

## Research on the Construction of Data Governance Framework in Vocational Colleges

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**Abstract:** *The data governance framework is a critical reference for organizations to develop data governance plans, carry out data governance processes, and evaluate the effects of data governance. This study employs content analysis based on the existing literature to extract the core elements of vocational college data governance, including 17 primary indicators and 32 secondary indicators from the perspectives of process, organization, and content. Based on the 5W1H principle, a theoretical prototype of the data governance framework for vocational colleges is established. Following this, two rounds of expert consultations were conducted with twelve experts in data governance from vocational colleges, focusing on the importance, clarity, practicality, and interaction of the framework elements. This iterative process resulted in the formation of a data governance framework for vocational colleges, encompassing top-level design, governance processes, and governance evaluation.*

**Keywords:** Vocational College, Data Governance, Governance Framework

## **1. Introduction**

In the digital age, data has become a crucial factor of production, and harnessing the asset value of data through data governance has emerged as a key strategy for organizations to achieve their strategic objectives (Lis, Gelhaar & Otto, 2023). In the field of education, data governance has become an essential means for educational institutions to enhance governance levels and the quality of talent cultivation (Williamson, 2016).

## **2. Literature Review**

The existing research on data governance in educational institutions can be primarily classified into five categories: theoretical research, framework research, technical platform construction research, practical application research and institutional guarantee research. Theoretical research lays the groundwork for other types of research by clarifying the relevant concepts of data governance in institutions and identifying core elements. Framework research focuses on the data governance framework as a crucial reference for institutions to plan, implement, and evaluate data governance (Hillman 2022; Latchman, Abdullah & Veiga 2024). Technical platform construction research supports data governance from a technical standpoint, emphasizing middleware technology to address issues like data silos (Ratner & Gad, 2018). Practical application research, originating from the concept of “institutional research” in American universities, includes studies on the status quo, practical forms, and implementation strategies of data governance in institutions, providing a reference for other institutions through exemplary cases

(Jim & Chang, 2018). Institutional guarantee research highlights challenges in data governance and suggests strengthening policy, system, and standard constructions to ensure proper governance.

Current research on educational data governance primarily concentrates on primary and higher education, with less emphasis on vocational education. Data governance in vocational colleges is characterized by openness and dynamism: the educational attributes of industry-education integration and school-enterprise cooperation mean data governance necessarily involves diverse stakeholders, including government, industry, enterprises, and school administrators, teachers and students. The governance objects also extend to external educational environments, personnel, funds, equipment, and other resources, making data governance in vocational colleges inherently open. Moreover, the goal of talent training in these colleges is to produce technical and skilled personnel, necessitating the prompt incorporation of new technologies, processes, and standards into teaching content and ensuring alignment between professional orientation and vocational development, course content and occupational standards, teaching content and production requirements. As a result, the rapid development of socio-economics, industry, and technology makes the data governance of higher vocational colleges exhibit stronger dynamic characteristics.

Given these characteristics, this paper conducts research on the construction of a data governance framework for vocational colleges, aiming to provide practical clues and tangible methods for these institutions to carry out data governance work.

### **3. Research Question**

This paper will address the following research questions:

What are the core elements of data governance in vocational colleges when viewed from the perspectives of process, organization, and content?

How is the data governance framework in vocational colleges constructed, and what is the relational structure among its core elements?

In this paper, we aim to delve into the intricacies of data governance in vocational colleges. Our research questions revolve around the core elements of data governance, including process, organization, and content. We will also analyze the construction of the data governance framework in these institutions and explore the relational structure among its core elements.

### **4. Core Elements of Data Governance in Vocational Colleges**

To construct the data governance framework for vocational colleges, it is first necessary to clarify the core elements of data governance. Due to limited research on data governance in vocational colleges, there is insufficient support for the extraction of framework elements. Considering that vocational colleges are also part of higher education, this section combines the discussions on data governance elements of universities and vocational colleges from relevant literature, employing content analysis to extract the core elements of data governance in vocational colleges.

Content analysis is a research method

that obtains study results through the analysis of “content”, which includes determining research samples, selecting analysis units, constructing categories, content coding, and result presentation. This study uses content analysis to analyze the discussions on data governance elements of universities and vocational colleges and extracts the core elements of data governance in vocational colleges.

From the perspective of activity theory, human activity can be considered as the process in which the subject of activity conducts a certain activity (including process and content) based on certain organizational rules. Therefore, the data governance of vocational colleges can be unfolded from three perspectives: process, organization, and content. The process perspective defines the core elements of data governance from the entire data lifecycle; the organizational perspective defines the core elements of data governance from the constituent elements of governance; the content perspective defines the core elements from the content that should be included in data governance. The coding methods of content analysis mainly fall into two categories: one is coding based on existing theoretical frameworks, and the other is coding according to the content of the materials. This study combines both coding methods: first, based on activity theory, the elements of data governance in vocational colleges are divided into three dimensions: process, organization, and content perspectives. Then, based on the induction and summarization of the material content, the contained elements are extracted (see Table 1). Finally, the elements and dimensions are reorganized to form the core elements of data governance for vocational colleges.

**Table 1**

*Coding of Data Governance Elements in Vocational Colleges*

<b>Dimension</b>	<b>Content</b>	<b>Elements</b>
Process Perspective	Data governance covers the entire data lifecycle, including the entire process from collection, application to cleaning (PTAC, 2015)	Data Collection, Data Application, Data Destruction
Process Perspective	The elements of data governance in universities include data acquisition, data integration, data analysis, data application (Xu, Wang , Bian, et al., 2015)	Data Collection, Data Integration, Data Analysis, Data Prediction
Process Perspective	The levels of data governance in vocational colleges include data source layer, data collection layer, data storage layer, data application layer, data security layer, and data governance hardware layer (Liu, Luo, & Han, 2021)	Data Source, Data Collection, Data Storage, Data Application, Data Security, Hardware Environment
Process Perspective	The entire lifecycle of data is divided into seven stages: collection, organization, evaluation, description, processing, access, and data reuse (Song, Deng, & Jin, 2015)	Data Collection, Data Integration, Data Processing, Data Evaluation
Process Perspective	Data governance is a process that revolves around internal data assets, following a closed loop of data collection, data cleaning, data arrangement, data exchange, and data update, continuously iterating to improve data quality (Liu, Qu, & Chen, et al., 2020)	Data Collection, Data Cleaning, Data Integration, Data Exchange, Data Update, Data Quality
Organizational Perspective	The elements of university data governance include governance objectives, governing subjects, governance objects, governance principles, governance methods, and governance tools (Dong, 2021)	Governance Objectives, Governing Subjects, Governance Objects, Governance Division, Governance Principles, Governance Tools
Organizational Perspective	The logical framework of data governance in higher education includes four dimensions: governance objectives, governing subjects, governance objects, and governance methods, with data objects focusing on data quality, data security, data standards, and data sharing (Dai & Wang, 2021)	Governance Objectives, Governing Subjects, Governance Objects (Data Quality, Data Security, Data Standards, Data Sharing), Governance Methods

Content Perspective	Data governance is about making policies related to internal data, including policies for data optimization, monetization, and privacy protection (Sunil, 2014)	Policy System
Content Perspective	The contents related to university data governance construction include policies, organizational architecture, data governance organization, metadata, data standards, data quality, data security, data assets, and data integration (Yu & Li, 2020)	Policy System, Organizational Architecture, Data Standards, Data Architecture, Data Integration and Management, Data Sharing and Service
Content Perspective	Data governance content construction includes data resource catalogs, data standards and specifications, data opening and sharing, high-level management services, and efficient collaborative supervision (Xie, Chen, & Zheng, 2022)	Data Standards, Data Sharing and Service, Data Integration and Management
Content Perspective	The data governance system includes data governance service system, service mechanisms, organizational structure, and policy support (Liu, Luo, & Han, 2021)	Service System, Operational Mechanisms, Organizational Structure, Policy System
Content Perspective	The operational mechanisms of educational governance include decision-making mechanism, execution mechanism, supervision mechanism, coordination mechanism, and service mechanism (Shen & Xia, 2018)	Operational Mechanisms
Content Perspective	University data governance requires the formulation of policies, organizational structure, technical tools, process norms, data standards, supervision, and assessment (Li, Qian, Huang, et al., 2017)	Policy System, Organizational Structure, Technical Tools, Data Standards, Operational Mechanisms, Governance Evaluation

After the induction, analysis, and coding of the original text, according to the three dimensions of the study's process perspective, organizational perspective, and content perspective, a reorganization was carried out, ultimately forming the core elements of data governance for vocational colleges (see Table 2). The process perspective defines the

entire process of operation, management, and application of data during data governance in vocational colleges, which specifically includes six elements: data collection, data processing, data storage, data application, data operation and maintenance, and data lifecycle ; the organizational perspective defines the components of data governance in vocational

colleges based on the constituent elements of “governance,” including goals, subjects, objects, and methods; the content perspective defines the specific work that needs to be carried out when vocational colleges implement data governance, including

constructing organizational structures, formulating policies and systems, specifying operational mechanisms, defining data architectures, providing technical tool support, building service systems, and conducting governance evaluations, among others.

**Table 2**

*Core Elements of Data Governance in Vocational Colleges*

<b>Dimension</b>	<b>Primary Index</b>	<b>Secondary Index</b>
Process Perspective	Data Collection	Data Source, Data Collection
	Data Processing	Data Clarity, Data Integration
	Data Storage	Data Storage
	Data Application	Data Analysis, Data Exchange, Data Prediction
	Data Operations	Data Update
	Data Lifecycle	Data Destruction
Organizational Perspective	Governance Objectives	Governance Objectives, Governance Entities, Data Quality, Data Security, Data Standards, Data Application, Data Sharing, Governance Principles, Governance Division of Labor, Governance Tools
	Governance Entities	
	Governance Subjects	
	Governance Methods	
Content Perspective	Organizational Structure	Organizational Structure, Policy System, Data Standards, Data Organization
	Policy System	
	Data Architecture	
	Service System	Data Sharing and Services, Data Integration and Management
	Operating Mechanism	Decision Mechanism, Execution Mechanism, Supervision Mechanism, Coordination Mechanism, Service Mechanism, Hardware Environment, Data Evaluation, Supervision and Assessment
	Technological Tools	
Governance Evaluation		

**5. Construction of the Data Governance Framework for Vocational Colleges**

**5.1. Building the Prototype of the Data Governance Framework for Vocational Colleges**

To guide the implementation of data governance, researchers and organizations have constructed systematic data governance frameworks. Among these, representative

ones include the Data Governance Framework constructed by the International Data Governance Institute (referred to as the “DGI Framework”), the Data Management Body of Knowledge constructed by the Data Management Association (referred to as the “DAMA Framework”), as well as China’s “Data Governance Specification” and “Data Management Capability Maturity Model Assessment Model.” Data governance in vocational colleges is actually using data

governance as a tool to achieve the governance goals of vocational colleges. The involved elements mainly answer basic questions such as why to carry out data governance, who carries out data governance, what content is involved in data governance, and how to carry out data governance. Based on the review of typical data governance frameworks, it was found that the basic concepts and core elements underlying vocational college

data governance are highly consistent with the logic of the 5W1H (Who, What, When, Where, Why, How) principle, which the DGI Framework is based on. Therefore, this study decided to refer to the DGI Data Governance Framework and reorganize the above elements based on the 5W1H principle to form the prototype of the data governance framework for vocational colleges, as shown in Table 3.

**Table 3**

*Prototype of Data Governance Framework for Vocational Colleges*

<b>First-Level Dimension</b>	<b>Second-Level Dimension</b>	<b>Significantly Influential Content Aspects</b>
Top-Level Design	Goals	Goals of data governance in vocational colleges Data governance departments in vocational colleges (organizational structure, division of governance)
	Subjects	Stakeholders in data governance of vocational colleges Regulatory departments in data governance of vocational colleges
Content		Data architecture in vocational colleges (including data needs, data quality requirements, data standard definitions and classifications [business terminology, reference data and master data, data elements, indicator data], etc.)
		Data governance principles in vocational colleges (including security, effectiveness, openness, etc.)
		Data governance system in vocational colleges (including policy systems, personnel systems, supervision systems, evaluation systems, etc.) Governance content in vocational colleges (specific work carried out in governance, etc.) Governance tools in vocational colleges (including hardware device support, etc.)

Governance Process	Data Security	Systems and measures to ensure data security during the data governance process in vocational colleges
		Data distribution situation in vocational colleges
	Data Collection	Data interface situation in vocational colleges
		Data model usage in vocational colleges
		Systems and measures for data cleaning in vocational colleges
		Systems and methods for data integration in vocational colleges
	Data Processing	Metadata management in vocational colleges
		Systems and methods for data quality checks in vocational colleges
	Data Storage	Construction situation and content of data catalog in vocational colleges
		Data warehouse construction systems and situation in vocational colleges
	Application of data in analysis and prediction in vocational colleges	
Data Application	Application of data in opening and sharing in vocational colleges	
	Application of data in services in vocational colleges (including support for party building leadership, teaching and learning, campus management, campus services, decision-making, etc.)	
Data Operations and Maintenance	Systems and measures for data operations and maintenance in vocational colleges	
Data Destruction	Systems and methods related to data lifecycle in vocational colleges	
Governance Evaluation	Data Indicators	Indicators for measuring the effectiveness of data governance in vocational colleges
	Evaluation System	System for evaluating the effectiveness of data governance in vocational colleges

### ***5.2 Optimization of the Framework Prototype for Data Governance in Vocational Colleges***

The aforementioned prototype mainly comes from theoretical-level analysis and lacks evidence from the practical level. Therefore, this section uses the expert consultation method to optimize the

framework prototype. Expert consultation is a research method that solicits opinions from multiple experts in the relevant field, mainly using paper or electronic questionnaires as a medium for experts to anonymously rate and provide text feedback on specific questions (Brill, Bishop, & Walker, 2006). Although expert consultation often unfolds in the form



of questionnaires or scales, existing studies have pointed out that integrating interviews, focus group discussions, and other methods can further enrich the results of expert research (Hasson & Keeney, 2011).

This study used two rounds of expert consultation to optimize the framework of data governance in vocational colleges. To ensure the validity of the research, during the analysis of materials, two researchers carried out joint coding and compared the results of the two coders. Any inconsistencies were discussed to reduce individual biases in information cognition and ensure a high degree of consistency in information analysis results among different researchers.

In the first round of optimization iteration, three directors of information technology offices from vocational colleges were invited based on the feasibility principle. They focused on three aspects: clarity of framework description (finding unclear elements based on the comparison of experts' understanding and the elements' definitions), practicality of framework elements (identifying framework elements that do not match the actual work carried out in data governance in vocational colleges), and suggestions for framework openness (whether the framework is correct, clear, and provides work guidance). A combination of questionnaires and interviews was used to solicit opinions from frontline experts.

The feedback from the first round of expert consultation showed that the constructed data governance framework for vocational colleges was relatively clear and effective, with comprehensive elements, and had a certain guiding significance for the data governance work of vocational colleges. Elements that performed poorly in practicality mainly included governance principles, data indicators, data models, governance content,

data destruction, data architecture, metadata management, and governance departments. The reasons for poor performance were partly due to unclear framework descriptions, which caused misunderstandings (e.g., governance departments, data architecture, metadata management), and partly because the framework elements did not adapt to the current stage of data governance in vocational colleges and should be modified. Based on these issues and combined with expert suggestions, this study mainly optimized and iterated the data governance framework for vocational colleges from two aspects: clarity of description and practicality of elements, making it more in line with the actual work of data governance in vocational colleges.

In the second round of optimization iteration, the idea of expert consultation was continued, and 9 experts in data governance from vocational colleges (including seven directors of information technology offices, one CIO, and one college president) were invited to anonymously rate specific questions and provide text feedback through questionnaires. The consultation form focused on three aspects: framework elements, element relationships, and suggestions for framework openness. Through the qualitative and quantitative analysis of the expert opinions collected from the consultation form, on the one hand, it was possible to clarify the importance, clarity, and practicality of the elements involved in the data governance framework for vocational colleges constructed after one round of iteration, and finally determine the element composition of the data governance framework for vocational colleges. On the other hand, it was possible to explore the relationships between elements and the correspondence of elements with the 5W1H principle, thus laying the foundation for the formation of the data governance framework for vocational colleges.

The results of the second round of expert research showed that after iterations and optimizations, the data governance framework for vocational colleges became clearer and more effective, with comprehensive elements, and had a certain guiding significance for the data governance work of vocational colleges. In terms of framework elements, the importance, clarity, and practicality of the various elements involved in the framework were good: In terms of element importance, the importance of each element was generally “very important” or “important.” At the third level of impact content, except for governance tools, data distribution, data warehouses, data analysis and forecasting, data opening and sharing, data lifecycle, evaluation mechanisms, and optimization mechanisms, which one expert rated as “general,” the remaining elements were “very important” and “important.” In terms of the clarity of element description, only the data lifecycle was regarded as “general” by experts, while the clarity of the remaining elements was “very clear” or “clear.” At the third level of impact content, except for the need to further define “stakeholders,” the remaining elements performed well in clarity after the first round

of optimization. In terms of the practicality of elements, the implementation of governance evaluation was poor, with two experts indicating that their colleges had not yet been involved in related work. Additionally, one expert each indicated that governance subjects, data storage, and data lifecycle were “not yet involved.” The remaining elements were practical and either “already implemented” or “involved but not fully implemented” in vocational colleges. At the third level of impact content, except for the evaluation mechanism, optimization mechanism, and data warehouse, which were poorly practical, the remaining elements were well implemented in frontline vocational colleges. In response to the elements that performed poorly, this study, combined with expert suggestions, optimized and iterated the data governance framework for vocational colleges from the element perspective, making it clearer, more comprehensive, and reasonable, and in line with the actual work of data governance in vocational colleges. After the aforementioned modifications, the final version of the data governance framework for vocational colleges was iteratively formed from the element level, as shown in Table 4.

**Table 4**

*Core Elements of Data Governance in Vocational Colleges*

<b>First-Level Dimension</b>	<b>Second-Level Dimension</b>	<b>Third-Level Dimension</b>	<b>Definition</b>
Top-Level Design	Concept	Concept of data governance in vocational colleges	Value orientation guiding all data governance work
	Goals	Pre-conditions for data governance in vocational colleges	Main issues corresponding to ‘Why’ data governance is necessary
		Strategic goals of data governance in vocational colleges	Reflecting the school’s strategic deployment
		Governance goals of data governance in vocational colleges	Expected outcomes post data governance

Subjects	College administrators in vocational colleges	Digital leadership and data governance awareness of leaders
	Responsible departments in vocational colleges	Departments responsible for data governance (existing/new), such as establishing a Chief Data Officer (CDO), forming data management functional departments, etc.
	Stakeholders in data governance of vocational colleges Internal (administrators, teachers, academics) and external (educational administrative staff, enterprises, parents, etc.) stakeholders and their digital literacy	
	Regulatory departments in data governance of vocational colleges	Institutions responsible for overseeing the data governance process and outcomes
Content	Data architecture in vocational colleges	Data standards and classification, how data is organized, code standards, code mapping needs, data access standards, data sharing standards
	Institutional mechanisms of data governance in vocational colleges	Systems for data governance (policy, personnel, supervision, evaluation), mechanisms (responsibility, coordination, supervision, communication), and content (data security, data quality, data cleaning, data integration, data operations, and maintenance)
	Workflow in data governance in vocational colleges	Core aspects of conducting data governance such as research, defining scope, establishing standards
	Resource assurance in data governance in vocational colleges	Support needed in terms of resources like system vendor support, third-party data governance capabilities, internal personnel training, coordination of internal human resources, involving financial, technological, human resources, and other aspects
	Governance tools in vocational colleges	Software and hardware equipment support

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Governance Process	Data Security	Data permission management in vocational colleges	Managing data permissions for different entities, defining different security levels for data, such as open to public, partially visible, etc.
		Data classification and management in vocational colleges	Grading and managing data based on different permissions
		Data privacy in vocational colleges:	Data privacy needs including encryption, de-identification, watermarking, technical means for data privacy protection, data confidentiality methods
		Data operation log management in vocational colleges	Recording each data operation for data security, management, and traceability analysis of data operation logs
Data Collection		Data distribution in vocational colleges	Data distribution structure, source business systems for various data types, ensuring one data source, compliance in data transmission
		Data interface in vocational colleges	Data interface standards, internal departmental interfaces, external data opening interfaces
Data Processing		Data cleaning in vocational colleges:	Data cleaning tools, checking data consistency, handling invalid data including invalid values, missing values
		Data structure in vocational colleges	Data types (structured and unstructured), organizing these data types, collection, storage, processing, and respective planning paths for structured and unstructured data, how unstructured data is processed and entered into data warehouses
		Master data management in vocational colleges	Important internal data such as personnel data, student information, teaching data, historical linkage management for tracking changes in master data
		Data integration in vocational colleges	Integration tools, transformation, reorganization, publishing

Data Storage	Data standards in vocational colleges	Data standards for assessing compliance in the big data center, regular maintenance and update mechanisms for data standards
	Data catalog in vocational colleges	Establishing data catalogs according to business, facilitating query and location
	Data warehouse in vocational colleges	Storing structured data, together with unstructured data storage forming the big data center
	Unstructured data storage in vocational colleges	Storing unstructured data, together with data warehouse forming the big data center
	Metadata construction in vocational colleges	Business metadata (data values, units, indicators, statistical time, regional scope, population scope, thresholds), technical metadata (database type, connection, instance name, table name, tools, data interface), operational metadata (data operation logs - creator, creation time, modification time), management metadata (data permissions, security levels)
Data Application	Data display in vocational colleges	Data visualization through data screens, unified portals, etc., to reveal college development
	Data analysis and prediction in vocational colleges	Supporting college development forecasts and important decisions through data analysis
	Data openness and sharing in vocational colleges	Including internal department data sharing, opening and co-building certain data with enterprises (e.g., internships and training)
	Data services in vocational colleges	Including SaaS services (providing related applications to education entities), DaaS services (directly providing data to educational applications), and supporting party building leadership, educational teaching, campus management, campus services, etc.

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Data Operations and Maintenance	Data update in vocational colleges	Updating certain data in line with school development, replacing old data values with new ones	
	Data structure adjustment in vocational colleges	Mechanisms and techniques for adjusting data structures based on data needs	
	Data recovery in vocational colleges	Processes for recovering data that cannot be directly restored due to deletion or other reasons	
	Data backup in vocational colleges	Methods and records for backing up important internal file data	
Data Lifecycle	Full data lifecycle in vocational colleges	Lifecycle of various data including collection, processing, storage, backup, destruction, defining which data to destroy, destruction cycle, destruction methods (including review, backup)	
Governance Evaluation	Evaluation Indicators	Scope of data governance in higher vocational colleges	Metadata scope, data content scope
		Timeliness of data in vocational colleges	Data update frequency, data flow frequency
		Effectiveness of data in vocational colleges:	Data integrity, standardization, quality
		Openness of data in vocational colleges	Circulation of data in various business systems, sharing among various business entities
		Security of data in vocational colleges	Privacy protection, data accuracy
Evaluation System	Evaluation mechanisms and methods in vocational colleges	How to evaluate the effectiveness of data governance	
	Optimization mechanisms and methods in vocational colleges:	Establishing related adjustment systems, normalizing the process, feedback from governance experience summary	

## **6. Conclusion**

Firstly, in contrast to some frameworks, such as the DGI Data Governance Framework (The DGI Data Governance, 2023) and the “Data Governance Standard’ Framework” (State Administration for Market Regulation of the PRC & Standardization Administration of the PRC, 2018) that solely focus on the management perspective, outlining the organizational structure and operational mechanisms constituting data governance, others like the Hierarchical Model of Data Ecological Governance in Universities (Yu & Li, 2018) and the “Vocational College Data Campus Standard” Data Governance Framework (Liu, Luo, & Han, 2021) approach from a technical perspective, concentrating on various stages of data operations in colleges. This study constructs a data governance framework for higher vocational colleges that starts from an institutional level, emphasizing the top-level design of data governance in higher vocational colleges and addressing governance in these institutions. It clarifies the philosophy, goals, entities, and content of data governance in higher vocational education. Furthermore, it starts from the data operation process, defining a complete process from data collection, processing, storage, application, maintenance, to data destruction. It underscores the core importance of data security and quality, providing a systematic and comprehensive description of data governance in higher vocational colleges from both management and technical perspectives.

Secondly, compared with the highly generalized and theoretical nature of frameworks like DCMM (General Administration of Quality Supervision, Inspection and Quarantine of the PRC & Standardization Administration of the PRC, 2018) and the basic education data governance model (Liu, 2022), the framework constructed

in this study focuses on guiding the specific work of front-line higher vocational colleges. On the one hand, the framework is detailed to the level of three-tier elements, defining each element to provide colleges with practical tools. On the other hand, it aligns with the practices of colleges to ensure that the descriptions of elements fit the usage habits of front-line higher vocational colleges, avoiding ambiguities and fully supporting the work of colleges.

Finally, existing frameworks either lack a description of the relationships between elements, such as the data governance framework of the Open University (Zhang, Peng, & Huang, 2018), or only provide a brief description of the relationships between primary elements, such as Liu Huan’s basic education data governance model (Liu, 2022). In contrast, the data governance framework for higher vocational colleges constructed in this study, combining actual college work, elaborates on the operational conditions of each element in practice and clarifies the relationships between primary, secondary, and tertiary elements. It clearly illustrates the interactions between elements, laying a foundation for the data governance framework of higher vocational colleges.

## **Acknowledgments**

This paper is supported by Research on online education system, model and evaluation of Vocational Colleges Based on system theory (Project Number: BCA 200084), one of the educational projects of the National Social Science Foundation in the 13th Five-Year Plan in the year of 2020.

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