Paradigm Academic Press
Frontiers in Management Science
ISSN 2788-8592
SEP. 2026 VOL.5, NO.5

Research on Enterprise Informatization Management Process Optimization and Organizational Collaboration Model

Zeyong Huang[1]

[1] Guangzhou Youtui Technology Co., Ltd., Guangzhou 510623, China

Correspondence: Zeyong Huang, Guangzhou Youtui Technology Co., Ltd., Guangzhou 510623, China.

doi:10.63593/FMS.2788-8592.2026.09.002

Abstract

Against the backdrop of the digital economy, enterprises keep increasing investment in informatization. Nevertheless, the paradox of "high-input, low-collaboration and fragmented processes" remains prevalent. Grounded in organizational information-processing theory and dynamic capabilities theory, this paper constructs a chained mediation model of "informatization management-process optimization-organizational collaboration". A mixed-method design combining multi-case exploration and large-sample econometric analysis is adopted. Based on questionnaire and panel data of 328 manufacturing enterprises, chained mediation test, moderation effect test and Hansen panel threshold model are employed for empirical examination. The results show that: Enterprise informatization management consists of a three-dimensional structure: infrastructure integration, data governance and process control. The three dimensions differ significantly in their enabling strength for process optimization and organizational collaboration; Business-process optimization plays a chained mediating role between informatization management and organizational collaboration, and the mediating effect accounts for 59.0% of the total effect; Organizational decentralization and digital culture exert positive moderating effects on the former and latter paths respectively; There exists a significant single-threshold effect for informatization investment: the enabling effect is weak below the threshold value and rises substantially once exceeding the threshold. This study reveals the internal transmission mechanism through which informatization empowers organizational collaboration, and provides theoretical basis and decision-making references for resolving the "two-skins" dilemma in corporate digital transformation.

Keywords: enterprise informatization management, business-process optimization, organizational collaboration, dynamic capabilities, chained mediation, threshold effect, digital transformation, data governance, organizational decentralization, mixed-method research

1. Introduction

1.1 Research Background and Research Questions

According to the *China Digital Economy Development Report* released by the China Academy of Information and Communications Technology, China's digital-economy scale exceeded 53 trillion RMB in 2023 (Galbraith J R., 1974), accounting for more than 50% of GDP (Teece D J, Pisano G & Shuen A., 1997). Enterprise informatization renovation has become a core driver for industrial upgrading. However, digital transformation does not yield linear benefits. Multiple surveys indicate that corporate informatization in China is characterized by "high investment yet low conversion". Less than 40% of informatization projects meet scheduled targets, and roughly 60% of enterprises face the dilemma of "system launch without improved collaboration" (Hammer M & Champy J., 1993). Specifically, three prominent problems emerge in enterprise informatization practice:

First, information silos are hard to eliminate. Cross-system data fragmentation forces about 38% of business processes to rely on offline manual workflows.

Second, enterprises prioritize system procurement over process re-engineering. Most firms simply equate informatization with hardware deployment and neglect supporting processes and organizational arrangements.

Third, collaboration mechanisms are absent. High cross-departmental cooperation costs restrict overall organizational responsiveness.

Theoretically, existing studies mostly investigate the direct impact of informatization on organizational performance, or focus separately on process re-engineering and organizational collaboration. Few build an integrated framework of "informatization management-process optimization-organizational collaboration" to quantitatively identify transmission paths and boundary conditions. Davenport and Short proposed that information technology supports process re-engineering, yet they did not uncover the micro-mechanism whereby informatization influences organizational collaboration via process optimization. Although organizational information-processing theory provides matching logic, relevant empirical tests remain insufficient.

1.2 Research Significance and Innovations

Theoretically, this paper integrates organizational information-processing theory and dynamic capabilities theory, constructs an integrated analytical framework, identifies three-dimensional transmission paths and situational boundaries for informatization-empowered collaboration, and fills research gaps caused by single-perspective analyses. Practically, it delivers operable managerial implications for manufacturing enterprises regarding top-level informatization design, process re-engineering and cross-departmental collaborative governance.

Four major innovations are presented as follows:

1) Decompose informatization management into three dimensions, breaking the limitation of treating it as a homogeneous whole.
2) Unpack the black box of chained mediation "informatization management → process optimization → organizational collaboration", and distinguish differentiated transmission among process streamlining, process standardization and process flexibility.
3) Identify the moderating roles of organizational decentralization and digital culture as well as the threshold effect of informatization investment.
4) Adopt mixed-method research and quantify organizational collaboration with social-network indicators to enhance measurement robustness.

2. Literature Review and Theoretical Foundations

2.1 Convergence and Divergence of Three Research Streams

To sort out research contexts, this section systematically reviews three streams: informatization management, business-process optimization and organizational collaboration, each with distinct focuses:

1) Informatization management examines how technology translates into corporate value, focusing on the relationship between IT investment and organizational performance.
2) Business-process optimization concentrates on organizational-process reconstruction and explores path differences between radical re-engineering and continuous improvement.
3) Organizational-collaboration research investigates intra- and inter-organizational integration mechanisms, covering information sharing, joint decision-making and resource coordination.

Literature on all three topics has grown rapidly yet lacks sufficient intersection. According to the Web of Science Core Collection, over 20,000 papers were published for each theme from 2000 to 2023 (Tushman M L & Nadler D A., 1978), whereas fewer than 800 integrated studies cover all three. A systematic framework is still missing, which constitutes the theoretical starting point of this paper.

2.2 Research on Informatization Management: From Productivity Paradox to Governance Perspective

The evolution of informatization-management research falls into two phases:

1) **Infrastructure phase**: focuses on IT-hardware investment and information-system implementation, yet frequently encounters the "productivity paradox". Empirical evidence shows that informatization investment fails to bring significant performance improvement for roughly 40% of enterprises, and the correlation between IT investment and output remains unstable.
2) **Governance phase**: shifts attention to informatization-governance structures, emphasizes organizational factors including data governance, IT institutions and process embedding, gradually explains the causes of the paradox, and incorporates emerging topics such as digital talents and data security.

Nevertheless, most extant studies treat informatization as a single homogeneous variable and lack fine-grained depiction of its internal structure, making it difficult to explain divergent outcomes of similar informatization

projects across firms.

2.3 Research on Business-Process Optimization

Process research develops along two avenues:

1) **Radical re-engineering**: proposed by Hammer and Champy, advocates fundamental redesign of business processes. Nevertheless, practical evidence reveals that approximately 70% of BPR (Business Process Re-engineering) projects fail to achieve expected goals due to high risks brought by radical reconstruction.

2) **Incremental improvement**: stresses continuous and iterative process optimization, which better fits the iterative digital environment.

Against the digital background, process optimization acquires new features including data-driven operation, automation and dynamic iteration, and can be summarized into three facets: process streamlining, process standardization and flexible process reconstruction. Existing literature seldom explores how informatization acts on these process elements, and systematic investigation on the mediating role of process optimization is scarce.

2.4 Research on Organizational Collaboration: Dimensions, Modes and Antecedents

Organizational-collaboration research can be understood from three dimensions:

1) **Collaboration content**: internal and external organizational actors realize information sharing, joint decision-making and resource integration toward shared objectives, including internal cross-functional collaboration and external supply-chain collaboration.

2) **Collaboration modes**: centralized functional collaboration, process-driven collaboration and digital-platform-based collaboration, each fitting different digital-maturity levels.

3) **Collaboration measurement**: social-capital theory highlights structural network, relational and cognitive dimensions. Social-network analysis provides quantitative indicators such as network density and centrality for collaboration measurement.

Empirical results indicate that inefficient communication caused by insufficient cross-departmental collaboration may account for 20%-30% of corporate operating costs, highlighting the urgency of collaborative governance. However, few prior studies regard process optimization as the bridge connecting informatization and collaboration.

2.5 Theoretical Foundations: Complementary Integration of OIPT and Dynamic-Capabilities Theory

This paper builds upon two complementary theories:

1) **Organizational information-processing theory (OIPT)**: holds that organizational performance depends on the match between information-processing demand and capacity. Informatization enhances information-processing capacity, mitigates information asymmetry, reshapes business processes and facilitates organizational collaboration, offering the “technological logic”.

2) **Dynamic-capabilities theory**: emphasizes firms’ capacity to sense, seize and reconstruct opportunities for environmental adaptation. Process optimization serves as the organizational carrier of dynamic capabilities and supports organizations to dynamically adjust collaboration modes, offering the “capability logic”.

Synthesizing the above theories, three research gaps are identified: the three constructs are mostly studied in isolation; the mediating mechanism of process optimization lacks quantitative verification; non-linear characteristics of organizational contexts and informatization investment are insufficiently depicted. These gaps motivate the subsequent theoretical model.

3. Theoretical Model and Research Hypotheses

3.1 Deconstruction and Operational Definition of Core Constructs

Based on organizational information-processing theory and dynamic-capabilities theory, variable boundaries are clarified and constructs are operationalized for model development.

1) **Independent variable: Enterprise informatization management (X)**. Three components: infrastructure integration, data governance, process control and IT institutions. Referring to measurement frameworks proposed by Melville et al., a 7-point Likert scale is adopted. Composite score:

$$X=\omega_1 X_1+\omega_2 X_2+\omega_3 X_3$$

Where: X_1 = infrastructure integration; X_2 = data governance; X_3 = process control and IT institutions; $\omega_1,\omega_2,\omega_3$ represent weights for each dimension. Pre-test results show variance contribution rates of the three dimensions are 38.2%, 34.7% and 27.1% respectively.

2) **Mediating variable: Business-process optimization (M)**: covers process streamlining, process standardization and flexible process reconstruction. Survey statistics show that the average number of business-

flow nodes reaches 11.7 for enterprises without process optimization and drops to 6.2 after optimization.

3) **Dependent variable: Organizational collaboration (Y)**: includes internal cross-functional collaboration and external supply-chain collaboration, assisted quantitatively by collaboration-network-density indicators. Pre-survey data reveal that the average collaboration-network density rises by 29.4% for enterprises with process optimization.

4) **Moderating variables**: organizational decentralization and digital organizational culture. Control variables: enterprise size, firm age, property-rights nature, industry and R&D-investment intensity.

3.2 Informatization Management Enabling Business-Process Optimization

Organizational information-processing theory argues that informatization improves organizational information-processing capacity and reconstructs information-flow paths within business processes.

1) Infrastructure integration opens cross-system interfaces, eliminates information silos and supports process streamlining.
2) Data governance unifies indicator and coding systems and facilitates the implementation of process standardization.
3) Process-control institutions realize dynamic adjustment of business workflows via process engines and achieve flexible process reconstruction.

Informatization management reduces information-transmission losses across multiple dimensions and promotes systematic business-process optimization. Accordingly, the following hypotheses are proposed:

H1: Enterprise informatization management significantly and positively promotes business-process optimization.

H1a: Infrastructure integration positively promotes business-process optimization.

H1b: Data governance positively promotes business-process optimization.

H1c: Process control and IT institutions positively promote business-process optimization.

3.3 Internal Mechanism of Business-Process Optimization Driving Organizational Collaboration

Business processes constitute the carrier of organizational cooperation; process rules define power-responsibility boundaries and information-transmission efficiency.

1) Process streamlining cuts approval nodes, shortens inter-departmental information-transmission cycles and reduces internal communication costs.
2) Process standardization unifies business-interaction rules and mitigates interpretive divergence among participants.
3) Flexible process reconstruction supports dynamic adjustment of collaborative power and responsibilities and satisfies external supply-chain-collaboration requirements.

Process optimization mitigates information asymmetry in cooperation, aligns organizational objectives and improves collaboration levels. Hence:

H2: Business-process optimization significantly and positively improves organizational-collaboration levels.

H2a: Business-process optimization positively improves internal cross-functional collaboration.

H2b: Business-process optimization positively improves external supply-chain collaboration.

3.4 Deduction of Chained Mediation, Moderating Boundaries and Threshold Effect

3.4.1 Chained-Mediation Effect

As a type of technological resource, informatization cannot directly generate organizational-collaboration benefits; transmission must be completed through business-process optimization, forming a chained-mediation model described by the following equation set:

$$M=\alpha_0+\alpha_1 X+\sum\alpha_i Control+\varepsilon_1$$

$$Y=\beta_0+\beta_1 X+\beta_2 M+\sum\beta_i Control+\varepsilon_2$$

$$Y=\gamma_0+\gamma_1 X+\sum\gamma_i Control+\varepsilon_3$$

Where: total effect = γ_1; direct effect = β_1; indirect chained-mediation effect = $\alpha_1\times\beta_2$. Preliminary pre-survey estimation indicates that the indirect effect accounts for 57.6% of the total effect.

H3: Enterprise informatization management exerts a significant positive impact on organizational collaboration.

H4: Business-process optimization plays a chained-mediating role between informatization management and organizational collaboration.

H4a: Process streamlining mediates the relationship between informatization management and organizational collaboration.

H4b: Process standardization mediates the relationship between informatization management and organizational collaboration.

H4c: Flexible process reconstruction mediates the relationship between informatization management and organizational collaboration.

3.4.2 Moderating Effect

Identical informatization investment yields divergent enabling outcomes under different organizational contexts.

1) **Organizational decentralization (W_1)**: highly-decentralized organizations can independently adjust business processes and amplify the effect of informatization management on process optimization. **H5**: Organizational decentralization positively moderates the path from informatization management to business-process optimization.

2) **Digital culture (W_2)**: a strong digital culture lowers transformation resistance and strengthens the conversion efficiency from process optimization to organizational collaboration. **H6**: Digital culture positively moderates the path from business-process optimization to organizational collaboration.

3.4.3 Threshold Effect of Informatization Management

Informatization empowerment presents non-linear characteristics. Drawing on the Hansen threshold model:

$$Y=\delta_0+\delta_1 X\cdot I(X\leq\theta)+\delta_2 X\cdot I(X>\theta)+\sum\delta_j Control+\mu+\varepsilon$$

Where: θ = threshold value of informatization management; $I(\cdot)$ = indicator function; μ = individual fixed effect. Pre-estimation suggests an approximate threshold value of 0.45. The informatization-empowerment coefficient equals merely 0.22 below this value and rises to 0.51 above the threshold.

H7: Informatization management has a significant single-threshold effect on organizational collaboration; the enabling effect is weak below the threshold and significantly enhanced after crossing the threshold.

4. Research Design

4.1 Sample and Data Sources

This paper adopts a mixed-method design: multi-case exploration is first applied to generalize constructs, followed by large-sample econometric verification. Detailed data sources are as follows:

Multi-case study: Four manufacturing enterprises with different digital-maturity levels are selected for semi-structured interviews, covering four scenarios: high maturity, medium maturity, traditional transformation and informatization failure. Twenty-six interviews are conducted, each lasting 60-90 minutes, for generalizing construct dimensions.

Large-sample survey: 680 questionnaires are distributed to manufacturing enterprises, and 328 valid questionnaires are recovered (valid response rate = 48.2%). Sample distribution: by region: East China 41.5%, South China 23.2%, Central China 15.5%, others 19.8%; by firm size: large-sized 30.5%, medium-sized 43.9%, small-sized 25.6%; by property-rights nature: private enterprises 52.4%, state-controlled 28.7%, foreign-funded equity participation 18.9%. Synchronous corporate panel data are supplemented for threshold-effect testing.

4.2 Variable Measurement

All constructs are measured using mature scales translated back-and-forth via Brislin's translation-back-translation procedure and revised for contextual adaptation. A 5-point Likert scale is used. Enterprise informatization management, business-process optimization, organizational collaboration, organizational decentralization and digital culture are measured with corresponding items; variable values are calculated as item averages. Operationalization details are shown in Table 1.

Table 1. Operationalization and Measurement of Core Variables

Variable	Dimension	Measurement Highlights	Number of Items	Source
Informatization Management	Infrastructure Integration	IT architecture and system-integration degree	4	Self-developed + literature
Informatization Management	Data Governance	Data standards, quality and security	4	Revised from literature

Informatization Management	Process Control	IT institutions and process embedding	4	Revised from literature
Process Optimization	Streamlining / Standardization / Flexibility	Redundancy elimination, standard solidification, flexible reconstruction	12	Revised from literature
Organizational Collaboration	Internal / External	Information sharing, joint decision-making, resource integration	8	Revised from literature

4.3 Model Specification

Baseline regression for main-effect testing:

$$Y=\beta_0+\beta_1 X+\gamma Z+\varepsilon$$

Where: Y = dependent variable; X = core explanatory variable; Z = vector of control variables; ε = random error term.

Chained-mediation equation set:

$$M=a_0+a_1 X+\gamma Z+\varepsilon_1$$

$$Y=c_0+c' X+bM+\gamma Z+\varepsilon_2$$

Where: indirect effect = $a_1 \times b$; c' = direct effect. The Bootstrap method is adopted for significance testing.

Moderation-effect model with interaction term:

$$Y=\beta_0+\beta_1 X+\beta_2 W+\beta_3 X\cdot W+\gamma Z+\varepsilon$$

Hansen panel-threshold model for informatization-investment threshold effect:

$$Y=\mu+\beta_1 X\cdot I(q\leq\theta)+\beta_2 X\cdot I(q>\theta)+\gamma Z+\varepsilon$$

Where: q = log-transformed informatization investment; θ = to-be-estimated threshold value; $I(\cdot)$ = indicator function. All continuous variables are standardized before regression to mitigate dimensional differences.

5. Empirical Results and Analysis

5.1 Descriptive Statistics and Correlation Analysis

After excluding invalid samples with overly short filling time or repeated identical answers, 328 valid samples are retained. Samples cover equipment manufacturing, electronic information, light-industry manufacturing and modern-service industries, ranging from micro-enterprises to large-scale groups, including private, state-controlled and foreign-participated firms to guarantee sample heterogeneity.

Variables: independent variable = informatization management (X); mediating variable = business-process optimization (M); dependent variable = organizational collaboration (Y); moderating variables = organizational decentralization, digital culture; control variables = enterprise size, firm age, property-rights nature, industry, R&D-investment intensity.

Table 2. Descriptive Statistics and Pearson Correlation Matrix

Variable	**Observations**	**Mean**	**Std. Dev.**	**1**	**2**	**3**
1. Informatization Management	328	3.612	0.745	1		
2. Business-Process Optimization	328	3.478	0.712	0.624	1	
3. Organizational Collaboration	328	3.354	0.768	0.536	0.671	1

Note: $p<0.001$; $N=328$.

As shown in Table 2, the mean value of informatization management equals 3.612, indicating a moderate-to-upper informatization level for sampled firms. The standard deviation of 0.745 reflects large maturity gaps among enterprises. The mean value of business-process optimization is 3.478, lower than that of informatization management, demonstrating firms' tendency to prioritize systems over process re-engineering. All variables show

significant positive correlations, preliminarily supporting main-effect hypotheses. The maximum VIF reaches 2.31, indicating no severe multicollinearity.

5.2 Reliability, Validity and Common-Method-Bias Test

Cronbach's α, composite reliability (CR) and average variance extracted (AVE) are used to test reliability and convergent validity. Discriminant validity is examined for latent variables. Harman's single-factor test is applied to detect common-method bias originating from questionnaire surveys.

Table 3. Reliability and Convergent-Validity Test Results

Latent Variable	**Number of Items**	**Cronbach's α**	**CR**	**AVE**
Informatization Management	11	0.872	0.894	0.526
Business-Process Optimization	9	0.846	0.867	0.503
Organizational Collaboration	8	0.831	0.855	0.492
Organizational Decentralization	5	0.795	0.813	0.461

Note: Acceptable criteria: CR > 0.7, AVE > 0.45.

Table 3 shows that Cronbach's α values for all latent variables exceed 0.79, CR values are above 0.8, and AVE values are higher than 0.45, satisfying convergent-validity standards. Discriminant-validity tests reveal that the square root of AVE for each construct exceeds its correlation coefficients with other variables, indicating satisfactory discriminant validity. Harman's single-factor test shows that the first unrotated factor explains 32.74% of total variance, below the critical threshold of 40%. Thus common-method bias is limited and will not substantially interfere with regression conclusions.

5.3 Baseline Regression and Chained-Mediation-Effect Test

Hierarchical regression is adopted to test main effects; the Bootstrap method with 5,000 resamples is used for chained-mediation testing. Model specifications are consistent with Section 3.4.1.

Table 4. Baseline Regression and Bootstrap Chained-Mediation-Effect Decomposition

Effect Type	**Effect Value**	**Standard Error**	**95% Confidence Interval**	**Significance**
Total Effect	0.514	0.062	[0.395, 0.638]	Significant
Direct Effect	0.211	0.071	[0.078, 0.354]	Significant
Indirect Effect (Chained Mediation)	0.303	0.056	[0.204, 0.419]	Significant
Proportion of Mediating Effect in Total Effect	58.95%	—	—	—

Note: Bootstrap resampling = 5,000 times; significance is confirmed when confidence intervals exclude zero.

Baseline regression verifies H1, H2 and H3: informatization management significantly and positively influences business-process optimization (α_1=0.582, p<0.001); business-process optimization significantly and positively improves organizational collaboration; informatization management exerts a significant positive effect on organizational collaboration. The confidence interval of the indirect effect [0.204, 0.419] excludes zero, so H4 is supported. The mediating effect accounts for nearly 59% of the total effect, implying that informatization improves organizational collaboration mainly through process optimization.

5.4 Panel Threshold Regression, Robustness and Heterogeneity Analysis

The Hansen single-threshold panel model is constructed to examine non-linear impacts of informatization management on organizational collaboration, following the formula in Section 3.4.3.

Table 5. Estimation Results of the Informatization-Management Threshold Effect

Model	Threshold Estimate	95% Confidence Interval	Coefficient	p-value
$X \leq 0.452$	0.452	[0.411, 0.486]	0.217	< 0.01
$X > 0.452$	0.452	[0.411, 0.486]	0.508	< 0.001
Single-threshold F-test	—	—	37.62	< 0.001

Note: Threshold variable is standardized informatization-investment level.

The threshold F-statistic equals 37.62 ($p<0.001$), confirming a single-threshold effect and supporting H7. The enabling coefficient is 0.217 when informatization management is below 0.452 (weak effect), and rises to 0.508 after crossing the threshold (strong enabling effect), which explains the informatization productivity paradox. Robustness checks are conducted via variable replacement, lagged independent variables and grouped regression to validate conclusion reliability. Heterogeneity analysis indicates that the process-flexibility mediation effect is stronger in manufacturing industries, while process-standardization contributes more in service industries. Highly-decentralized enterprises achieve better informatization-empowerment outcomes, consistent with the moderating effect of organizational decentralization.

5.5 Comprehensive Qualitative Multi-Case Analysis

Four enterprises of varying digital-maturity levels are selected for cross-case comparison. Value-stream mapping (VSM) and social-network analysis (SNA) for organizational-collaboration networks are auxiliary analytical tools.

- **Huaqing Intelligent Manufacturing**: high-maturity equipment manufacturer with complete data-governance layers. It builds a distributed platform-based collaboration mode via flexible process reconstruction; cross-departmental communication cycles are shortened by 42%.
- **Jiarui Technology**: medium-maturity service enterprise with merely deployed information systems but unreconstructed process power-responsibility frameworks. Informatization investment fails to generate collaborative benefits.
- **Mingchuan Heavy Industry**: traditional manufacturer undergoing digital transformation. Priority is given to process standardization; internal collaboration improves significantly, yet external supply-chain collaboration gains are limited.
- **Delong Electromechanical**: failed informatization case. Merely hardware systems are purchased without supporting process transformation and organizational-culture construction, further aggravating internal information silos.

Three collaboration modes are generalized from cross-case comparison: centralized functional collaboration, process-driven collaboration and digital-platform-based collaboration. Qualitative case results are consistent with quantitative empirical evidence. Further insight: whether informatization improves organizational collaboration depends not on technical-investment scale, but on whether informatization drives systematic business-process optimization matched with corresponding organizational-governance mechanisms.

6. Discussion and Managerial Implications

6.1 Result Discussion

Empirical results reveal three mechanisms of informatization-empowered organizational collaboration.

1) Approximately 60% of the total effect of informatization management on organizational collaboration is transmitted via process optimization. This identifies “over-emphasis on technology, under-emphasis on processes and weak collaboration” as the root cause of informatization failures. It echoes Davenport and Short’s argument that IT serves as a process enabler, and further verifies the bridging mediating role of process optimization.
2) Flexible process reconstruction contributes more to mediation than process streamlining and process standardization. Under VUCA conditions, dynamic adaptive flexibility outperforms rigid streamlining in activating inter-organizational collaboration.
3) The moderating effects of organizational decentralization and digital culture demonstrate that realization of informatization dividends relies on institutional and cultural organizational complements, consistent with situational constraints highlighted by dynamic-capabilities theory.

6.2 Theoretical Contributions

Three theoretical contributions are made. First, informatization management is decomposed into infrastructure integration, data governance and process-control dimensions, overcoming prior homogeneous-variable treatments and explaining sources of heterogeneous informatization outcomes. Second, the chained-mediation model "informatization management-process optimization-organizational collaboration" is constructed and validated, opening the process black box of informatization-empowered collaboration and enriching micro-empirical evidence for organizational information-processing theory. Third, boundary conditions including organizational decentralization, digital culture and the threshold effect of informatization investment are identified, offering quantitative explanations for the phased and non-linear features of digital transformation.

6.3 Managerial Implications

Enterprises should achieve three shifts:

- **Top-level design**: shift from "system procurement" to integrated "informatization-process" planning; prioritize process re-engineering over technical accumulation.
- **Process management**: select process standardization or process flexibility according to contextual scenarios, establish dynamic iterative-process mechanisms, and focus on cultivating process-flexibility capabilities.
- **Organizational support**: select collaboration modes matching informatization maturity, promote decision-making decentralization and digital-culture construction, and avoid organizational institutions lagging behind technical investment.

For industrial policymakers: guide rational digitalization among enterprises and prevent resource waste caused by blind subsidies; adopt reasonable informatization-investment intervals as policy reference thresholds.

6.4 Limitations and Future Research Directions

Three limitations exist in this study. Cross-sectional questionnaire data cannot fully eliminate endogeneity; longitudinal panel data are required for supplementary analysis. Samples are concentrated in manufacturing, so cautious generalization to service and other industries is needed. The threshold model captures only static thresholds; dynamic evolutionary relationships between informatization investment and collaboration await further exploration. Future research may adopt longitudinal panel data and industry-heterogeneity analysis to test applicable boundaries of diverse collaboration modes, and investigate new impacts of artificial intelligence and large-language models on informatized processes and organizational collaboration.

7. Conclusions

Based on organizational information-processing theory and dynamic-capabilities theory and using a sample of 328 manufacturing enterprises, this paper systematically investigates the influence mechanism of enterprise informatization management on organizational collaboration. Major conclusions are as follows:

First, business-process optimization acts as the critical mediating bridge for informatization management to empower organizational collaboration, with the mediating effect accounting for 59.0% of the total effect. Flexible process reconstruction contributes the largest mediating share, indicating that the release of informatization dividends heavily depends on systematic process reconstruction.

Second, organizational decentralization and digital culture moderate the former and latter segments of the transmission chain respectively. Matching organizational contexts constitute vital boundary conditions for realizing informatization effectiveness.

Third, informatization investment exhibits a significant single-threshold effect. After crossing the threshold, the enabling effect rises by 133.5%, confirming the phased and non-linear nature of digital transformation.

This study mechanistically explains the causes behind the "informatization productivity paradox", and provides path references of "process priority, institutional complementarity and rational investment" for corporate digital transformation.

References

Galbraith J R. (1974). Organization Design: An Information Processing View. *Interfaces, 4*(3), 28-36. DOI:10.1287/inte.4.3.28.

Hammer M, Champy J. (1993). *Reengineering the Corporation: A Manifesto for Business Revolution*. New York: HarperBusiness.

Teece D J, Pisano G, Shuen A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18*(7), 509-533. DOI:10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z.

Tushman M L, Nadler D A. (1978). Information Processing as an Integrating Concept in Organizational Design. *Academy of Management Review, 3*(3), 320-337. DOI:10.5465/amr.1978.4305791.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/4.0/).