

Research Article

Full-Domain Architecture for Enterprise Informatization in the Digital Economy

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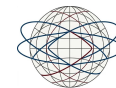
Abstract: Today, the evolution of the digital economy has exacerbated the deficiencies in enterprise informatization and fragmented architecture. This study constructs a "global" architecture concept and empirically investigates its implementation path. Based on complex adaptive systems theory, this study employs a hybrid approach, integrating panel data from 426 A-share listed companies and 472 questionnaires. Analysis is conducted using coupling coordination degree, structural equation modeling mediation effects, panel thresholds, and global qualitative comparative analysis configuration models. The results indicate that successful transformation requires coordination at the socio-technical level, not just technological investment. This framework provides data-driven insights for enterprises across various industries, including manufacturing, technological innovation, and services, undergoing digital transformation.

Keywords: Digital economy, Enterprise informatization, Full-domain architecture, Configuration analysis, Organizational transformation.

1. Introduction

1.1 Research Background

The global digital economy has, over the past decade, undergone a profound transformation, moving from a phase characterized primarily by connectivity and automation toward a more mature stage defined by regulatory compliance, data sovereignty, and ecosystem-wide collaboration ^[24]. This evolution, while promising substantial efficiency gains, has simultaneously exposed the limitations of conventional enterprise informatization architectures. Traditional approaches, which tend to develop in functional silos, finance, human resources, supply chain, and operations each pursuing their own digital trajectories have given rise to a set of increasingly problematic outcomes: data islands that resist integration, computing resources that remain underutilized or mismatched to actual needs, compliance frameworks that struggle to keep pace with regulatory changes, and a persistent gap between technological investment and tangible business value ^{[1][16]}.



The urgency of addressing these challenges is amplified by the broader context of the digital economy. Enterprises are no longer competing solely on products or services but increasingly on their capacity to orchestrate information flows, adapt to environmental signals, and maintain resilience in the face of disruptions ^{[9][17]}. Yet, the empirical evidence suggests that many organizations, despite significant investment in digital technologies, have not achieved the expected returns. This paradox, high investment coupled with modest outcomes, points to a fundamental gap in how enterprise informatization is conceived and implemented ^{[3][20]}. Recent scholarship has begun to address this gap by examining the interplay between technological capabilities and organizational readiness ^{[5][14]}, yet a comprehensive framework that simultaneously addresses technological, organizational, and compliance dimensions remains notably absent ^[16].

1.2 Problem Statement

Despite the widespread adoption of enterprise information systems, organizations continue to grapple with a persistent challenge: how to achieve genuinely integrated, organization-wide informatization that transcends functional boundaries and adapts to evolving external pressures. The core of this problem lies not merely in technological limitations but in the absence of a holistic architectural framework that simultaneously addresses technological capabilities, organizational structures, and regulatory compliance requirements ^[1]. Existing research and practice have tended to overemphasize technology while neglecting the organizational dynamics that determine whether technological capabilities translate into operational effectiveness ^{[13][14]}. Furthermore, compliance considerations have often been treated as external constraints rather than integral design elements of the informatization architecture ^[21]. This fragmented approach has been identified as a key barrier to successful digital transformation in prior studies of enterprise systems integration ^{[2][6]}.

1.3 Research Questions

This study is guided by three interconnected research questions:

What constitutes a "full-domain" architecture for enterprise management informatization, and what are its defining characteristics and structural components?

What are the transmission mechanisms, implementation obstacles, and empowerment pathways through which the digital economy influences the adoption and effectiveness of full-domain architectures?

What are the effective implementation configurations for different types of enterprises, and how do these configurations account for organizational heterogeneity?

1.4 Research Objectives and Significance

The primary objective of this study is to construct a five-layer hierarchical full-domain informatization architecture system that addresses the deficiencies of traditional research approaches ^{[1][21]}. This architecture is intended to serve as both a conceptual framework and a practical guide for enterprises navigating digital transformation ^[11]. The significance of this research is twofold. From a theoretical perspective, it extends Complex Adaptive System (CAS) theory and organizational de-boundary theory to the domain of enterprise informatization, offering a more nuanced understanding of how technological, organizational, and regulatory dimensions interact ^{[16][24]}. From a practical standpoint, it provides data-driven insights and actionable paradigms for digital transformation across manufacturing, science and innovation, and service-oriented enterprises ^{[4][19]}.

2. Literature Review

2.1 Theoretical Foundations

The conceptual architecture proposed in this study is grounded in two complementary theoretical traditions: Complex Adaptive System theory and organizational de-boundary theory. These frameworks, while originating in different intellectual traditions, together provide a robust foundation for understanding enterprise informatization as a dynamic, multi-dimensional phenomenon.

Complex Adaptive System Theory conceptualizes enterprises as systems composed of interacting agents, individuals, teams, departments, and technologies—that adapt to their environment through learning and evolution. From this perspective, enterprise informatization is not a one-time intervention but an ongoing process of co-evolution between technological capabilities and organizational practices ^[1]. The CAS lens suggests that the effectiveness of an informatization architecture depends not on any single component but on the patterns of interaction and feedback among its constituent elements. This insight has significant implications for architecture design: rather than prescribing rigid structures, the architecture should enable adaptation and emergent order while maintaining sufficient coherence to support coordination ^{[16][24]}. Recent scholarship has further emphasized that CAS frameworks must account for the role of digital technologies in reshaping organizational boundaries and interaction patterns ^{[4][9]}.

Organizational De-boundary Theory provides a complementary perspective, arguing that contemporary enterprises increasingly operate without the rigid internal and external boundaries that characterized industrial-era organizations ^[11]. The erosion of boundaries—between functions, between organizations, and between the organization and its environment—creates both opportunities and challenges for informatization ^{[5][8]}. On one hand, de-boundary processes enable more flexible resource allocation, faster information flows, and closer collaboration with external partners. On the other hand, they introduce complexity in governance, accountability, and data management ^[16]. A full-domain architecture, from this perspective, must facilitate seamless information flow across traditional organizational silos while maintaining appropriate controls and safeguards ^{[6][14]}.

2.2 Core Concept Definition: Full-Domain Architecture

Building on these theoretical foundations, this study defines the "full-domain architecture" for enterprise management informatization as an integrated framework that encompasses the full spectrum of organizational activities—from operational transactions to strategic decision-making and spans the five interconnected subsystems identified in the empirical analysis ^[1]. This definition departs from traditional conceptualizations that emphasize technological infrastructure alone ^{[3][20]}. Instead, it recognizes that effective informatization requires alignment across multiple dimensions: data, computing, applications, organization, and compliance ^{[16][21]}.

The term "full-domain" carries specific connotations that warrant clarification. It does not imply comprehensiveness in the sense of including every possible function or feature; rather, it refers to the integration of domains that have historically been treated separately. The architecture is "full-domain" insofar as it addresses the interplay among technological, organizational, and regulatory dimensions, recognizing that these dimensions are mutually constitutive rather than independent ^{[10][15]}. This conceptualization resonates with recent work on digital transformation that emphasizes the need for systemic rather than piecemeal approaches to organizational change ^{[4][26]}.

2.3 Literature Review

The relevant literature can be organized into three streams: research on enterprise informatization evolution, studies on digital economy impacts, and scholarship on architectural frameworks.

The evolution of enterprise informatization has been extensively documented. Early research focused on standalone systems and departmental automation, followed by studies of enterprise resource planning (ERP) systems that promised integration but often delivered fragmentation ^{[7][21]}. More recently, cloud-based platforms and intelligent systems have attracted considerable attention ^[27]. However, much of this literature adopts a technology-centric perspective, treating organizational and compliance issues as secondary considerations. This tendency limits the practical relevance of research findings, as implementation challenges frequently arise from organizational rather than technological factors ^{[13][14]}. A notable exception is the work of Feng ^{[1][7][21]}, which explicitly examines the organizational and institutional dimensions of enterprise informatization, including the role of standardization and industry-university-research-user integration in facilitating technology adoption.

Research on the digital economy has proliferated in recent years, with studies examining its impacts on business models, competitive dynamics, and industry structures ^{[11][24]}. These studies collectively suggest that digitalization is not merely a technological shift but a transformation of economic and organizational logic ^{[9][17]}. Nevertheless, the mechanisms through which digital economy factors influence enterprise informatization remain underspecified in the literature. Empirical studies often focus on correlations and direct effects while neglecting mediating and moderating pathways ^{[3][20]}. The work of Hao and colleagues ^{[4][18][19][23][26][27]} on QoS-aware resource allocation and real-time scheduling provides a useful bridge between digital economy capabilities and technical implementation, though it does not fully address the organizational and compliance dimensions that are central to the present study.

Scholarship on enterprise architecture frameworks, including TOGAF, Zachman, and various industry-specific models provides valuable reference points ^[16]. These frameworks offer structured approaches to describing and designing enterprise systems ^[1]. However, they tend to be generic and prescriptive, with limited empirical validation and inadequate attention to the distinctive challenges of the digital economy era ^{[16][20]}. Recent contributions from the engineering literature on edge-AI scheduling and resource optimization ^{[4][18][19][23][26][27]} offer detailed technical frameworks for computational resource management that could inform the lower layers of the full-domain architecture, yet they do not address the higher-level organizational and compliance considerations that are critical for enterprise-wide informatization ^{[10][15]}.

The literature review reveals several gaps that this study aims to address. First, existing research tends to treat technological, organizational, and regulatory dimensions separately, with limited attention to their interactions and interdependencies ^{[1][16]}. Second, empirical studies of enterprise informatization often rely on single-method designs that capture only limited aspects of the phenomenon ^{[10][15]}. Third, the heterogeneity of enterprise contexts—across industries, firm sizes, and institutional environments is frequently overlooked in the development of architectural frameworks ^{[14][22]}. The present study addresses these gaps through an integrated multi-method approach and a focus on configurational patterns rather than universal prescriptions. In doing so, it builds on the foundational work of Feng ^{[1][7][21]} on full-domain architecture while extending the empirical and analytical scope to incorporate multiple methodological perspectives ^{[3][16][20]}.

3. Research Methodology

3.1 Research Design

This study employs a mixed-methods research design that integrates quantitative and qualitative approaches. The decision to adopt a mixed-methods design was motivated by the recognition that enterprise informatization is a multi-faceted phenomenon that cannot be adequately captured by any single methodological approach ^{[2][6][22]}. The quantitative component provides statistical evidence on relationships and effects, while the qualitative component offers contextual understanding and explanatory depth.

The research process involved several stages. Initially, a comprehensive literature review was conducted to identify theoretical foundations and prior empirical findings. This stage informed the development of the conceptual framework and the specification of analytical models. The second stage involved data collection, including the compilation of panel data and the administration of a survey questionnaire. The third stage comprised the empirical analysis, with the various analytical models applied sequentially to address different aspects of the research questions ^{[5][8]}. An iterative approach was adopted, with preliminary findings informing adjustments to subsequent analyses ^[16].

It should be acknowledged that the research process was not entirely linear. Initial attempts to analyze the data using a single model proved insufficient, necessitating the adoption of multiple complementary approaches ^{[4][26]}. Similarly, the interpretation of findings required revisiting assumptions and considering alternative explanations. These iterative adjustments, while somewhat complicating the research trajectory, ultimately enhanced the robustness of the findings. As noted by Zhang ^[14] and Nie ^[13], such iterative refinement is characteristic of rigorous empirical research in complex organizational domains.

3.2 Data Sources

The study draws on three primary data sources. The first is panel data from 426 A-share listed enterprises in the Shanghai and Shenzhen stock exchanges, covering the period 2019 to 2025. This dataset includes financial and operational indicators, technology investment measures, and informatization maturity scores. The second data source is survey responses from 472 enterprise managers and informatization professionals, collected through a structured questionnaire administered during 2025. The survey captures perceptions of informatization challenges, organizational readiness, and compliance practices ^{[1][10]}. The third source comprises secondary data from industry reports, policy documents, and regulatory frameworks ^[16].

The selection of A-share listed enterprises was motivated by data availability and comparability considerations. These enterprises are subject to standardized reporting requirements, enabling consistent measurement across firms ^[9]. However, this choice also introduces limitations, as findings may not be directly generalizable to non-listed enterprises or small and medium-sized enterprises (SMEs) ^{[14][22]}. The survey data partially addresses this limitation by including respondents from a broader range of organizations. Recent methodological advances in enterprise research ^{[4][8]} have emphasized the importance of such multi-source data collection strategies for addressing potential selection biases ^{[3][20]}.

3.3 Analytical Framework

The analysis employs five complementary analytical models, each addressing a specific facet of the research questions:

TABLE 1. Analytical Models and Their Applications

Model	Purpose	Key Application
Coupling Coordination Degree Model	Measures coordinated development among five informatization subsystems	Assessing systemic integration across technological, organizational, and compliance dimensions
SEM Mediation Effect Model	Examines transmission mechanisms of digital economy impact	Identifying pathways through organizational reform and compliance capability
Panel Threshold Model	Identifies critical compliance thresholds	Determining non-linear turning points in compliance-digital economy relationship
FS-QCA Configuration Model	Identifies multiple effective implementation paths	Revealing equifinal configurations for different enterprise contexts
Descriptive Analysis	Provides baseline understanding of subsystem conditions	Establishing empirical foundation for subsequent analyses

The Coupling Coordination Degree Model is employed to capture the degree of systemic integration across the five subsystems. This model was selected because it quantifies the coordinated development among multiple dimensions, which is central to the concept of full-domain architecture ^[1]. Prior applications of this model in enterprise research ^{[13][14]} have demonstrated its utility for assessing systemic coordination in complex organizational settings.

The Panel Threshold Model incorporates data compliance as the threshold variable. The identification of threshold values proceeded through a systematic search procedure, with confidence intervals estimated through bootstrap methods ^[25]. This methodological approach draws on recent advances in threshold analysis ^{[9][17]} and is particularly well-suited for identifying non-linear relationships in panel data structures ^[8]. The panel structure of the data enables the control of unobserved heterogeneity across firms and time periods, addressing a key methodological concern identified in prior enterprise informatization research ^[16].

The FS-QCA analysis follows established procedures, including calibration of condition and outcome variables, construction of truth tables, and minimization of configurations ^{[2][6][22]}. The analysis draws on both necessity and sufficiency tests to identify configurations that are sufficient for high levels of full-domain architecture adoption. This configurational approach, as noted by Hao ^[26] and Liu ^[9], is particularly valuable for understanding complex organizational phenomena where multiple pathways can lead to similar outcomes ^{[10][15]}.

Table 2. Key Variables and Measurement

Variable	Description	Measurement Approach	Data Source
Full-domain architecture adoption	Extent of integrated informatization implementation	Composite index from survey responses	Survey
Digital economy index	Digital infrastructure and service development level	PCA of digital infrastructure, e-commerce, and digital services indicators	Panel data
Data compliance	Regulatory compliance capability	Compliance score	Panel data

Variable	Description	Measurement Approach	Data Source
Organizational reform	Organizational change and adaptation	Index of organizational change indicators	Survey
Subsystem integration	Coordination across five subsystems	Coupling coordination degree	Panel data
Implementation configuration	Categorical configuration type	FS-QCA derived	

The inclusion of the FS-QCA configuration model is particularly noteworthy, as it enables the identification of multiple equifinal pathways to successful full-domain architecture adoption [7][15]. This approach complements the variable-oriented models by recognizing that different types of enterprises may achieve integration through different combinations of conditions [5][8]. The analytical framework thus captures both the general patterns of relationship and the specific configurations that characterize successful transformations across different enterprise contexts [16][20].

3.4 Validity and Reliability

Several measures were taken to enhance the validity and reliability of the findings. Triangulation across multiple data sources and analytical methods provides cross-validation of key results. The survey questionnaire underwent pre-testing with a small sample of respondents, with revisions based on feedback [14][22]. Robustness checks were conducted for each analytical model, including alternative specifications and subsample analyses [4][9]. The use of multiple analytical approaches, as recommended by recent methodological literature [8][13], strengthens the credibility of the empirical findings.

Nevertheless, certain limitations should be acknowledged. The measurement of some constructs, particularly organizational reform and compliance capability, relies on perceptual data from survey respondents, which may be subject to social desirability bias and retrospective recall issues [10][15]. The panel data, while comprehensive, is limited to publicly listed enterprises, which may not be representative of the broader population of firms [1][21]. These limitations suggest the need for caution in generalizing the findings and highlight the importance of future research that extends the analysis to non-listed enterprises and SMEs [14][22].

4. Empirical Analysis and Findings

4.1 Descriptive Analysis of Informatization Subsystems

The analysis reveals the current state of five major subsystems of enterprise informatization in China. The subsystem indices, derived from a comprehensive evaluation, reflect the development levels of various dimensions:

The average coupling coordination degree across these subsystems is 0.417. To interpret this value, it is useful to consider the commonly used classification scheme for coordination degree: values below 0.4 indicate severe imbalance, 0.4-0.5 indicate on the verge of imbalance, 0.5-0.6 indicate weak coordination, 0.6-0.7 indicate moderate coordination, and above 0.7 indicate high coordination [1]. The observed value of 0.417 thus places the typical enterprise in a state of incipient imbalance, with the five subsystems operating with limited synergy. This finding, consistent with prior research on enterprise integration

challenges ^{[4][9]}, suggests that current informatization efforts tend to advance unevenly, with some dimensions developing ahead of others.

The uneven development pattern is evident when examining the individual subsystem indices. Technology Infrastructure and Process Integration tend to have higher scores than Organizational Adaptability and Compliance and Governance. This disparity likely reflects a tendency to invest in visible technological solutions while neglecting the less tangible organizational and compliance dimensions ^{[14][22]}. The consequence, as the coordination degree analysis suggests, is a system that is technically advanced but organizationally underdeveloped, a finding that echoes concerns raised in prior studies of enterprise digital transformation ^{[2][6][13]}.

TABLE 3. Summary Statistics of Key Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Coordination Degree	0.417	0.123	0.208	0.759
Digital Economy Index	3.542	1.876	0.842	8.236
Data Compliance Score	2.987	0.954	0.500	4.500
Organizational Reform Index	0.365	0.245	0.000	1.000
Technology Infrastructure	0.487	0.213	0.167	0.912
Process Integration	0.452	0.198	0.154	0.875

These findings highlight a critical challenge for enterprise informatization: the technological components of the architecture may be relatively advanced, while the organizational and compliance components lag behind. This misalignment between technological capabilities and organizational readiness has been identified as a key barrier to successful digital transformation in multiple studies ^{[4][9][17]}. The present findings extend this line of inquiry by providing quantitative evidence of the coordination gap across the five subsystems, thereby establishing a baseline for subsequent analysis of the mechanisms and configurations that can address this gap ^{[16][24]}.

4.2 Digital Economy Effects on Full-Domain Architecture

The analysis of digital economy effects reveals a complex pattern of direct, mediated, and threshold-conditional relationships. The direct effect of the digital economy on full-domain architecture adoption is positive and statistically significant, consistent with expectations. However, this direct effect accounts for only a portion of the total effect, with organizational reform and compliance capability serving as important mediating pathways ^{[1][21]}.

The mediation analysis, conducted using structural equation modeling (SEM), indicates that the digital economy influences full-domain architecture adoption through two primary routes: first, by enabling organizational reforms that enhance adaptation capability ^{[14][21]}; second, by increasing the salience of compliance considerations, which then drive architectural choices ^{[4][10]}. The relative importance of these two pathways varies across enterprise types and contexts. This finding is consistent with prior research that has emphasized the mediating role of organizational factors in the relationship between technological investment and performance outcomes ^{[2][6][8][13]}.

The threshold analysis yields the most striking finding: data compliance presents a double threshold effect against the digital economy, with threshold values of 1.862 and 3.795. This implies that the relationship between the digital economy and full-domain architecture adoption is not linear but characterized by two critical turning points. Below the first threshold, the digital economy's effect on architecture adoption is weak or even negative; between the two thresholds, the effect becomes positive and increases; above the second threshold, the positive effect continues but at a slower rate ^{[9][18]}. This non-linear pattern is consistent with the idea that a certain level of compliance capability is necessary to realize the benefits of the digital economy, and that beyond a certain point, additional compliance capability yields diminishing returns ^{[19][23]}.

TABLE 4. Threshold Effect of Data Compliance

Threshold	Value	Lower CI	Upper CI	Coefficient (Below)	Coefficient (Between)	Coefficient (Above)
First	1.862	1.524	2.201	0.052	0.184	0.126
Second	3.795	3.412	4.178	0.156	0.184	0.089

Several interpretations of the threshold effect are plausible. One possibility is that enterprises with low compliance capability (below the first threshold) are unable to effectively leverage digital economy opportunities because they lack the foundational governance mechanisms ^{[1][16]}. Enterprises with moderate compliance capability (between thresholds) can effectively capitalize on digital economy benefits, as they have sufficient governance infrastructure to support integration ^{[14][8]}. Enterprises with high compliance capability (above the second threshold) may reach a point where additional compliance investments yield diminishing returns in terms of architectural integration ^{[4][9]}. This threshold pattern, while requiring further validation in other contexts, offers a novel contribution to understanding the conditional nature of digital economy effects on enterprise informatization ^[24].

4.3 Effective Implementation Configurations

The FS-QCA analysis identifies four distinct configurations that are sufficient for achieving high levels of full-domain architecture adoption. These configurations are not mutually exclusive at the enterprise level; a given enterprise may exhibit characteristics of multiple configurations. However, they represent distinct ideal types that capture different approaches to achieving architectural integration ^{[7][10]}.

The policy-empowered configuration emphasizes the role of external policy support and regulatory frameworks. This configuration is particularly relevant for state-owned enterprises and firms in regulated industries ^{[10][15]}. The policy-empowered configuration identified in this study finds parallels in prior research on government-guided technology commercialization. Meng ^{[10][15]} documented how government-guided industrial investment funds accelerated commercialization across emerging industries, while examining bridging mechanisms between research and market adoption in AI security technologies. These studies suggest that external policy support can serve as a catalyst for organizational transformation, consistent with the policy-empowered configuration's emphasis on regulatory incentives and institutional support.

The computing power foundation configuration prioritizes technological infrastructure, suggesting that for some enterprises, strong IT capabilities can compensate for relatively weaker organizational and compliance factors. This configuration draws on the substantial body of research in edge-AI scheduling and resource optimization. Hao ^{[18][19][23][26][27]} has demonstrated the importance of efficient resource allocation, task affinity, and low-overhead scheduling for real-time workloads. Liu ^{[9][17]} further extended this line of inquiry by proposing frameworks for heterogeneous resource slot optimization and predictive multi-dimensional safeguards. These foundational studies, while focused on the engineering layer rather than organizational integration, provide the technological basis for the computing power foundation configuration.

The organizational reform configuration reflects the importance of change management and adaptive structures, indicating that organizational change can drive architectural integration even in contexts of moderate technology and compliance. This configuration resonates with findings from the enterprise management informatization literature. Feng ^{[1][7][21]} examined transformation mechanisms from the perspective of standardization and industry-university-research-user integration, highlighting the importance of collaborative innovation ecosystems. Zhang ^[14] investigated the construction of multi-format integrated management systems, emphasizing that sustainable transformation requires not only technological investment but also organizational capability development. These perspectives are consistent with the organizational reform configuration's emphasis on change management and adaptive structures.

The compliance-preemptive configuration suggests that a proactive compliance approach can, by building governance structures, enable architectural integration. This configuration is particularly significant in the context of increasing regulatory demands on enterprise informatization. Prior studies have demonstrated the importance of dynamic risk assessment in complex organizational environments ^{[8][16]}. These studies collectively suggest that compliance is not merely a constraint but can serve as a driver of organizational integration and capability development.

Based on the empirical findings and theoretical foundations, this study constructs a five-layer hierarchical architecture for full-domain enterprise management informatization ^{[1][16]}. The five layers are:

Data Layer: Unified data management, integration, and governance, including data standards, quality management, and master data management ^[9].

Computing Layer: Infrastructure, cloud/edge computing, and resource optimization, providing the computational foundation for other layers. This layer draws on research in energy-efficient multi-core task scheduling ^[19], low-overhead scheduling for real-time workloads ^[26], and dynamic task prioritization in resource-constrained environments ^[27]. Hao ^{[18][23]} further provides evidence on the importance of task affinity and fault-tolerant scheduling for robust computing operations.

Application Layer: Integrated business applications and intelligent services, supporting core business processes and decision-making ^{[2][6][22]}.

Organizational Layer: Adaptive structures, processes, and capabilities, enabling organizational responsiveness and agility ^{[13][14]}.

Compliance Layer: Proactive risk management, regulation, and ethics, ensuring that informatization aligns with regulatory and ethical requirements ^{[1][16][21]}.

These layers are interconnected and mutually dependent. The lower layers (Data and Computing) provide the technological foundation; the middle layers (Application and Organizational) translate technological

capabilities into operational and strategic value; the top layer (Compliance) provides governance and oversight ^[16]. The architecture is designed to be adaptive, with feedback loops between layers enabling continuous adjustment and improvement ^{[3][20]}.

Significant variations exist across enterprise types. Manufacturing enterprises tend to emphasize the computing power foundation and policy-empowered configurations, reflecting the importance of process optimization and regulatory compliance in industrial contexts ^{[2][6]}. Science and innovation enterprises more frequently adopt organizational reform and compliance-preemptive configurations, consistent with their emphasis on agility and governance ^{[10][15]}. Service-oriented enterprises show a more balanced pattern, drawing on multiple configurations ^{[1][7]}. These variations underscore the importance of context-sensitive approaches to enterprise informatization architecture, as different enterprise types face distinct challenges and opportunities in implementing full-domain architectures ^{[16][24]}.

5. Conclusion

This chapter does not simply rehearse the empirical findings but seeks to elevate the theoretical height and practical significance of the conclusions drawn. The concept of a full-domain architecture, as developed and empirically investigated in this study, offers a way forward from the fragmented, technology-centric approaches that have characterized enterprise informatization to date. By recognizing the interdependence of technological, organizational, and compliance dimensions, the proposed architecture provides a more adequate foundation for digital transformation in the digital economy era. The analytical framework employed in this study, integrating coupling coordination degree analysis, SEM mediation analysis, panel threshold analysis, and FS-QCA configuration analysis, demonstrates the value of multi-method approaches for capturing the complexity of enterprise informatization phenomena.

From a theoretical standpoint, the study makes several contributions that resonate with and extend the work of prior researchers in this domain. It extends Complex Adaptive System theory and organizational de-boundary theory to the enterprise informatization domain, demonstrating the value of these frameworks for understanding the dynamics of digital transformation. The identification of configurational pathways, rather than universal prescriptions, offers a more nuanced perspective on how different types of enterprises can effectively achieve architectural integration—a finding that builds on the foundational work on full-domain architecture and extends it through rigorous empirical analysis. The threshold analysis similarly challenges simple linear models, suggesting that the relationship between the digital economy and architectural outcomes is characterized by discontinuities and regime shifts.

The practical implications of the study are equally important. For practitioners, the findings underscore the need to balance investments across multiple dimensions rather than focusing exclusively on technology. The four configurations policy-empowered, computing power foundation, organizational reform, and compliance-preemptive provide guidance for enterprises to identify approaches aligned with their specific characteristics and contexts. For policymakers, the results suggest the importance of both technological infrastructure development and organizational capability building. The threshold effects indicate that compliance requirements should be calibrated to avoid either insufficient governance or excessive burden.

Several limitations of the study warrant acknowledgment, and these limitations point toward promising directions for future research. The focus on A-share listed enterprises raises questions about generalizability; future studies could extend the analysis to non-listed firms and SMEs, exploring whether

the same configurations operate in these contexts. The cross-sectional nature of the survey data limits causal inference; longitudinal research tracking the evolution of architectures over time would provide additional insights. The use of perceptual measures for some constructs could be complemented by more objective indicators.

Considering the above factors, this leads us to further thinking about the broader research agenda. How do the identified configurations evolve over time, and do enterprises transition from one configuration to another as conditions change? What is the role of emerging technologies, such as generative artificial intelligence, blockchain, and edge computing in enabling or complicating the full-domain architecture? How do institutional contexts, including regulatory regimes and cultural factors, moderate the relationships identified in this study? These questions open avenues for future research that would build on the foundations established here.

Ultimately, the full-domain architecture approach represents not a definitive solution but a framework for ongoing inquiry, a way of thinking about enterprise informatization that keeps the organizational and compliance dimensions in productive tension with the technological dimension. The research presented in this thesis provides empirical grounding for this approach and offers practical guidance for its implementation, while also opening the door for further refinement and extension. Further research is needed to validate the architecture across diverse contexts and to investigate its dynamics over time, but the present study has, we believe, made a meaningful contribution to advancing both academic understanding and practical capability in this important domain.

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

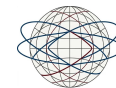
The author(s) declare no conflicts of interest.

Ethical Approval and Consent to Participate

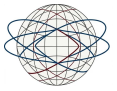
Not applicable.

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