projects, and other phenomena between governments. In "The Evolution of Policy Diffusion Theory" (2014), Chen Fang reviewed the development process of policy diffusion theory over half a century from three dimensions: basic concepts, theoretical foundations, and research methods. According to the chronological order and different characteristics presented in each stage, the development of policy diffusion theory was divided into a single factor theory explanation period (before 1980), There are three stages:

the explanation period of fragmentation theory (1980-2000) and the explanation period of attempting to integrate theory (2000-present). In the field of health and medical services, the population distribution, total number of institutions, and disease spectrum vary among different regions in China. In addition, there are significant regional differences in industrial technology level and economic and social development level. Therefore, there are also significant differences in the time series and regional space of health and medical investment and government investment in China. Wang Yuanlin (2015) et al. (2004) constructed an economic growth model for healthcare investment variables, mainly conducting empirical analysis on the relationship between healthcare investment and regional economic growth.

The study found that the impact of healthcare investment on regional economic growth presents temporal and spatial stages and differentiated characteristics. Healthcare investment on eastern China The economic growth contributions of the central and western regions show a trend of "high low high" respectively. Xie Xia (2008) used data from China Health and Nutrition Survey (CHNS) and its TIP curve to calculate the anti poverty effect of medical insurance on urban and rural households. Due to the fact that most vulnerable groups are not included in the medical insurance system, the high savings rate of medical insurance funds, and inadequate government investment responsibilities, the poverty reduction effect of China's medical insurance policies is currently very small. Du Lexun (2010) applied the Distributed lag model to conduct an empirical study on the relationship between China's total health expenditure and economic growth.

The results showed that the impact coefficient of China's government health investment on GDP was 2.5, and the economic benefits of government investment in health services were higher than that of education investment. Zhao Pengfei (2012) believes that China's medical and health financial expenditure has a strong human capital effect, improving the accessibility of health services for low-income groups, and helping to improve the quality of workers and labor productivity. Lan Xiangjie used the spatial panel model to conduct statistical analysis and pointed out that: the contribution of the government's public health expenditure on child immunization, infectious disease prevention and control and other fields to economic growth has gradually emerged, and the positive Externality of public health expenditure on promoting regional economic growth is very obvious.

Overall, healthcare investment and fiscal investment in China not only promote health performance, but also have a "dual growth" effect on regional economy and residents' income. At the same time, healthcare investment has a geographical dependence and spillover effect. Li Yuansheng and Xue Jing (2016) conducted a study in "The Income Growth Effect and Spatial Heterogeneity of China's Medical and Health Financial Expenditure" (2016). Based on the theory that medical and health financial expenditure has spatial spillover effects, they used spatial panel models and applied spatial econometric models to investigate the growth effect of China's medical and health financial expenditure on residents' income from 1996 to 2013, and tested whether there was spatial heterogeneity in this growth effect,

The research conclusion is that China's medical and health fiscal expenditure and resident income present an uneven distribution in space, and the growth effect of medical and health fiscal expenditure on resident income is significant, with spatial spillover. The regional estimation results show that the growth effect of medical and health fiscal expenditure on residents' income in the eastern coastal, northern coastal and southern coastal areas is not significant, while the growth effect of medical and health fiscal expenditure on residents' income in Underdevelopment such as the northwest and southwest is significant, and the spatial spillover of medical and health fiscal expenditure on residents' income growth in the eastern coastal areas, the middle reaches of the Yangtze River, and the middle reaches of the Yellow River is strong, Research suggestion: The central government should adjust and optimize the structure of public financial expenditure, and increase the proportion of medical and health financial expenditure; Guide medical and health resources to tilt towards areas such as the northwest, southwest, and middle reaches of the Yangtze River, and increase the marginal effect of medical and health fiscal expenditure on residents' income growth.

Based on the above research, in the modern open economy system, information has become a universal resource and driving force (Si Di Laiyin, 2009). The pace of digital and networked transformation of China's economy and society is accelerating. China is in the accelerated transformation period from a Industrial society to an information society. It is expected that China will enter the primary stage of the information society as a whole around 2020. The rapid development of information technology and the rapid accumulation of massive amounts of information have led to the widespread use of information resources in the process

of socio-economic development, thereby promoting disruptive changes in resource utilization patterns. Information technology has made profound use of the transformation of world resource utilization mode to promote the improvement of social and economic structure and Economic efficiency (Hu Wei, Chen Dong, 2018). Currently, the healthcare industry is on the eve of the transformation of information gathering and boosting models. The innovation in the aggregation and application of health and medical information resources has provided new impetus for stimulating the improvement of quality and efficiency in the construction of a healthy China, better supporting and driving the acceleration of transformation and upgrading of smart health and medical service models, and continuously deepening the supply side structural reform of health and medical services. It has also become the commanding point of a new round of global competition in the health industry. The planning and allocation of health and medical information resource aggregation, layout, and application development are crucial for restructuring the health and medical model, continuously improving the efficiency and supply quality of health and medical services, effectively expanding the diffusion and extension of high-quality resources, continuously stimulating new driving forces for deepening the reform of the medical and health system, cultivating new business formats and economic growth points, and continuously meeting the multi-level and diversified health needs of the entire people.

Research Method

Research design

Firstly, using the field research method, health and family planning administrative departments, professional public health institutions, hospitals, etc. Baiyin City, Gansu Province were selected for field research to understand and grasp the current situation and existing problems of the management standards of the regional national health information platform. The problems were summarized, extracted, and summarized, laying the foundation for the construction of the management standard system framework of the regional national health information platform. By applying various theories such as regional economic theory, incremental marginal benefits theory, external economic theory, sustainable information network resources theory, information economics theory, industrial agglomeration theory, and

health economics theory, a deep analysis was conducted on the current situation and existing problems of China's health and medical information resources. On this basis, through quantitative empirical analysis of the application level of health and medical information resources in China, and drawing on the development experience of developed countries in the application of health and medical information resources, an empirical analysis of the spatial evolution characteristics of the agglomeration development of health and medical information resources in China was conducted, and the results of the empirical analysis were deeply explored, Proposed policy recommendations for the innovative development and spatial layout of China's health and medical information resource agglomeration and application in the future. Finally, a combination of qualitative and quantitative methods is used. By selecting appropriate indicator data, the application level of health and medical information resources in China was measured, and the characteristics of the agglomeration and development of health and medical information resources in China were analyzed. Considering the complexity of the research subject of this topic and the subjectivity of the development and policy implementation of health and medical information resources, it is not possible to solve all problems correctly by relying solely on subjective quantitative analysis in constructing a quantitative evaluation system of health and medical information resources.

Sample Source

A total of 2,000 questionnaires were distributed online, the population was an unknown number. The target hospital management, hospital information department personnel, medical informatization practitioners, and health management departments in 4 hospitals in Baiyin City including The First People's Hospital of Baiyin, Baiyin Branch of Gansu Provincial Hospital of Traditional Chinese Medicine, The Second People's Hospital of Baiyin, and Central Hospital of Baiyin. For the collected questionnaires, the collection rate of valid questionnaires should be calculated while excluding invalid ones. Maintaining a high questionnaire recovery rate (i.e. effective questionnaire rate) is also a guarantee for us to obtain true and reliable data. A total of 1,500 questionnaires were collected in this willingness of online respondents to participate of which 900 were valid.

Research Architecture and Assumptions

Based on the theoretical basis combined in the literature review chapter and the path mechanism explored in the case study, the conceptual model of planning and construction, operation and maintenance and safety management, data management, and platform sustainable operation and development is constructed from the two theoretical perspectives of the process optimization theory and attention theory, as shown in the following research hypotheses:

H1: In the management standard system, planning and construction have a positive and direct impact on data management.

H2: In the management standard system, operations and security management have a positive and direct impact on data management

H3: In the management standard system, planning and construction have a positive and direct impact on the sustainable operation and development of the platform.

H4: In the management standard system, data management has a positive and direct impact on the sustainable operation and development of the platform.

H5: In the management standard system, The positive and direct impact of operation and security management on the sustainable operation and development of the platform.

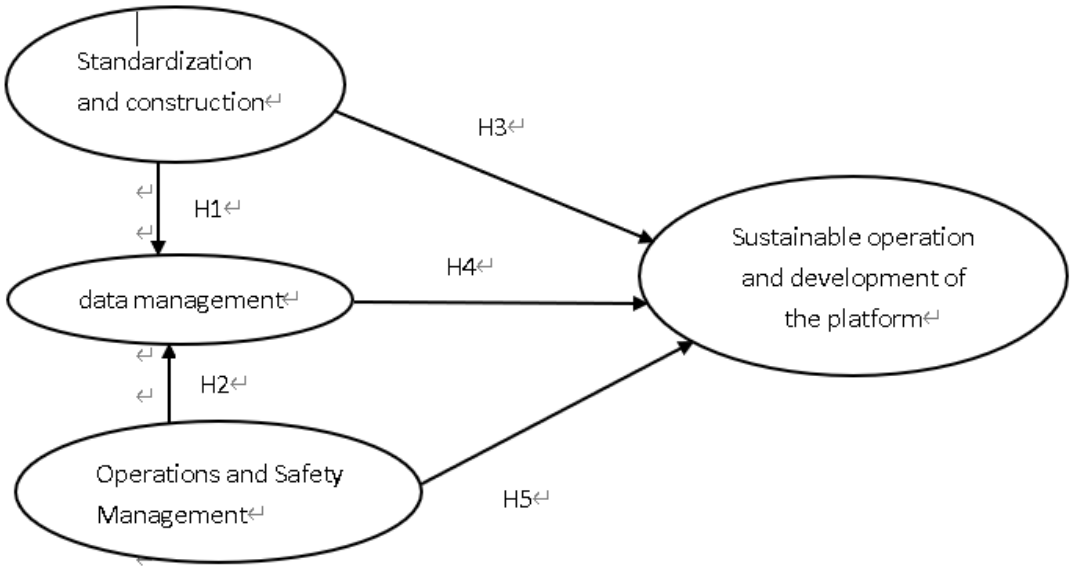


Figure 1 Conceptual Model Diagram

The descriptive statistics of the sample in this study are shown in depicting the overall distribution of the collected questionnaire data samples. From Q1.2, it can be concluded that there are 351 male respondents, accounting for 39.00%, and 529 female respondents, accounting for 61.00%. There is a significant gender gap, with women significantly exceeding

men, which is related to the business characteristics of engineering projects. From Q1.1, it can be seen that the age group of 21-30 (238 people, 26.4%) has the highest proportion, making it the group with the highest number of respondents, followed by the age group of 31-40 (202 people, 22.4%). This is consistent with the project experience distribution characteristics of 6-10 years (238 people, 26.4%) and 3-5 years (256 people, 28.4%), which to some extent reflects the good quality of the sample. From the perspective of educational qualifications, the number of respondents who have received college and undergraduate education (428 people, 47.6%) is the highest, while the number of respondents who have received master's education (169 people, 18.8%) and high school education or below (183 people, 20.30%) is relatively balanced, indicating that the respondents have good quality. This study also conducted statistics on Q1.4 and Q1.5, and classified the samples according to the specific situation of questionnaire collection. The total project amount is 5-20 million (245 projects, 27.2%), and the team size is 400-600 people (191 projects, 21.2%). The distribution of other project types is relatively uniform, reflecting the universality of sample coverage. In summary, the respondents have good project experience, which can effectively ensure the quality of questionnaire filling and improve sample reliability and validity. At the same time, calculate the mean and variance of each basic variable in the sample by assigning values to the item results. The results show that the variance of each variable is small, which also reflects the uniform and reasonable distribution of the sample.

Using Pearson correlation coefficient. Pearson product moment correlation coefficient test for collinearity. When the correlation coefficient is higher than 0.85, it is prone to collinearity problems, which may lead to model misjudgment (Hill et al., 2001). The analysis results of this study show that the correlation coefficients between the facets are all less than 0.85, and there is no collinearity problem in the model, as shown in

Tabel 1 Collinearity diagnosis of Latent and observable variables in the measurement model correlation

	Standardization and construction	Operations and Safety Management	data management	Sustainable operation and development of the platform
Standardization and construction	1			
Operations and Safety Management	0.041	1		
data management	.641**	.672**	1	
Sustainable operation and development of the platform	.665**	.658**	.85**	1

**There is a significant correlation at the. 01 level (bilateral).

Structural Model Interpretation and Predictive Power

R^2 It is one of the main evaluation criteria used to evaluate the path of structural models. R^2 The larger the model, the stronger its explanatory power. As shown in Table 4.5, all endogenous variables R^2 The values are all greater than 0.33, indicating that the model has moderate explanatory power.

The impact effect value f2 in this study is a small impact effect when $0.02<f2 \leq 0.15$ after removing specific external derivatives; $0.15<f2 \leq 0.35$ has a moderate impact effect; And $f2>0.35$ has a significant impact effect (Cohen, 2013). The significance is shown in Table 4.5. The effect of the external derivative variable on the internal dependent variable in this study is all above 0.02, and all valid hypotheses belong to the influential range.

Table 3 Interpretation and predictive power of structural models

route	R^2	f^2
Operations and Security Management ->Data Management	0.828	2.180

Standardization and Construction ->Data Management		2.419
Operations and Security Management ->Plat form Sustainable Development	0.849	0.536
Data Management ->Platform Sustainability		0.052
Standardization and Construction ->Platform Sustainable D evelopment		0.471

Research Conclusion

The article first defines the relevant concepts of the regional national health information platform and introduces the relevant theoretical basis involved. Secondly, the current status and existing problems of the relevant standards and specifications of the regional public health information platform were discussed and analyzed develop a relatively complete framework and directory for the management and standardization system of regional public health information platforms. Finally, we studied the district prioritize the development of standardized management for the domain wide health information platform, and propose suggestions for standardized development. Research Conclusion mainly including:

1)Analyzed the current status of relevant standards for regional national health information platforms and explored the problems in their development Question.

2) Based on the current development status and actual needs of the platform, and referring to the relevant theoretical methods formulated by the platform management standard system, a framework for the management standard system of the regional national health information platform is constructed. The framework consists of platform planning and construction management standards, platform organization management standards, platform standard management standards, platform data management standards, platform operation and maintenance management standards, platform safety management standards, and platform emergency response standards The platform's fund guarantee standard consists of 8 parts.

3)Proposed key elements: planning and construction, operation and security management, and the impact of data management on the sustainable development of the platform. Through quantitative analysis, it has been confirmed that there are the following impacts among key elements:

H1: In the management standard system, planning and construction have a positive and direct impact on data management.

H2: In the management standard system, operations and security management have a positive and direct impact on data management.

H3: In the management standard system, planning and construction have a positive and

direct impact on the sustainable operation and development of the platform.

H4: In the management standard system, data management has a positive and direct impact on the sustainable operation and development of the platform.

H5: In the management standard system, The positive and direct impact of operation and security management on the sustainable operation and development of the platform.

Research recommendations

Improve the platform infrastructure, fully leverage the pivotal role of the national health information platform application support and resource sharing, strengthen platform management and application, and effectively support data fusion and business integration. Provide a unified computing, storage, network, and other infrastructure cloud for various application systems. Realize the rapid deployment of the system and the dynamic expansion of resources, improve the basic services of the platform, including information components, management components, business components, etc., and provide the identity Indexing Service of residents, institutions, and medical personnel. Promote unified access and information sharing among various levels and types of medical and health institutions, and promote business collaboration and sharing across systems, institutions, departments, and regions

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