

# Research on Bank Data Governance Organization Architecture Planning

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**Abstract:** Banking service capacity building is a critically essential area of study and research because banks, as vital components of the financial system, are key drivers of economic development and industrial progress. In light of the continuous improvement of financial innovation and scientific and technological knowledge, bank data information regarding the current state of the commercial banking industry displays a geometric multiple growth pattern. The complex state of bank data is also brought about by these data, which serve as a reference for bank architecture and planning. Because of this, efficient data management is required to fully reap the benefits of data. In short, the bank's data governance work will further enhance the bank's service capabilities and achieve its comprehensive value improvement.

**Keywords:** Big Data Era, Commercial Bank, Data Governance.

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## 1. Introduction

A significant amount of data has been gathered by banking and financial organizations in recent years due to the quick growth of the industry. Banks are starting to recognize the importance of data for business development with the advent of big data, cloud computing, and artificial intelligence. As a result, one of their key responsibilities is to fully utilize the value of data and to implement good data governance. The Guidelines for Data Governance of Banking Financial Institutions (henceforth referred to as the Guidelines) were released by the CIRC on May 21, 2018. Their objectives are to provide guidance to banking financial institutions in strengthening data governance, enhancing data quality, maximizing the value of data, raising the bar for operation and management, and encouraging the shift of banking financial institutions from rapid development to high-quality development [2]. In accordance with the Guidelines, banking and financial institutions must: establish a multi-level, interconnected operation mechanism; define the roles and responsibilities of the board of directors, the board of supervisors, senior management, and pertinent departments; and create a data governance structure with a sound organizational structure and boundaries among responsibilities [3]. In addition to the data governance centralized management department, this "guidance" specifically stipulates the responsibilities, job allocation and data accountability mechanism of the business department, and emphasizes the obligations of the business department as the data owner [4].

After the issuance of the Guidelines, banks began to start data governance projects one after another. Large banks paid more attention to driving business value and data value enhancement through data governance, while small and medium-sized banks began to construct and perfect data governance system, organizational structure and relevant systems. A reasonable and efficient data governance organization can not only eliminate the gap between business and IT, but also provide guarantee in promoting the implementation of data standards, improving data quality and realizing data value.

## 2. Data Governance Organizational Design Principles

"Centralized functions, intensive organization, team specialization, and target responsibility" are the guiding principles of the data governance organization design. It also makes sure that the overall design scheme has "design foresight" and "scheme feasibility". The connectivity and collaboration between head office departments and branches will be realized by constructing communication bridges between science and technology and business departments. The following design principles must be adhered to by the particular design principles.

(1) Function centralization: The organizational structure design should concentrate and rationally use existing resources, give full play to the aggregation effect of human resources, and break the situation of each department doing its own thing.

(2) Organization intensification: rationally organize and distribute the work content of various departments and offices, realize the intensification of organizational forms, further clarify the responsibilities of data governance, and strengthen the assessment system.

(3) Team specialization: cultivate and establish a data governance team with professional capabilities, build a professional organizational structure system and responsibility allocation model, and assign posts and responsibilities.

(4) Goal responsibility: The design of data governance organizational structure should be operable, clarify the responsible party for relevant work management, and implement the relevant processes and operation links of data governance.

(5) Design foresight: based on the advanced experience of data governance at home and abroad and the development trend of the big data era, the data governance organization design fully considers the requirements of the bank's future business development and technological change on the data governance organization.

(6) Plan viability: Define the positioning and evolution

strategy of the data governance organization throughout the entire bank, taking into account the current state of the bank's data governance., divide the responsibility boundary with other departments, formulate clear post setting, responsibility scope and personnel allocation of data governance organization, and ensure the feasibility of scheme.

### **3. Business Support Status of Bank's Current Data Governance Organizational Structure**

The problems faced by bank data governance are mainly data standards and data quality, which are mainly reflected in the inconsistency of data standards, data missing, heavy data cleaning workload in the process of statistics and analysis, inconsistent data statistical caliber, and difficult sharing of data across departments and business lines.

In order to address the data governance issue supporting the current business, it is necessary to take into consideration the current business support problem., we believe that banks need to establish and implement a complete data governance system, including:

(1) A special data governance organization needs to be established to clarify the organizational structure level and related responsibilities. The lack of professional and independent data management and control organization makes the motive force of data governance insufficient, and it is difficult to carry out data governance effectively.

(2) Standardized data management processes need to be established. Create a set of procedures for data management and control. The centralized management department of data governance will be in charge of managing pertinent process specifications overall, encouraging bank-level process implementation, and achieving standardized data management for the entire bank.

(3) It is necessary to strengthen the management and implementation of core areas of data governance. Establish management mechanisms in data governance related fields such as data standards, data accountability, data quality, metadata, data life cycle, data architecture and models, and data security, and designate relevant competent departments to be responsible for overall management. Technical assistance is handled by the technology department, and data management systems and procedures are implemented by the relevant business divisions as part of business development. Finally, Gather the strength of the whole bank to jointly complete the implementation of data governance.

### **4. Gap Analysis of Data Governance Organizational Structure and Regulatory Requirements**

There is a gap between the existing state of bank data governance and the needs of the "Guidelines". The organizational framework of data governance must be improved as soon as practicable, including:

#### **4.1. In terms of organizational structure:**

(1) Establish a top-down, transparent organizational structure and role-sharing arrangement. Clearly define the roles and responsibilities of the senior management, board of directors, board of supervisors, and pertinent departments [5];

(2) Research and set up the data governance committee as the highest decision-making body of the bank wide data

governance, set up an independent data governance functional department for centralized management, take the lead in implementing the construction of the data governance system [6], coordinate the implementation of the data management operation mechanism, organize and promote the data to play a full role in the operation and management process, and set up full-time posts to meet the work needs in the data governance centralized management department, Set up full-time or part-time positions in other relevant business departments.

#### **4.2. In terms of Data Governance Responsibilities**

(1) Business departments shall be responsible for data governance in their own business areas, manage data sources of business lines, ensure accurate recording and timely maintenance, implement data quality control mechanisms, and implement work requirements related to regulatory data [7];

(2) The Data Governance Committee is in charge of developing the data strategy, making sure it is implemented and revised successfully, and creating a thorough, efficient, and scientific data management system; the data governance centralized management department establishes a standardized plan covering all data and follows unified business norms and technical standards;

(3) Departments of science and technology will constantly work to enhance the information system to support a variety of enterprises and management data; improve the supervision statistical system, continuously improve the automation degree of supervision data processing; strengthen data sharing to ensure data security; establish comprehensive and strict management process and filing system, clarify requirements such as filing handover and caliber sorting, strengthen data impact analysis, and formulate emergency plans;

(4) Internal audit departments should bring bank data governance into the scope of supervision;

(5) In terms of data quality control, the centralized management department of data governance shall establish data quality management system and rules, improve data quality control by introducing technical means; strengthen daily supervision and inspection, establish data quality assessment and evaluation system, and incorporate the assessment results into the performance assessment system of the institution to realize continuous improvement of data quality [8];

(6) Each business department shall strengthen data application in risk management, business operation and internal control, realize data-driven, improve management refinement, give full play to data value, and establish regular self-assessment and inspection mechanism [9].

#### **4.3. In terms of Building Data Governance Talent Echelon**

(1) Fill in the missing basic data governance posts as soon as possible, including full-time personnel of data standard management post, data quality management post, data demand management post, metadata management post and data life cycle management post;

(2) Transform part-time posts into full-time posts, including data architecture, data application and mining posts, to form full-time posts;

(3) Strengthen the training and recruitment of business and science and technology compound data governance talents,

and enhance professional collaboration capabilities.

## **5. Bank Data Organization Structure Specific Implementation Proposal**

### **5.1. Overall Architecture Construction Scheme**

As mentioned above, banks should follow the overall organizational structure building strategy of evolving from a composite data governance organizational model (that is, "data" centered with a hybrid cross departmental data governance organizational model) to an independent data governance organizational model. Data governance is essentially bank wide. In order to break the inherent barriers in cross departmental collaboration, better coordinate science and technology and business departments, and reduce implementation resistance, banks need to establish a stable decision-making body, a strong overall management department, and ensure that all relevant departments have clear division of labor and efficient collaboration to ensure the effective implementation of data governance. According to the requirements of the Guidelines, banking financial institutions should establish a professional team to meet the needs of data governance work, and set up full-time posts to meet the needs of work in the centralized management department of data governance, and set up full-time or part-time posts in other relevant business departments.

The bank data governance work is still in its early stages of decision-making, so a permanent and ongoing leading organization is required to continuously participate in the data governance work's decision-making. Additionally, the leading data governance decision-making organization should be around for a long time in the long-term planning of the future. Data governance is a very collaborative effort of the Bank, including all lines and divisions, in terms of the management coordination layer. To guarantee cohesive administration and efficient data standardization across the Bank, a robust management department must assume the responsibility of organizing and resolving cross-departmental disputes. Data governance at the executive level encompasses both business and technological aspects, necessitating technical assistance from science and technology departments in addition to direction from business departments. As a result, it's critical to establish precise guidelines for the responsibilities and links between the business and science and technology departments, as well as the thorough involvement of different departments and the fair distribution of job duties. Each level of the organization management mode shall perform corresponding responsibilities, and the performance of responsibilities shall be based on corresponding authority, resources and personnel. Only by having consistent responsibilities and rights can the stability and feasibility of the data governance organizational structure be guaranteed and the driving force and execution force of the bank data governance work be increased [10].

#### **5.1.1. Decision-making Level Organization Construction Strategy**

In terms of setting up the data governance decision-making layer organization, two models can be considered, one is composed of the Information Technology Committee and the Data Governance Committee, and the other is that the Data Governance Committee independently assumes the decision-making layer function.

Given that the bank's data governance activity is in its early

stages, there are numerous issues that require decision-making in the implementation process of the future data governance system, and the requirements for decision-making and approval efficiency are rather high; The bank has a foundation in the decision-making layer setting, and has established a data governance leading group to be responsible for decision-making work on data governance-related matters, so an independent data governance committee is set up in the executive management office as the data governance decision-making layer.

#### **5.1.2. Management Coordination Layer Organization Construction Strategy**

In terms of setting up the organization of data governance management coordination layer, one is to set up a data management center under the data governance working group, which is suitable for organizations with high participation and coordination ability of various departments; the other is to establish an independent data management center to assume the functions of working group and data governance committee office, which is suitable for organizations with low management maturity and uses the data governance department to carry out work.

In view of the fact that the Bank has established a data governance working group composed of business backbones of relevant departments, with extensive resolutions and certain effectiveness in promoting and implementing data governance work, It is recommended to keep the data governance working group in place and create a data governance management coordination layer made up of the data management center and the working group. The entire administration of data standards, quality, requirements, accountability, etc. is the responsibility of the Data Administration Center, which is the department in charge of data governance general management, as well as the preparation of relevant systems and management processes; the Data Governance Working Group is the deliberation and coordination organization of data governance, accountable for organizing and settling disagreements brought forth by the Data Management Center, as well as for considering issues filed by the Data Management Center.

#### **5.1.3. Executive Level Organization Construction Strategy**

Data governance covers a wide range and has a large impact, requiring the deep participation of science and technology departments and business departments. Therefore, the executive layer needs to establish a federal-style working mode to jointly carry out data governance implementation under the overall management of the data management center. The science and technology department undertakes the technical support and system construction of data governance, introduces advanced technical means, meets business needs, and provides technical support for the realization of data value. The business line department is responsible for data governance in the field under its jurisdiction, implementing the data quality control mechanism, and implementing work requirements related to regulatory data and internal business management data; In risk management, business operations, and internal control activities, data application scenarios should be actively explored to drive the continuous improvement of internal management and business development through data.

## 6. Summary and Outlook

As mentioned in this report, the construction of bank data governance organization is divided into two stages, namely, short-term and long-term. In the near future, as an independent organization-data management center, it is set under the planning and finance department, focusing on the construction of data governance system, organization construction, talent cultivation, implementation of system process, etc., supplemented by data governance working group, jointly with science and technology departments and business departments to carry out data governance work in a planned way, so as to realize standardized management of all kinds of data throughout the Bank. In terms of department assessment, the head of the Planning and Finance Department needs to have assessment authority over the data management center. In the future, the data management center will evolve into a data management department, becoming an independent first level department that will coordinate the entire bank's data management and data value realization work. The department's positioning will gradually shift from focusing on "standardization" in the early stage to focusing on "value and application" in the later stage. The Future Data Management Department is a new driving force for "Business IT" to support decision-making across all business departments and senior management throughout the bank.

### 6.1. The Difficulties and Challenges Faced

In the process of organizational structure construction, we may face a series of difficulties and challenges. On the whole, the bank data governance work is in the initial stage, and there is little experience to learn from in the bank. The personnel of the data management center will work in a highly complex environment following the early stages of the center's construction and will go through an adjustment period.

First of all, in terms of business operation process (such as data standard formulation process and data requirement management process), more trial work needs to be carried out, and it may occur that all departments submit all data problems to the data management center for solution, resulting in deviation of work focus. To prevent such circumstances, each job must have a clear understanding of the boundaries of its responsibilities.

Secondly, with the continuous increase of data fields and data items involved in the data management center, the requirements for the quality and staffing of data management center personnel will continue to improve. If relevant departments (such as human resources department and data management center supervisor) fail to find problems in time, problems such as brain drain and poor work results may occur due to heavy work pressure of departments and insufficient personnel matching.

Thirdly, in the construction of talent team, data management organization needs to build talent team with financial+IT compound ability. At present, the accumulation of compound talents in banks is weak, and large investment is needed in talent team construction, otherwise it will face the problem of recruitment difficulty.

Finally, the cross-department collaboration problem. As the overall management department of data governance in the future, the data management organization needs to carry out cross-department collaboration with the executive layer of business department and the executive layer of science and technology line. The system process execution force and

cross-department collaboration efficiency of each relevant organization bring certain risks to the development of data governance work.

### 6.2. Suggestions for Dealing with Problems

(1) Clear boundaries of departmental responsibilities and establishment of dispute resolution mechanisms

Data management co-ordinates a department to undertake a lot of executive layer work is the problem that a lot of banks face commonly, also be the problem that should avoid emphatically. In order to avoid such phenomena, firstly, at the initial stage of department establishment, it is necessary to publicize and implement the department responsibilities, management processes and systems to the whole bank, convey the data governance responsibilities that each department should undertake, and timely follow up and adjust the boundary of department responsibilities according to the overall work needs of the bank. Secondly, induction training shall be provided to the employees of the data management center to ensure that they fully understand their post responsibilities. In the face of controversial matters, the data management center shall, on the one hand, strengthen the organizational ability of cross-department coordination, and on the other hand, from the perspective of decision-making efficiency, timely report the problems to the data governance working group and even the data governance committee for resolution.

(2) Appointing people on merit, tilting salary system and differentiating career planning

In terms of talent training and team building, it is suggested to give priority to internal training and selection of excellent business backbones and technical experts, implement post competition mechanism at the bank level, and make certain preferential consideration in salary treatment to attract all kinds of talents in the industry. At the same time, external recruitment methods are adopted to attract compound talents with technical development + financial background from peer institutions to supplement the backbone of the bank data governance talent team. With the improvement of data application in the company's strategic position in the future, it is necessary to consider the differences in career planning between technology talents and business personnel. It is recommended to optimize the bank's performance evaluation mechanism and address talent selection and retention issues.

(3) Actively investigate the completeness of the organization and improve the talent guarantee system for data governance

The director of HR Department and Data Management Center shall communicate with the staff of Data Management Center regularly (suggested frequency: at least every year, and the frequency can be increased according to the internal evaluation requirements of the bank), fully understand their responsibilities, problems faced in their work, evaluate whether the staffing of existing organizations meets the work needs, timely arrange to increase relevant posts and staffing, and improve the talent guarantee system.

(4) Create a cross-departmental training program for talent in data governance and work to consistently enhance their professional aptitude

The employees of the data management center should maintain their continuous learning ability in the business and technology fields. In addition to strengthening the cross disciplinary internal training organized by the data management center itself, and taking part in various training

programs for business and technology lines run by banks and outside organizations, in an effort to fully satisfy the needs of business and technology lines, the data management center can dispatch a certain number of backbone employees to the corresponding business each year. A positive cycle of talent and a route for knowledge updates is created by the rotation of technology departments and the concurrent hiring of staff members from the business and technology departments for the data management center. This enables the sharing of both new and old roles.

(5) Bring data governance into the scope of assessment and promote cross-department collaboration

As the overall data governance management department, the future data management center (long-term data management department) recommends that data governance work be included in the assessment system to ensure the effective implementation of cross-departmental organization and coordination mechanisms and improve the efficiency of cross-departmental collaboration.

In addition, the data governance work is at the level of the whole bank, and all departments and branches of the Bank should actively participate in it. On the premise of ensuring the effective implementation of personnel allocation and relevant responsibilities, the Bank needs to popularize the corporate culture of data governance in the bank by means of internal propaganda, assessment and incentive, finally realize the value of data application in marketing management, risk management and internal control, and help build a leading bank in science and technology.

### **6.3. Data Governance Organizations Support Business Development, Financial Technology, And Big Data Applications**

To meet the demands of the rapidly developing fields of artificial intelligence, big data, financial science, technology, and other fields, combined with the strategic deployment of banks in customer marketing, risk management, operation efficiency improvement, etc., the future data governance organization provides guarantee in improving bank data management level, big data mining capability, high-level data application, etc. Industry research shows that at present, the big data application of financial institutions is mainly concentrated at the front-end business level, and the development of artificial intelligence faces significant data infrastructure problems. Traditional financial institutions are mostly exploring how to use technology to successfully transform.

In the future, data governance organizations will enable banks to better embrace financial technology on the premise of solving data foundation problems for banks. Within the context of the data foundation, the positions established by the data governance organization with regard to standards and quality data will be in charge of organizing the development of the Bank's standards and quality guidelines and encouraging their use, further encouraging the Bank's degree of data management to be improved continuously, continuously optimizing the quality of the data, encouraging data integration and sharing, and safeguarding the advancement of big data and artificial intelligence for banks; In terms of big data mining, a dedicated position for data

mining has been established throughout time. This position will be in charge of investigating and studying different data mining tools and algorithms, as well as utilizing a variety of data mining tools to complete data mining work for particular jobs. [11], and improving the R&D and practice capabilities of new data mining technology modes, models and algorithms of banks; In terms of high-level data applications such as artificial intelligence, data application posts have been set up to be responsible for the development of various application scenarios and scheme design, which will continuously expand the business application scope of bank artificial intelligence and big data applications.

In the future, banks need to cultivate financial technology and big data mining talents internally, while actively attracting external talents to enhance their practical abilities in machine learning, data mining, intelligent risk control, and refined marketing, providing guarantees for the realization of bank data value. In addition, it emphasizes the allocation of technology + business compound professionals in data governance organizations, which conforms to the trend of talent selection in the financial industry and will form important talent assets of banks in the future.

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