Asia Pacific Science Press

# Research on the Composition and Improvement Mechanism of Financial Governance Capabilities of Manufacturing Enterprises under the Background of Intelligent Finance

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**Abstract:** Against the backdrop of the accelerated evolution of intelligent finance, the financial functions of manufacturing enterprises are shifting from traditional accounting supervision to the value center of strategic leadership and intelligent decision-making. However, in practice, there are widespread governance obstacles such as process fragmentation, data fragmentation, organizational rigidity and cognitive lag. This paper constructs a five-dimensional structural system of financial governance capabilities, proposes four types of improvement mechanism paths of "process-data-organization-culture", and selects typical cases of Midea, Haier, China Resources and other companies to verify the mechanism. The study found that the key to improving governance capabilities lies in achieving the organic linkage of technology embedding, structural adaptation and capability evolution. This paper systematically analyzes the construction logic and improvement path of financial governance capabilities in the context of intelligent finance, and provides theoretical support and practical reference for the construction of intelligent governance systems in manufacturing enterprises.

**Keywords:** Intelligent Finance; Financial Governance Capability; Capability Structure; Mechanism Evolution; Manufacturing Enterprise

## 1.Introduction

With the continuous deepening of digital intelligent technologies such as artificial intelligence, big data, and cloud computing, the financial functions of manufacturing enterprises are transforming from the traditional accounting and supervision model to the strategic empowerment model. As a product of the deep integration of digital technology and financial functions, intelligent finance is reshaping the value boundaries and governance logic of finance in organizations, becoming a key mechanism for enterprises to gain dynamic competitive advantages. However, most manufacturing companies are still facing problems such as delayed response of governance structure, insufficient use of data assets, and failure of business and financial synergy in the process of intelligent financial transformation, reflecting that their financial governance capabilities are not yet sound and the improvement mechanism is not yet clear.

Existing research focuses on the system architecture, technology deployment and information sharing mechanism of intelligent finance. Some literature begins to explore its role in improving the quality of financial decision-making and management efficiency, but there is still a lack of in-depth research on the system composition, evolution path and internal

mechanism of "financial governance capability" as a composite organizational capability. Especially in the context of technology being deeply embedded in organizational processes, how enterprises reconstruct financial governance capabilities through process reshaping, data governance and platform collaboration is still a problem that the academic community is concerned about but lacks theoretical construction.

Based on this, this paper introduces the dynamic capability theory, resource-based view and organizational capability theory, constructs a dynamic evolution analysis framework of "technology embedding-structural adaptation-capability evolution", and explores the element system and coordination mechanism of the financial governance capability of manufacturing enterprises under the background of intelligent finance. Through the induction of typical enterprise cases and mechanism deduction, the core driving factors and improvement paths of capability generation are revealed, aiming to enrich the financial governance theory system from the perspective of organizational capability, and provide theoretical guidance and mechanism reference for the implementation of intelligent financial strategies of manufacturing enterprises.

## 2.Literature review and theoretical basis

### 2.1 Definition of core concepts

"Smart finance" refers to a complex form that uses an intelligent technology platform as a basis, integrates automated processes and intelligent decision-making models, and realizes the transformation of financial functions from accounting support to strategic leadership. This concept forms a preliminary framework based on the analysis of Wu Chunlei and Liu Junyong (2021) on the reshaping of financial functions [1], and integrates the perspective of "technology reconstruction control structure" proposed by Bhimani (2015) for comprehensive refinement [2].

"Financial governance capability" refers to the system capability of an enterprise to achieve resource allocation optimization, process coordination and intelligent response by relying on the financial system in the process of strategic execution, value creation and risk prevention and control. This definition integrates the connotation of big data governance capability proposed by Li Yinlong and Yang Miaofan (2023) [4], and is supported by the "transformative integration" theory in the dynamic capability framework of Teece et al. (1997) [3], reflecting the evolution path of financial functions from static support to dynamic empowerment.

### 2.2 Review of domestic and foreign research

#### 2.2.1 Current status of foreign research

In recent years, the international academic community has continued to deepen its research on the composition mechanism and improvement path of corporate financial governance capabilities, mainly focusing on the three core dimensions of technological capability embedding, management capability structure and dynamic capability evolution.

Zhu (2024) took corporate governance capabilities and internal control as the starting point, revealing the intermediary mechanism of equity structure in improving financial governance and management capabilities, and emphasized that financial governance is affected by both institutional arrangements and the distribution of control rights [5]. Mungai and Lee (2024) clarified the key role of IT system capabilities in corporate governance infrastructure by constructing the "information technology capabilities-management quality-financial reporting quality" path[6]. Mu Li (2024) used EDAS technology and group decision-making methods to construct a multidimensional evaluation framework for corporate financial management capabilities, providing methodological support for the structured measurement of capabilities [7].

From the perspective of capability evolution, Khan et al. (2022) explored how managers' capabilities drive sustainable performance in a resource-constrained environment, highlighting "endogenous capability reshaping" as a key mechanism for performance improvement[8]. Liu (2022) proposed that supply chain resilience and financial performance can be improved through optimization of internal governance mechanisms based on dynamic capability theory, demonstrating the linkage logic between enterprise capability structure and governance synergy [9].

#### 2.2.2 Current status of domestic research

Domestic research focuses on the modernization of financial governance capabilities and digital transformation of universities and public institutions, and generally emphasizes the integrated practice of institutional mechanism construction and information technology application.

Wang Zongzong and Deng Ping (2022) proposed a two-dimensional linkage model of "dynamic governance" and "dynamic allocation of financial power", and established a matching mechanism between governance capacity and organizational resilience [10]. Tan Tianmin (2023) took "double first-class" universities as samples and proposed a research paradigm of "capability dimension decomposition-mechanism path construction", emphasizing the integrated development of institutional support and process execution [11]. Guo Yumei (2023) and Tang Fei (2024) respectively proposed a path for the modernization of governance capacity around the construction of information platforms and the closed-loop mechanism of budget performance, highlighting the core role of data governance in improving institutional effectiveness [12][13].

Liu Kaiyuan and Zhang Li (2025) pointed out that the current university financial system has problems of process fragmentation and institutional structure dislocation, and suggested strengthening technology embedding and process coordination to improve governance efficiency[14]. At the enterprise level, Wu Zhongxin et al. (2025) analyzed the role of intelligent financial logic in the reconstruction of governance structure from the perspective of scientific and technological innovation, and proposed that intelligent technology is promoting the reconstruction of governance capacity system [15]. Wang Huiying and Chen Donglin (2025) took the reimbursement process as an example to construct a risk governance model based on intelligent control, which has strong cross-industry application potential [16].

### 2.2.3 Research review

Overall, the existing literature discusses financial governance capabilities from multiple dimensions, including governance structure, technical capabilities, process execution, and management mechanisms, and has initially formed a multi-faceted research system of capability identification, mechanism construction, and performance evaluation.

Foreign research emphasizes the capability attributes and evolution mechanism of financial governance capabilities, and builds an adaptive governance framework with the help of theoretical tools such as dynamic capabilities, organizational learning, and IT-based capabilities. However, most studies focus on general organizational scenarios and lack scenario-based analysis and capability element identification for manufacturing companies, especially in the context of intelligent finance.

Domestic research has a practice-oriented approach in terms of system execution, process nesting, and budget-performance integration. However, the research subjects are mainly universities and public institutions, and the governance focus is still on system norms and compliance. There is little involvement in the construction of enterprise capability systems based on the linkage logic of "strategy-technology-governance".

In summary, current research still has the following three shortcomings: (1) There is a lack of systematic connotation definition and structured analysis of financial governance capabilities in intelligent finance scenarios; (2) In theory, a clear "technology-process-system" co-evolution mechanism has not yet been established to explain the generation logic of financial governance capabilities; (3) In practical research, there is little mechanism modeling and path verification of typical cases of manufacturing enterprises, making it difficult to form a systematic summary of capability improvement strategies.

Therefore, this paper attempts to build an analytical bridge between theoretical integration and corporate practice, and proposes a research framework with "capability identification-mechanism construction-path optimization" as the main line to respond to the structural gap in current research.

### 2.3 Theoretical basis

In the context of intelligent finance, the financial governance of manufacturing enterprises is no longer limited to traditional accounting and supervision functions, but has evolved into a complex governance system that integrates multiple elements of technology, organization and system. In order to systematically analyze the logic of its capability formation, this article introduces the resource-based view, organizational capability theory and dynamic capability theory, and constructs a multi-level theoretical support framework to explain the formation path and mechanism of governance capability (as shown in Figure 2-1).

(1) The resource-based view emphasizes the scarcity and heterogeneity of data, technology, and institutional resources owned by the enterprise, which is the basic supply layer for the construction of financial governance mechanisms. The configuration and integration of technology platforms (such as RPA, AI accounting systems), institutional regulations, and master data platforms are the prerequisites for capability development.

(2) Organizational capability theory focuses on the adaptation of resource allocation and structural design. In the intelligent financial system, capability is not a simple superposition of resources, but a coordinated execution capability formed in process configuration, job design, system coordination, etc., which is reflected in the efficient connection between structure and responsibilities.

(3) Dynamic capability theory emphasizes the ability of enterprises to perceive, respond and restructure in uncertain environments. In the context of continuous technological evolution, financial governance mechanisms need to have strategic responsiveness and achieve dynamic evolution of resource reorganization, process reengineering and cultural integration.

Combining the logic of the three, this paper constructs a nested explanatory framework of "resource supply-structural adaptation-capability evolution". This framework is not a new expansion of existing theories, but a systematic integration and structural matching of the three mainstream management theories in the intelligent financial scenario, emphasizing the logical embedding and practical mapping between mechanisms, and serving the analysis of subsequent mechanism formation and improvement paths.

*Figure 2-1 Evolutionary path of financial governance capabilities under the nested logic of the ternary theory*
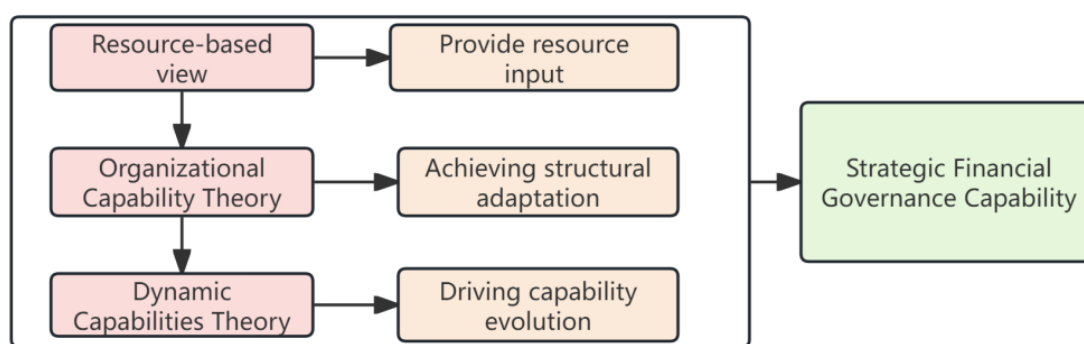


## 3.Construction of financial governance capability framework

### 3.1 Definition of Financial Governance Capabilities

the context of intelligent finance , the financial functions of enterprises are shifting from "accounting and supervision" to "strategic coordination and value leadership". Based on the dynamic capability theory proposed by Teece et al. (1997) and the definition of big data governance capabilities by Li Yinlong and Yang Miaofan (2023), this article defines "financial governance capabilities" as: the comprehensive governance capabilities of enterprises to achieve resource optimization, business process coordination, strategic decision-making empowerment and dynamic risk control in a highly uncertain and rapidly evolving technological environment, relying on financial functions and data intelligence.

This capability not only includes traditional accounting, budgeting and auditing functions, but also emphasizes value collaboration, process integration and data-driven management for strategic goals. Its main features are reflected in the following three aspects:

(1) Decision-making leadership: The finance department has transformed from an "accounting center" to a "strategic center", providing future-oriented uncertainty identification and dynamic resource allocation support to help implement the strategy;

(2) Collaborative integration: With the help of intelligent platforms, we can achieve deep integration of finance, business and management systems, and build a closed-loop collaborative chain covering budget, cost and performance;

(3) Continuous evolution: In the face of rapid changes in the external environment and internal structure, financial governance must have flexible mechanisms for system updates and capacity reconstruction to achieve adaptive evolution.

### 3.2 Dimensional structure of financial governance capabilities

Combining management theory with manufacturing enterprise practice, this paper constructs a "five-dimensional" financial governance capability structure system, covering the following core dimensions:

(1) Strategic leadership capability: reflects the supporting and guiding role of finance in strategic identification, goal setting and performance feedback. Core capabilities include strategic budgeting, resource integration and value assessment.

(2) Process management capabilities: Focusing on the institutionalization, process automation and operational transparency of

key business processes such as budgeting, accounting and reimbursement is the basis for ensuring governance efficiency.

(3) Data analysis capabilities: Emphasis on the integrated use and intelligent analysis of financial data, including visual report construction, predictive modeling and decision support, reflecting the cognitive advantages driven by data.

(4) Risk control capability: covers key modules such as internal control system construction, audit supervision, and fund security, and is the institutional guarantee to support governance stability and compliance.

(5) Value creation capability: highlight the proactive involvement of finance in cross-departmental collaboration, performance incentives and business innovation, and realize the functional transformation of finance from a "recorder" to an "enabler".

This capability system is strategically oriented, technically supportive, and functionally collaborative , and is the core foundation for supporting manufacturing companies to leap from "informatization" to "intelligence." To support the effective generation of the above five-dimensional capabilities, this article will further design and verify the corresponding improvement mechanism path in Chapter 4.

## 3.3 Capability Evolution Logic in the Context of Intelligent Finance

In the context of intelligent finance, financial governance capabilities are no longer a stack of static modules, but a dynamic reconstruction process of "technology embedding - structural adaptation - capability evolution". This article summarizes the practices of typical manufacturing companies and proposes a three-stage capability evolution model (as shown in Figure 3-1):

Phase 1: Technology embedding:

Enterprises automate and digitize key processes such as budgeting, reimbursement, and voucher processing by introducing tools such as RPA, OCR, AI reimbursement, intelligent recognition, and financial robots, thereby achieving information integration and online processes.

The second stage:

On top of the structural adaptation technology platform, enterprises need to reshape their organizational structure and processes, such as setting up a shared service center, opening up the financial and business collaboration chain, and establishing a job decoupling mechanism to achieve a flexible and highly responsive management structure.

Phase 3: Capability Evolution

After the coupling of technology and structure, the financial organization will form a new capability system with intelligent insight, dynamic collaboration and strategy-driven, and achieve a fundamental transformation from a transaction executor to a strategic enabler.

*Figure 3-1 Three-stage evolution model for building financial governance capabilities of manufacturing enterprises*
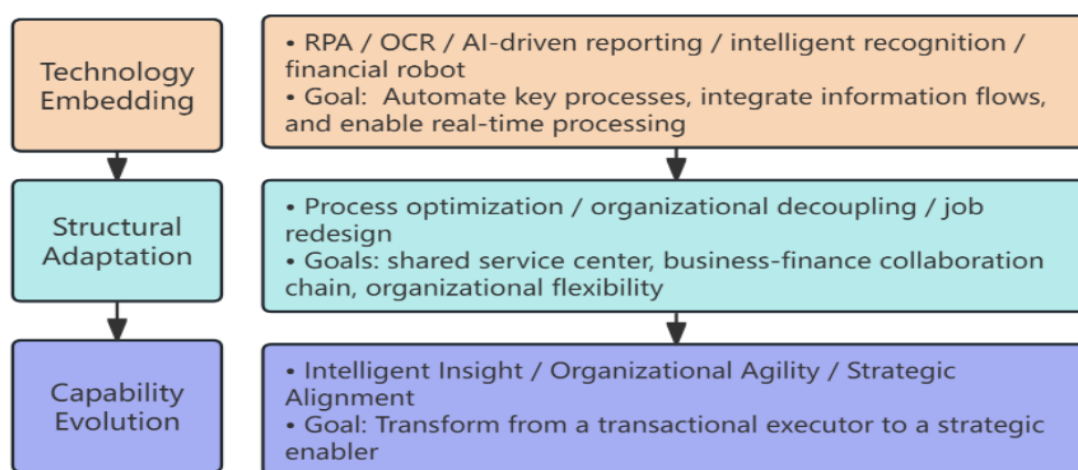


This model not only reveals the transition path of financial governance capabilities from instrumental functions to systemic capabilities, but also provides a clear logical starting point and practical mapping basis for the subsequent mechanism design and optimization. The proposed three-stage capability evolution model, as a dynamic generation path at the practical level, can also be regarded as a nested situational mapping of the resource-based view, organizational capability theory and dynamic capability theory in the context of intelligent finance: among them, "technology embedding" corresponds to the enterprise's

acquisition and allocation of key resources, which conforms to the scarcity and heterogeneity logic of the resource-based view; "structural adaptation" reflects the collaborative reconstruction and structural integration of organizational capabilities, reflecting the emphasis of organizational capability theory on process and structure matching; and "capability evolution" reflects the enterprise's adaptability and regeneration ability to change in a dynamic environment, which conforms to the core proposition of dynamic capability theory. The three together constitute a progressive evolutionary logic from resource support, structural shaping to capability iteration, providing a multi-dimensional integrated support system for the theoretical construction and mechanism implementation of financial governance capabilities under the background of intelligent finance.

# 4.Design of financial governance capacity enhancement mechanism

The four types of mechanisms serve different capability modules in the five-dimensional structure of financial governance capabilities: the process automation mechanism focuses on "process management" and "strategic leadership", the data mechanism strengthens "data analysis", the organizational mechanism supports "risk control" and "value creation", and the cultural mechanism covers "organizational identity" and "collaborative drive".

## 4.1 Process Automation and Intelligent Decision-making Mechanism

Process automation is the technical starting point of intelligent financial governance. Its core lies in deeply embedding institutional processes with AI models to build a closed-loop mechanism of "automation-perception-regulation". Relying on the iMidea platform, Midea Group embeds a node-based budget control mechanism in the procurement-approval chain, combines AI models to set dynamic thresholds, and realizes flexible budget generation and real-time feedback. The budget accuracy rate reaches 92%, and the intervention response efficiency is improved by 38%.

According to a survey conducted by KPMG (2024) on 2,900 companies in 23 countries, 73% of companies have deployed AI systems in their financial reporting processes, and 57% of "AI leaders" believe that their return on investment (ROI) has exceeded expectations. Meike Technology (2025) also pointed out that retail companies have saved an average of 30% of financial processing hours and increased process response speed by 41% through full-process automation mechanisms such as "transactions are data, and income and expenditure are recorded in accounts". These data show that process governance capabilities are becoming a common intelligent financial governance mechanism across industries.

This mechanism fits the core logic of "opportunity identification-rapid configuration" in the dynamic capability theory, and constitutes an important technical fulcrum for financial strategic leadership capabilities. The process automation mechanism is embedded in the financial decision-making process through platformization, effectively improving the pre-emptiveness and agile response of financial functions, and is the key path for enterprises to transition from accounting support to strategic empowerment. The above practices reflect the core characteristics of "perceiving changes-rapid response" in the dynamic capability theory. Technical tools not only serve as the execution carrier of process reengineering, but also become the key to enterprises to reconstruct resource allocation methods and improve the real-time nature of decision-making.

## 4.2 Data assetization and information collaboration mechanism

Data assetization is the core guarantee for building "data-driven finance" governance. The key lies in achieving standardization of data throughout its life cycle with unified coding, semantics and caliber, and enhancing the collaborative value of data in the business-finance-management chain through platform-based sharing.

Haier Group relies on the master data governance platform to map fields and unify semantics of heterogeneous systems such as SAP and U8, establish a data lineage map, and achieve three-dimensional collaboration of "data consistency-caliber unification-decision consensus". The Gig Economy Research Center (2024) predicts that the scale of China's fiscal and tax digitalization market will reach 70.2 billion yuan in 2025; Meike Technology (2025) points out that 48% of companies have launched master data platforms, and 80% of retail companies have included "business and financial integration" in their strategic key tasks.

This mechanism corresponds to the configuration logic of "scarce and irreplaceable resources" in the resource-based view (RBV), transforming data from passive information into operational strategic assets. Through the three paths of standardization, platformization, and sharing, the data assetization mechanism strengthens the hub role of data among various functions, significantly improves decision-making consistency and traceability, and provides a high-quality data foundation

for financial governance capabilities.

## 4.3 Organizational structure and job competency adaptation mechanism

The dynamic matching of organizational and job capabilities is the organizational basis for upgrading financial governance capabilities. The key lies in achieving a closed loop of person-job matching and capability iteration through job decoupling and capability mapping.

China Resources Group has cancelled traditional low-value positions such as "accountants" and added "data analysts" and "intelligent control specialists", with supporting "position capability maps" and online training systems, forming a dual cycle of "structural flexibility-capability upgrade". Beisen (2024) survey shows that 70% of companies are restructuring financial positions, and 65% have established FBP (financial business partner) roles; ACCA (2024) pointed out that 83% of financial personnel believe that AI will reshape their role positioning. Meike Technology (2025) proposed that future financial talents need to have a triple capability model of "digital intelligence collaboration-data insight-strategic support", and their functions are shifting from accounting support to the growth center of the enterprise.

This mechanism is consistent with the Organization Capability Theory (OC)'s proposition of "structure-execution" synergy, and improves the resilience and agility of financial governance by reconstructing the organizational structure and capability configuration. The position capability adaptation mechanism takes the "position + capability" two-dimensional synergy as a starting point to build a flexible organization for intelligent finance for enterprises and promote the transformation of financial functions from transaction execution to value creation.

## 4.4 Institutional guarantee and cultural identity mechanism

The synergy between system and culture is the soft and hard integrated support for the long-term effective operation of the financial governance mechanism. The core lies in ensuring governance rules with rigid systems and enhancing employees' trust in and adoption of smart tools with flexible culture.

*Figure 4-1 Path diagram of the four mechanisms of intelligent financial governance capabilities*
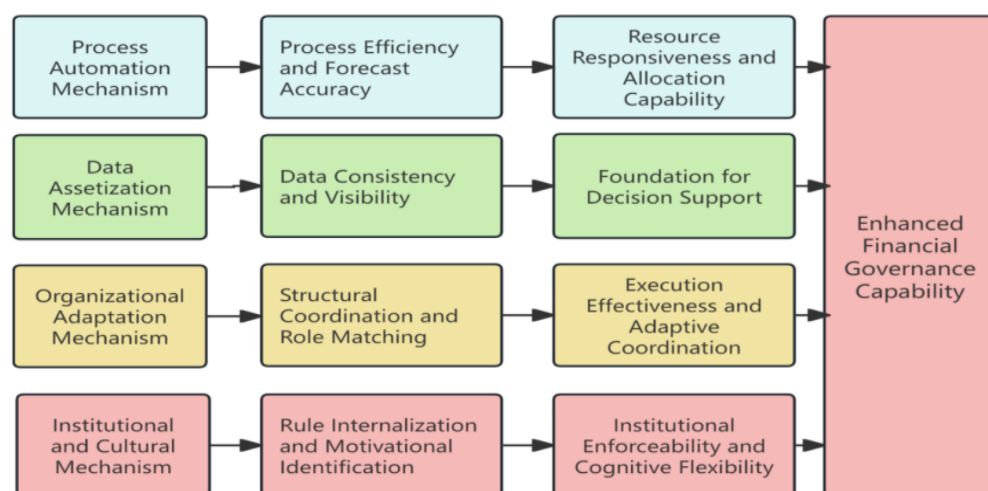


Midea Group incorporates "algorithm adoption rate" into performance appraisal, combines it with the "cultural points system" reward mechanism and embeds an explainability module in the CloudWeGo system to improve system transparency and employee trust. KPMG (2024) proposed "five types of AI governance models" covering access control, lifecycle maintenance, and explainability, and pointed out that 60% of global CEOs will continue to increase investment in AI governance during economic fluctuations. Meike Technology (2025) further pointed out that companies should strengthen institutional indicators such as "system utilization rate", "reimbursement timeliness", and "data adoption rate", and adjust employee and technology collaborative behaviors through points, performance, and cultural mechanisms to achieve integrated governance of "rigid system + flexible cognition".

This mechanism echoes the path of "cognitive embedding-cultural internalization" in organizational evolution theory, and builds a stable technology-organization-individual collaborative ecology through the dual drive of institutional hard constraints and cultural soft incentives. The institutional guarantee and cultural identity mechanism, through the parallel

design of "strong rules + soft incentives", strengthens the sustainability and credibility of intelligent financial governance, and provides long-term organizational stickiness and cultural soil for capability evolution.

Comprehensive evaluation: The four types of mechanisms systematically respond to the elements of financial governance capabilities from the dimensions of process, data, organization and culture, and use real cases such as Midea, Haier, and China Resources and authoritative research data (KPMG 2024, Gig Economy Research Center 2024, Beisen 2024, ACCA 2024, etc.) as quantitative support to form a path template for a highly adaptable financial governance system for manufacturing enterprises (as shown in Figure 4-1) .

# 5.Mechanism Verification and Application Scenarios

## 5.1 Analysis of Typical Enterprise Practices

In the process of intelligent financial transformation, Midea Group, Haier Group and China Resources Group respectively demonstrated the specific application of the four mechanisms of "process-data-organization-culture" in real enterprises.

(1) Relying on the "iMidea" platform , Midea Group embedded the process engine into the budget control system and built a dynamic threshold mechanism based on the AI model, which significantly shortened the response cycle from budget formulation to execution, increased the accuracy of financial forecasts to 92%, and improved the process intervention response efficiency by 38%.

(2) Haier Group takes the master data governance platform as the core, builds a cross-system field mapping and semantic standard mechanism, promotes data collaboration between SAP and U8 systems, realizes indicator unification and traceability management, and significantly reduces financial analysis deviations caused by inconsistent data.

(3) China Resources Group reshaped its financial job system through the "Job Competency Map", introduced new functions such as "Data Analyst" and "Intelligent Control Specialist", and combined it with a competency certification system to improve job matching rates and decision-making response efficiency (increased by more than 30%); at the same time, it used the "cultural points + algorithm explanation" mechanism to enhance employees' awareness and adoption of system outputs.

The three companies verified the implementation paths and synergy effects of four core mechanisms in the context of intelligent finance, and provided observable and quantifiable mechanism operation results.

## 5.2 Case Mapping and Mechanism Path Verification

Taking "mechanism model - enterprise practice - theoretical support" as the main line of analysis, this article conducts a structural mapping between the practice paths of the three enterprises and the proposed mechanism model (Table 5-1):

*Table 5-1 Typical practice and theoretical mapping paths of the four types of mechanisms of intelligent financial governance*

| Mechanism Type | Representative companies | Practice | Theoretical Mapping Path |
|---|---|---|---|
| Process automation and intelligent decision-making mechanism | Midea Group | Build a node-based budget control system based on the iMidea platform, embedding AI prediction and feedback mechanism | Dynamic Capabilities Theory: Opportunity Identification → Rapid Configuration Response |
| Data assetization and information collaboration mechanism | Haier Group | Establish a unified master data platform to promote semantic standardization and multi-system data consistency management | Resource-based view: scarce data resource integration and platform configuration capabilities |
| Organizational structure and job competency adaptation mechanism | China Resources Group | Promote job decoupling and "capability map" mechanism, add smart jobs and strengthen training and certification system | Organizational Capability Theory: Structural Adjustment → Execution Capability Synergy |
| Institutional guarantee and cultural identity mechanism | Midea Group | Incorporate algorithm usage into performance appraisals, and use a cultural points mechanism and explainable models to enhance trust and recognition | Organizational Evolution Theory: Cognitive Fit → Institutional-Cultural Embeddedness |

Each mechanism not only achieves the expected goals of process reconstruction and capability improvement in the enterprise, but also corresponds to the three-stage logical chain of "resources-structure-capability" in the theoretical model, forming a closed loop from institutional design-practical verification-theoretical regression, which improves the explanatory power and adaptability of the model.

## 5.3 Analysis of scalability and limitations

The four types of mechanisms have good portability and modularity in the manufacturing industry, but their promotion and application need to be combined with industry characteristics and enterprise development stages:

(1) Large manufacturing enterprises: They have a platform foundation and organizational support, and are suitable for simultaneously promoting the four-dimensional mechanism of "process-data-organization-culture";

(2) Medium-sized enterprises: Prioritize the promotion of process automation or job structure optimization, and gradually accumulate data asset management and institutional culture co-construction capabilities. For example, a medium-sized manufacturing enterprise in the Pearl River Delta, under the condition that the ERP system is not yet complete, has initially implemented the implementation of the budget response mechanism through the deployment of a lightweight process engine and BI tools, supplemented by a part-time job evaluation system;

(3) Regulation-intensive industries: such as public utilities and the financial industry. The promotion of the mechanism must give priority to compliance and data privacy restrictions. It is recommended to use institutional guarantees and job adaptation mechanisms as breakthroughs to steadily advance the pilot of process and data mechanisms.

In addition, although the current mechanism model has structural rationality and case support, there is still room for improvement in the quantitative evaluation of the mechanism's operating effectiveness and performance attribution. It is recommended to construct a "governance mechanism maturity index" based on indicators such as behavior adoption rate, feedback frequency, and system response time to enhance the empirical extension and dynamic evaluation value.

## 5.4 Mechanism variable framework and maturity level construction

### 5.4.1 Construction Logic of Mechanism Variable System

In order to improve the verifiability and practical adaptability of the theoretical model, this paper introduces mechanism variables as structural proxy indicators in the process of generating financial governance capabilities to make up for the limitations of abstract and difficult to measure capability evaluation. This variable system takes the mechanism operation status as the starting point, depicts the coupling relationship between the mechanism implementation level and capability maturity, and enhances the structural explanatory power and reality mapping of the model.

Specifically, this paper draws on the construction ideas of the structural equation model (SEM), combines typical enterprise case practices and governance trends revealed by industry research reports, designs four core mechanism variables including "process automation level", "data consistency", "job fit" and "cultural identity strength", and constructs a corresponding quasi-quantitative indicator system. The relevant indicators are mainly derived from theoretical deduction and industry inspiration (as shown in Table 5-2). Although they have not yet been verified by first-hand research data, they have the basic conditions for conducting quantitative analysis and model estimation.

*Table 5-2 Latent variable concept and observable indicator system of intelligent financial governance capability improvement mechanism*

| Latent variable name | Observable Metrics (Example) | Theoretical support/source of inspiration |
| --- | --- | --- |
| Process automation level | Node automatic identification rate, average budget response time, process exception handling frequency, process intervention trigger ratio | Midea Group's process platform practice; KPMG (2025) "AI Empowers Financial Process Optimization Report" |
| Data consistency | Field standardization coverage, proportion of semantic conflict items, completeness of report traceability chain, and consistency rate of key indicators | Haier master data governance mechanism; Meike Technology (2025) |

| Latent variable name | Observable Metrics (Example) | Theoretical support/source of inspiration |
|---|---|---|
| Job suitability | Job capability matching ratio, capability certification achievement rate, job decoupling coverage rate, digital tool operation proficiency | China Resources' "Capability Map" system; Beisen (2024) Talent Research Report |
| Strength of cultural identity | System suggestion adoption rate, algorithm output trust score, cultural points system coverage rate, user active feedback rate | Midea's cultural governance mechanism; Smart Finance Alliance (2024) report |

### 5.4.2 Maturity rating method and standards

On this basis, this paper constructs a mechanism maturity rating table (Table 5-3) to make a horizontal comparison of the performance of three representative manufacturing companies in terms of the operating levels of four types of governance mechanisms, revealing the differences in the maturity stages and paths of their mechanism implementation, and providing support for model verification and mechanism tuning.

*Table 5-3 Four types of mechanism maturity levels and enterprise comparison scores (levels 1-5)*

| Mechanism Type | Midea Group | Haier Group | China Resources Group |
|---|---|---|---|
| Process automation and intelligent decision-making mechanism | 5 | 3 | 4 |
| Data assetization and information collaboration mechanism | 4 | 5 | 3 |
| Organizational structure and job competency adaptation mechanism | 3 | 3 | 5 |
| Institutional guarantee and cultural identity mechanism | 5 | 4 | 4 |

To enhance the transparency and academic interpretation of the scoring results, the following explanation is given for the scoring logic: The scoring is not derived from the original data within the enterprise, but is based on public case descriptions, industry trend reports, and the mechanism variable system constructed in this article, and is assigned through structural deduction and expert judgment. To ensure the objectivity and comparability of the mechanism maturity score, this article constructs a three-level scoring system based on the systematic nature of the enterprise mechanism construction, the degree of closed-loop operation, and the depth of technology implementation:

(1) Level 1: The mechanism has not been established, the process relies on manual processing, and there is no platform support;

(2) Level 3: The mechanism is initially established, with basic rules and processes and partial system integration;

(3) Level 5: The mechanism is highly mature, with automated process identification, closed-loop feedback mechanism, and highly coordinated organizational response.

### 5.4.3 Operational significance and research prospects

This mechanism variable system is positioned as an operational bridge between "mechanism-capability". In order to improve the theoretical rigor and practical reproducibility of the scoring system, it is recommended that future research be further expanded in the following two directions:

(1) Refinement of scoring dimensions: Introduce secondary indicators such as "mechanism activation rate", "data closed-loop ratio", and "employee adoption activity" to construct a multi-dimensional scoring matrix and enhance the structural resolution of the evaluation system;

(2) Standardization of the evaluation process: Combine the Delphi method, multi-source interviews and enterprise questionnaires to clarify the scoring thresholds and judgment criteria and build a reusable mechanism evaluation system.

In essence, the mechanism variable system designed in this paper is an intermediary bridge to build an operational connection between "mechanism-capability". It not only provides a quantitative dimension for future empirical research, but also provides theoretical tools and methodological references for industry trend assessment and corporate governance capability diagnosis. It is recommended to further combine system log collection, employee behavior tracking and feedback data mining to build a financial governance capability maturity assessment system for dynamic environments, so as to continuously expand the extension and adaptability of the mechanism model.

# 6.Conclusion

From a structural perspective, this paper constructs a three-stage capability evolution model and a four-type mechanism support system. Rather than existing independently, these two frameworks jointly elucidate the evolutionary logic of financial governance capabilities—respectively addressing the dynamic path of capability development and the structural composition of governance mechanisms. The introduction of mechanism variables and the corresponding scoring system offers operational indicators to support model implementation, thereby forming a closed-loop analytical framework encompassing "theoretical construction–mechanism design–indicator evaluation".

In theory, this paper integrates the three mainstream management perspectives of resource-based view, organizational capability theory and dynamic capability theory, proposes a three-stage evolution path of "resource-structure-capability", and constructs a four-dimensional mechanism nested model of financial governance capability. Compared with previous fragmented and single-perspective research approaches, this paper adopts a system integration logic to uncover the progressive mechanisms and multi-dimensional coordination paths underlying capability formation in manufacturing enterprises undergoing intelligent financial transformation, providing a theoretical starting point and structural support for subsequent mechanism maturity assessment and capability optimization.

In terms of research content, this paper focuses on the core issue of "how to construct and effectively improve the financial governance capabilities of manufacturing enterprises under the background of intelligent finance", systematically constructs a five-dimensional capability structure covering strategic leadership, process management, data analysis, risk control and value creation, and proposes four types of capability improvement mechanisms of "process-data-organization-culture", emphasizing an evolutionary pathway centered on "technology embedding–structural adaptation–mechanism closure. Through the mechanism mapping and path verification of three typical enterprises, Midea, Haier and China Resources, the adaptability and operation effectiveness of the mechanism design are further confirmed, providing theoretical guidance and practical reference for the construction of the intelligent financial governance system of enterprises.

In general, this paper attempts to provide a theoretical framework and path model with structural completeness and application value for manufacturing enterprises to promote the strategic transformation of financial functions and the in-depth implementation of intelligent finance from the dual perspectives of capability system construction and governance mechanism design. Although the mechanism system has taken shape, its quantitative evaluation, differences in adaptability between industries, and the long-term impact of technological evolution on the operation of the mechanism still need to be further studied.

# Funding

# Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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