



An Analysis of the Development Path of Institutional Research Facing University Data Governance — Based on the Enlightenment from Institutional Research of University of California

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Abstract: In the context of university data governance, the orientation of institutional research in China is to provide data support and services based on decision-making scenarios. The content and process of work are closely related to data. The research fields specifically involve university students and other affairs in teaching, teacher management, resource management and planning, policy, management and so on. At present, with the continuous improvement of the level of data governance in colleges and universities, the development of institutional research in colleges and universities is mainly faced with problems such as insufficient data awareness, poor data quality and lack of data sharing platform. Therefore, universities should attach importance to top-level design and establish "data-driven decision-making" mechanism, create a data culture and develop data-related standards, build comprehensive database and build data sharing platform.

Keywords: data governance, institutional research, university management

With the advent of the era of "big data", all walks of life in society show an obvious digital trend, especially in the field of higher education, the process of data governance in colleges and universities is in constant acceleration tendency. As the "data melting pot", institutional research has higher and higher requirements on the "quantity" and "quality" of data, universities are required to establish clear strategic data based planning, building of integrated powerful data management system to promote institutional research system of data collecting, scientific forecast and analysis. The institutional research will give full play to the role of providing support and services for university data governance and scientific decision-making.

1. New requirements of data governance for institutional research

With the construction of data management platform, most universities have used artificial intelligence, cloud computing, big data and other advanced digital technology and means, to build a more integrated, intelligent teaching, service, management and scientific research and information services platform, as a result, to improve operational efficiency, improve teachers and students based experience, thus improving the quality of personnel training. At the same time, data governance puts forward new requirements for the development of institutional research in higher education.

Institutional Research had its presence in the 1950s in the United States, and Institutional Research in China began in the 1990s. ^[1] After continuous exploration and development, it is now becoming mature. At present, with the digital transformation in the field of higher education, institutional research has become an important part of data governance in colleges and universities, playing an increasingly prominent role in providing support and services for scientific decision-making.

1.1 Orientation of institutional research

Professor Chang Tongshan, director of the Institutional Research and Academic Planning, the University of California Office of the President, believes that institutional research has become a symbol of university management culture and decision-making behavior in the era of big data, and is a key component of university quality assurance system. ^[2] Professor Liu Xianjun, President of China's Institutional Research Committee, believes that the core function of institutional research is to provide support for the decision-making process by collecting and analyzing data. ^[3] 8 of the 2035 education modernization in the country strategic task "to speed up the informatization of education reform", explicitly proposed the focus of education informatization development tasks, including "the education management mode change, speed up the formation of modern education management and monitoring system, promote the scientific management and accurate decision." Therefore, in order to promote data governance and accurate management in colleges and universities, the orientation of institutional research is to provide data support and services based on decision-making scenarios. Specifically, institutional research is mainly conducted based on the data management in colleges and universities and different decision scenario through a unified data platform, data collection, collation, analysis and forecast. It provides empirical data support and planning

services for scientific management and decision-making in colleges and universities to improve school management level and improve the quality of personnel training.

1.2 Responsibilities of institutional research

The work of institutional research is conducted based on data. In the process of data governance in colleges and universities, the value of institutional research is mainly reflected by providing empirical data for scientific decision-making. It has high requirements on data system and high dependence on data. It mainly focuses on school-based research and attaches importance to interdisciplinary, scientific, practical and applied research. Taking the University of California as an example, the work responsibilities of the research department of the university include six aspects: data governance, issuing regular reports, conducting research on decision-making issues, conducting internal self-selected project research, completing statistical reports for the federal and state governments, and providing services for data needs outside the university.^[4]

According to the current situation and needs of colleges and universities in China, the responsibilities of institutional research are mainly reflected in four aspects: (1) Collecting, sorting and analyzing all kinds of data of school operation and writing annual reports; (2) Carrying out special research on issues requiring decision making; (3) Carrying out self-selected project research; (4) Carrying out research on new or major issues. Although there are some differences in the work duties of Chinese institutional research and American institutional research, the basic characteristics are scientific management based on data, providing data-driven information for university managers to make effective decisions. Its work content and working process are closely related to data, and data is the core.

1.3 Content of research in institutions

In the 1960s, the Association for Institutional Research was established to identify five areas of Institutional Research, namely student affairs, teaching affairs, faculty affairs, resource management and planning, policy and management^[5], to address different research topics in the field of higher education. At the university of California since 2009, through the analysis of internal operation data of institutional research department, the university union sharing data, government and nongovernmental organizations (NGOs) survey data, such as annual accountability report every year for the community with full and rich content and primary index involves the index system of comprehensive, concrete can be divided into primary and secondary indicators. Taking the Accountability Report of the University of California 2021 as an example, it specifically includes 13 first-level indicators and 43 second-level indicators, as shown in Table 1.^[6] Each sub-indicator will be adjusted appropriately every year, involving student data, teaching data, personnel data, scientific research data, financial data, service activity data, etc. These research fields and topics basically cover the management of people (teachers and students), operation management (teaching, scientific research, service) and material resources management (tangible and intangible assets) in university scientific management.^[7] With the deepening of university data governance, the fields and scope of institutional research are also expanding, aiming to provide rich data support and services for university managers to make scientific decisions.

Table 1. Indicator system of the University of California Accountability Report 2021

No.	First-level indicator (13)	Second-level indicator (43)
1	Admissions and enrollment of undergraduate students (4)	Applicants admits and enrollees; Demographic outcomes; Preparation outcomes; Geographic origins and nonresidents
2	Affordability of undergraduate students (3)	Cost of attendance; Income profile; Cost of attendance and student debt
3	Undergraduate student success (3)	Graduation rates; Retention rates and student credit hours, outcomes
4	Graduate academic and graduate professional students (4)	Graduate academic admission; Graduate academic and professional enrollment; Graduate academic student outcomes; Graduate professional student outcomes
5	Faculty and other academic employees (3)	Academic workforce; Academic workforce diversity; Academic hiring and retention
6	Staff (3)	Staff workforce; Staff compensation; Staff separations
7	Diversity (4)	Undergraduate pipeline; Graduate student pipeline; Diversity of the university community; Undergraduate campus climate
8	Teaching and learning (3)	Undergraduate student learning and engagement; Doctoral student learning; The instructional workforce
9	Research (2)	Research expenditures; Research impact
10	Public services (4)	Agriculture and natural resources; Nature reserve system; Educational partnerships; Social and economic impact
11	University of California Health (5)	Health sciences students; Medically underserved areas; Health sciences student debt; Patient care; Expenditures
12	Institutional performance (3)	Finances; Capital projects; Sustainability
13	Awards and distinctions (2)	Faculty awards; Rankings

Note: The data in brackets are the number of second-level indicators included in each first-level indicator

2. The difficulties faced by the institutional research development in the context of data governance

Data is the cornerstone of institutional research. Institutional research is a research mode and working mode that provides decision support for college management by systematically collecting and sorting out the operation data of colleges and universities, scientifically analyzing these data. ^[8] At present, in the context of data governance in universities, data awareness, data quality and data platform are the three major factors that restrict the development of institutional research in Chinese universities.

2.1 Low level of data awareness

An important responsibility of institutional research is to provide support and service for scientific decision-making by virtue of unified data platform based on the needs of different decision-making scenarios in colleges and universities. However, the scientificity, feasibility and validity of the research results depend on the data strategic planning and action deployment of colleges and universities. At present, university administrators have not fully established the strategic consciousness of "data-driven decision making", without establishment of long-term data strategic planning, stipulation of the data strategic vision, data scope, data management system and process, data system requirements and other contents. As a result, it is difficult to carry out the statistics, collation, analysis and prediction of various data in institutional research, which affects the professionalism, effectiveness and scientificity of institutional research. Therefore, the understanding of data governance and institutional research of university managers needs to be deepened.

2.2 Difficulty in guarantee of data quality

In the process of data management in colleges and universities, the problem of information inconsistency is more prominent with poor data quality. Individual data information system is mostly independent running, since the standard of the system data are not unified, the same kind of data information content, information departments to submit the results of the same data in both vary, may cause errors in the data output process, lead to the accuracy of the data and to use less. For example, when counting the number of students in school, it may appear that the Academic Affairs Office counts the number of students enrolled, the Student Office counts the number of students who have registered, and the secondary college counts the number of students who have attended courses. And in the process of data input, due to negligence in work, the data information source is not clear, the content is inaccurate, missing, scattered, and the focus is not prominent. Or it is not submitted in time according to the stipulated time, resulting in errors in data statistics or poor timeliness, and data fusion is more difficult, so that the "quality" and "quantity" of the data cannot be guaranteed. Institutional research is relatively passive in data mining and predictive analysis at the school level, which affects the final data report and analysis results.

2.3 The data sharing platform has not been fully established

On the one hand, there is a lack of comprehensive database in colleges and universities, and the phenomenon of "information island" is prominent. As the construction of university digital, most colleges and universities have been developed and applied to the teaching system, personnel system, the financial system and the scientific research system and other business system, these existing data system are mainly distributed in each department, function is unitary, the data is relatively fragmented, lack of systemic and flexibility, especially the low degree of data sharing between different systems. The foundation of institutional research is data. This phenomenon of "information island" makes it difficult to integrate, mine, analyze and apply all kinds of data in the process of institutional research at the university level, thus affecting the function of institutional research to provide support and service for university data governance. On the other hand, data are still scattered between universities and colleges. Especially for data protection, some data are not made public or only part of the data is made public on campus, which makes it difficult for researchers to obtain effective data and conduct horizontal in-depth research.

3. The development path of institutional research in the context of university data governance

In light of data management of colleges and universities, and in order to effectively promote institutional research to comprehensively and systematically collect and sort out various operational data related to school development, extract useful information from big data for prediction and analysis, and sort out the obtained information into research reports or other textual data, and to provide effective empirical data support for the decision-making body of colleges and universities to make scientific decisions. Colleges and universities can take measures in the following three aspects.

3.1 Attaching importance to top-level design and establishing a "data-driven decision" mechanism

Data are a solid foundation for institutional research. University administrators should establish the consciousness of "data-driven decision making", attach importance to the top-level design of data governance, regard data governance as an important part of university strategic planning and establish "data-driven decision making" mechanism to develop clear data governance planning and action deployment, as a result, to provide data foundation for institutional research and development. The institutional research department should become a comprehensive application center for school data. Based on the decision-making scenario, it needs to collect various data about school operations in a timely and effective manner, dig in-depth information, comprehensively understand and systematically analyze the environmental changes and urgent problems faced by the school's development, and form scientific research reports or practical solutions. Data is used to support the school each department manager to turn "data" into "action". It also involves the whole process of action implementation, evaluation and improvement, carrying out follow-up research, and continuous application of the research results of institutions in the process of school governance, so that data can be shared and exported in a valuable way, and provides support and service for school data governance to the maximum extent.

3.2 Creating a data culture and developing data-related standards

At present, mature data culture has not been formed in colleges and universities, and most staff in various departments have no correct understanding of all kinds of data at the level of "a bunch of numbers", and independent data or inconsistent data between various departments cannot play a high value in practice. Therefore, in the process of data governance, colleges and universities should build a good data culture for a long time, improve individuals' attention to the value of data, and promote the formation of an atmosphere where everyone makes decisions based on data. It is also necessary to formulate data related standards, clearly stipulate the content, format, statistical caliber and scope of data, achieve consistency and accuracy of data input and output, and improve the "quality" and "quantity" of data. At the same time, researchers and staff of colleges and universities should be trained in data management and application to deepen their understanding of data, and gradually improve their ability to process and analyze data scientifically. They should be rigorous and meticulous in filling in various data to ensure the integrity, accuracy and timeliness of data from the source. Support university administrators to carry out scientific data governance, provide effective empirical basis for university digital governance, and lay a good foundation for the development of institutional research, promote the accurate judgment, prediction and analysis of university data resources by institutional research, and realize data value-added.

3.3 Building comprehensive database and data sharing platform

Within the university, each department enjoys an independent business data system. The institutional research department should cooperate with the information technology department to further promote the construction of comprehensive, multi-level and dynamically updated comprehensive database and sharing platform at the university level on the basis of the original business data system to connect the student database, teaching database, personnel database, financial database, etc., at a result, to break the "information barrier", reduce the difficulty of data sharing, and provide comprehensive, accurate and effective high-quality data information for the development of institutional research. At the same time, it is conducive to data extraction and integration of institutional research work, finding, analyzing and solving problems, realizing the normalization of data mining and data integration, and providing good support and services for university data governance. Based on mutual trust and safeguarding legitimate rights and interests, the same type of universities should actively build a data sharing platform to properly open and share data resources and promote the effective use of data.

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