Frontiers in Economics and Management Volume 7 Issue 11, 2026
ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

The Intelligent Shift of the Logistics Informatization Issue

-- A Discourse-institutional Analysis based on "China Logistics Yearbook" (2004 - 2025)

Xiaohui Liu

School of Economics and Management, Shanghai Polytechnic University, Shanghai 201209, China

Abstract

Based on all the special texts in the "Logistics Informatization" section of the "China Logistics Yearbook" from 2004 to 2025, by integrating historical text analysis and discourse-institutional analysis methods, this study examines the long-term evolution of the logistics informatization issue in China. The research reveals that the discourse structure of this section has gone through four stages: the initial stage of single-point digitalization (2003-2008), system integration and public platform construction (2009-2014), the transformation of Internet + platformization (2015-2018), and the deep application of digital intelligence (2019-2024), achieving a paradigm shift from tool-level informatization to full-chain intelligentization. However, the "intelligentization shift" is not simply a narrative of technological upgrading: in the early stage, it was embedded in the survival framework of "no logistics industry without informatization"; in the mid-stage, it digested the institutional gaps of standardization and system interconnection with "integration" as the axis; and in the recent period, it was gradually redefined by the policy discourse of "artificial intelligence + logistics industry". The unique value of the yearbook texts lies in that they record not the completed theories in academic papers, but the judgments, anxieties and expectations of industry actors at each point on "what to do next". The essence of this shift is the migration of the legitimacy source of logistics informatization from "efficiency tool" to "industrial infrastructure" and "carrier of national competitiveness"; and its unfinished aspects - the repeated delays of standardization, the structural absence of small and medium-sized enterprises, and the institutional reproduction of data silos - precisely constitute the conditions for the continuous reproduction of the intelligent narrative.

Keywords

Logistics Informatization; Intelligent Transformation; "China Logistics Yearbook"; Discourse-Institutional Analysis; Smart Logistics; Digital-Intelligent Transformation.

1. Introduction

The changes in China's logistics informatization over the past two decades cannot be simply summarized by a smooth technological progress curve. In 2004, when Tang You-san, the CIO of Baogong Logistics, wrote in the yearbook that "without logistics informatization, there would be no modern logistics industry", he was confronted with the reality that the overall level of enterprise informatization ranked 51st globally, while there were "hundreds of logistics software suppliers" but "it was difficult to find products suitable for China's national conditions", and standardization "had not yet been formed"[1]. In 2025, the theme of the same section has changed to "Artificial Intelligence + Modern Logistics", "Smart Highways, Smart Ports, Smart Logistics Hubs", and the policy language repeatedly mentions "Digitalization",

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

"Large Models", "Vehicle-Road Coordination". From "Without informatization, there would be no modern logistics industry" to "Without intelligence, there would be no future of logistics", the grammatical structure of the discourse has undergone a significant shift[2].

Existing studies on logistics informatization/ smart logistics often adopt two paths: one is the technological evolution path, using the introduction and diffusion of technologies such as RFID, GPS, cloud computing, the Internet of Things, blockchain, and artificial intelligence as the clues; the other is the policy tool path, based on the chronological sequence of national plans and departmental documents. The former tends to present intelligence as the unfolding of the inherent logic of technology, while the latter tends to reduce industry changes to the projection of policy will. Together, they conceal an intermediate zone: the discourse production within the industry - those "current situation judgments" and "trend expectations" made by association experts, enterprise information directors, and industry media in each year, how they participated in shaping the collective cognition of "what constitutes informatization" and "where should we go next".

The "Logistics Informatization" section of the "China Logistics Yearbook" provides a rare continuous text, precisely located in this intermediate zone. It is neither a purely technical document nor a compilation of policy documents, but rather an annual self-expression of the industry knowledge system. The authors include the head of the China Logistics and Purchasing Federation, researchers from the Logistics Information Center, and CIOs of enterprises. Their writing is aimed at industry peers and policy makers, rather than the academic community. This means that this text sequence records more "what was considered important at that time" rather than what was proven important later. This "judgment of the same era" has an academic paper and post-event review-like experience value that cannot be replaced by other means for understanding the mechanism of the intelligence shift.

This paper uses all the special topic texts of this section from 2004 to 2025 as the corpus, attempting to answer three questions: First, how has the thematic structure of the logistics informatization issue changed over the past twenty years, and when and in what way did "intelligence" become the dominant framework? Second, which discourse strategies and institutional conditions jointly promoted this shift, and how was the driving force configured between "policy", "market", "technology", and "organization"? Third, to what extent did the "intelligence shift" in the yearbook discourse complete the transformation from efficiency narrative to infrastructure narrative, and on which structural issues did it maintain significant continuity?

2. Data Sources and Research Methods

2.1. Composition and Nature of the Materials

The corpus consists of all the special articles in the "Logistics Informatization" section of the "China Logistics Yearbook" from 2004 to 2025. There are a total of 22 annual texts, with varying lengths. The corpus covers industrial, commercial, third-party logistics, private and foreign-funded logistics enterprises, as well as regional logistics public platforms and vertical industry logistics (hazardous materials, cold chain, automobiles, medicine, bulk commodities). It also includes records of technologies and business models such as RFID, GPS/GIS, SOA, SaaS, Internet of Things, big data, AI, blockchain, and network freight transportation (Table 1).

The column writers are highly concentrated, and this author structure itself constitutes a notable variable: the "perspective" of the annual report discourse has gradually shifted from the information directors of enterprises, to the information-specific institutions of industry associations, and then to the semi-professional writing team centered around the Network Department of China Federation of Logistics and Purchasing. This text is not statistically representative and does not follow the argumentation norms of academic papers. Its value lies

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

in the continuity over time and the internal nature of the industry: it is the "annual diagnosis" of the same column on the same topic for over twenty years, providing quasi-horizontally longitudinal data on the changes in industry cognition. This article does not regard it as "a record of objective facts", but as a discourse practice of the industry knowledge system. The analysis object is the problem-oriented approach, causal attribution, future expectations, and legitimacy argumentation within it.

Table 1. Annual distribution of the corpus and changes in the structure of the authors

Period	Main writer	Identity	Text genre characteristics
2003	Tang Yousan [1]	Baogong Logistics Enterprise Group Co., Ltd. CIO	On-site judgment of the enterprise + narrative of cases
2004—2005	Dai Dingyi [3,4]	Vice President of China Logistics and Purchasing Association	Analysis of industry strategy + interpretation of policies
2006	Wu Zhihui [5]	China Logistics Information Center	Industry survey data + case collection
2007	Jiang Zhiqiang [6]	China Logistics Information Center	Technical Application Analysis + Case Studies
2008	China Logistics and Purchasing Network [7]	China Logistics Information Center	Case Collection Overview + Policy Mapping
2009—2012	Yan Qinghua [8-11]	China Logistics and Purchasing Federation Network Department	Industry survey data + Case collection + Policy mapping
2013	Liu Yuhang [12]	Secretary-General of the Internet of Things Technology and Application Professional Committee of the China Federation of Logistics and Purchasing	Summary of Science and Technology Awards + Technology Applications
2014—2018	Yan Qinghua [13-17]	Network Department of the China Federation of Logistics and Purchasing	Industry survey data + Case collection
2019—2020	Yan Qinghua, Jin Tanying [18,19]	Network Department of the China Federation of Logistics and Purchasing	Policy document arrangement + Case collection + Data statistics
2021—2023	Yan Qinghua, Wang Panpan [20-22]	Network Department of the China Federation of Logistics and Purchasing	Policy document arrangement + Case collection + Data statistics
2024	Yan Qinghua, Wang Panpan, Fan Wei[2]	Network Department of the China Federation of Logistics and Purchasing	Policy document arrangement + Case collection + Data statistics

2.2. Analysis Method

This paper integrates historical text analysis method, stage induction method, discourse - institutional linkage analysis, and comparative analysis method to conduct research in a layered manner:

First, carefully read all annual texts, extract policy nodes, mainstream technologies, enterprise practices, industry pain points, and trend predictions for each year, and form a chronological

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

fact base; mark the core issues of the text, problem attribution, and future expectations, and identify the dominant discourse framework.

Second, divide the evolution stages and compare the differences in Informatization goals, main behaviors, technical spectra, and core contradictions among each stage by using policy focus, technical mainline, business model, and the main contradictions of the industry as benchmarks.

Third, discourse - institutional linkage analysis: do not assume a one-way causal relationship where institutions determine discourse or discourse reflects reality. The key focus is on how policy signals, technological supply, and market demand can be transformed into industry discourse, and how this discourse then selects, translates, and reconfigures institutional signals to form industry consensus.

Fourth, driver - constraint framework analysis: from three dimensions of policy systems, technological iterations, and industrial market demands, identify driving forces; From the dimensions of standard systems, market entity capabilities, talents, platform governance, and data governance, summarize long-term structural constraints .

The research focus of the paper is not on the quantitative accuracy of theme modeling, but on the explanatory level of the framework including which issues are repeatedly raised, which solutions remain unresolved for a long time, how intelligence is utilized at specific time points, and how it becomes a new legitimate resource for resolving historical legacy problems.

3. The Phased Transition of the Issue Structure: From "Whether There is" to "Whether it is Connected" and then to "Whether it is Intelligent"

By carefully reading the text of the "Twenty-Two Years" column, four discourse stages can be identified. These stages are not completely disconnected from each other; instead, they evolve through a process of "superposition - shift of focus": the core issues of the previous stage do not disappear but are repositioned within a new framework (Figure 1, Table 2).

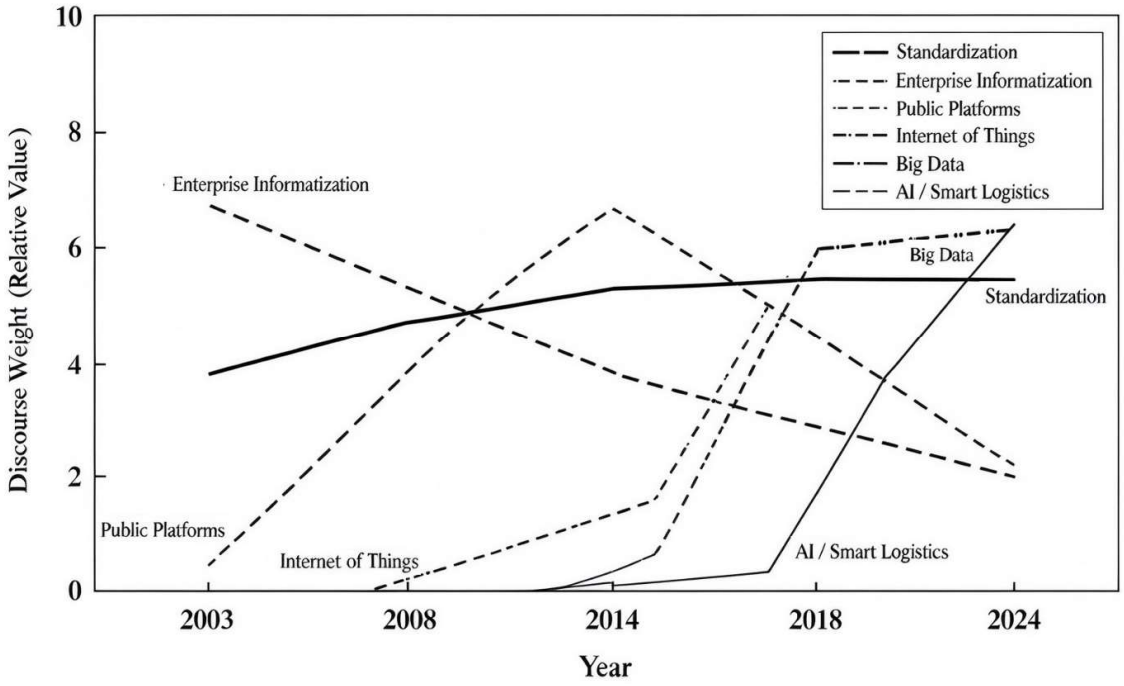


Figure 1. Migration of Discourse Focus in Logistics Informatization, 2003-2024

Note: Each curve represents the relative discourse weight of the corresponding theme in the Yearbook texts. The values are manually assigned relative intensities, intended only to illustrate the shifting trend of issue focus, and are not quantitative statistical results.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

Table 2. Annual distribution of the corpus and changes in the structure of the authors

Dimension	Phase I (2003 - 2008)	Phase II (2009 - 2014)	Phase III (2015 - 2018)	Phase IV (2019 - 2024)
Dominant framework	Survival framework: "Without informatization, there would be no modern logistics industry"	Integration framework: "Connect or Not? Who Will Build the Platform?"	Platform-based framework: "Internet + Efficient Logistics"	Intelligent framework: "Artificial Intelligence + Modern Logistics"
Core issue	Electronicization of internal business operations, introduction of ERP/WMS, RFID	System integration, public information platform, standardization	Vehicle and cargo matching, non-vehicle carriers, supply chain collaboration	Smart logistics, online freight transportation, AI scheduling, blockchain evidence storage
Cause of problem	Low level of enterprise informatization, unsuitable software, lack of standards	Fragmented system structure, immature platform profit model	Platform credibility deficiency, insufficient interconnection and communication, high cost of implementing new technologies	Data silos, the intelligence threshold for small and medium-sized enterprises, shortcomings in data governance systems
Future expected grammar	Conditional statement: "Only... can..."	Exploratory: "How to build, who will build, how to be sustainable"	Motivational aspect: "Interconnection is the inevitable trend"	Certainty: "It has risen to the level of national decision-making"
Source of legitimacy	Enterprise efficiency tools	Industrial integration infrastructure	Platform economy reconfigures resource allocation	National competitiveness carrier / Economic circulation infrastructure

3.1. Phase I (2003 - 2008): The Initial Stage of Single Point Digitalization and the "Survival Framework"

During this period, the writing was filled with a sense of urgency. The core judgment was that the level of logistics informatization was "relatively low", and the reasons were attributed to three constraints: the level of enterprise informatization application, the quality and standard of software supply, and the lack of standards. In 2003, the opening paragraph of the text discussed that industrial enterprises "began to focus on the efficiency and effect brought by logistics", but immediately pointed out that China's information capability index ranked 51st globally, and it was "difficult to find products suitable for China's national conditions" for logistics software, and standardization "had not yet been formed"[1]. In 2004, Dai Dingyi's article listed "new technologies represented by RFID" as a hot topic, but clearly judged that "the lack of successful application cases is still the primary factor affecting the promotion of this technology", "the supply side is enthusiastic, but the demand side is cautious"[3].

From the perspective of market entities: industrial enterprises (Baosteel, Haier, Lenovo) launched ERP and WMS to achieve integrated production, supply and sales; commercial chain enterprises (Lianhua Supermarket, Xinhua Bookstore) built replenishment and category management systems; large state-owned logistics enterprises (COSCO, Sinotrans, China Storage) increased IT investment; private logistics representatives (Baogong Logistics) introduced WMS and TOM's comprehensive order management system; foreign logistics enterprises introduced mature supply chain informatization solutions. The Pearl River Delta, Yangtze River Delta, and the Bohai Rim began to build regional logistics EDI and large customs clearance platforms.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

The future expectations of this stage were conditional: "Only... can... " was a recurring grammatical structure - only when the level of enterprise informatization improves, can logistics informatization improve; only when standards are introduced, can interconnection be possible. Informatization was placed in a sequence of preconditions, and intelligence was not on the visible agenda. The core contradiction of this stage: the uneven level of enterprise informatization; the lack of domestic logistics software suitable for domestic business processes; the absence of a unified national logistics information standard, with multiple EDI standards coexisting, and the high cost of data connection between enterprises; the shortage of logistics informatization compound talents. The informatization construction aimed at reducing costs within the enterprise, the degree of information sharing among enterprises was very low, and the phenomenon of information islands was prominent. The yearbook repeatedly emphasized: without logistics informatization, there would be no modern logistics industry; the positioning of informatization was the tool and means for the transformation and upgrading of traditional logistics.

3.2. Phase II: (2009 - 2014): System Integration, Public Platform Construction and "Integration Anxiety"

Since the "Logistics Industry Adjustment and Revitalization Plan" of 2009[23], the public information platform changed from the issue of "whether to build" to "how to build, who will build it, and how to ensure its sustainability". But in the yearbook discourse, it did not simply declare the arrival of the "platform era", but continuously recorded the failures and confusions in platform construction. In 2006, the text stated straightforwardly, "Many were included in the plan and the planning, but few were truly successful"[5]; in 2009, the text further pointed out the core contradiction: "Without government participation, platform construction is difficult to start; with government participation, it will be difficult to integrate in the future"[8]. The texts from 2009 to 2010 repeatedly discussed "standardized services are the most fundamental and difficult part of integrating public information platforms", and the superficial function of the road freight platform "helping vehicles find goods and goods find vehicles" was in contrast to the true "service and responsibility interconnection"[7,8].

The enterprise end no longer satisfied with internal data collection and storage, but turned to information processing, analysis and decision-making; system integration became the focus of enterprise informatization, and a large number of enterprises carried out the integration of their original multiple heterogeneous systems. "Centralized or distributed", "standardized or personalized" were clearly expressed as "strategic issues". The SaaS model gradually replaced the early ASP, providing a low-cost informatization path for small and medium-sized logistics enterprises; the application of supply chain management (SCM) spread to heavy industry, coal, and steel industries. In the public platform field, the national transportation and logistics public information platform was initiated for construction, and the rapid implementation of electronic ports at various provincial ports was achieved; a large number of road freight information platforms emerged; the types of platforms differentiated into government supervision platforms, transportation resource release platforms, and business collaboration trading platforms. At the technical level, the concept of the Internet of Things emerged, and RFID was scaled pilot-tested in hazardous chemicals, tobacco, and warehousing fields; mobile internet, mobile positioning, and the shortcomings of high GPS costs were compensated; business intelligence (BI) began to be implemented; cloud technology gradually entered the logistics field.

The signs of "intelligence" (RFID, GPS, mobile positioning, SOA) began to appear in this stage, but they were placed within the framework of "integration", expected to solve the problem of "whether it can be connected", rather than replacing integration itself. In 2010, the text stated that "the Internet of Things" became a hot topic, but the writer judged with caution: "The

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

industry is relatively cold", the "hot spot" mainly "is still hot in the technical field"; in the texts from 2011 to 2013, the IoT was more prominently presented in the pilot implementation in hazardous chemicals, tobacco, and warehousing fields. The prominent contradiction in the industry: the division of administrative regions and blocks restricts the construction of cross-departmental public platforms; the profit model of commercial platforms is not mature, and a large number of platforms focus on construction rather than operation; the difficulty of interconnection among enterprises; funds and talents remain the main obstacles for small and medium-sized enterprises in informatization.

3.3. Phase III: (2015 - 2018): Internet + Platform Transformation and the Rise of "Platform Economy"

In 2015, the State Council issued the "Guiding Opinions on Actively Promoting the 'Internet Plus' Initiative", launching the "Internet Plus Efficient Logistics" action plan, marking that logistics informatization has entered the period of platform-based transformation driven by the Internet+[24]. 2016 was a clear turning point year. The text begins by quoting the statement of the State Council's executive meeting on "Internet Plus Logistics", and claims that "obviously, 'Internet Plus Logistics' has risen to the level of national decision-making"[15].

In terms of market structure, a large number of vehicle and cargo matching platforms have emerged; the pilot program for non-vehicle carriers (later upgraded to online freight transportation) has been initiated, and the platforms have evolved from simple information matching to integrated business platforms covering transactions, settlements, taxation, and finance. The industrial logistics informatization has developed rapidly, and manufacturing and trading enterprises have promoted data integration of upstream and downstream supply chains, moving from data-level integration to process-level collaboration. E-commerce logistics has experienced explosive growth, with JD and Cainiao promoting integrated information technology for warehouse and distribution. In terms of technology and business models, big data is widely used for route optimization and demand forecasting; cloud computing SaaS has been widely popularized; blockchain technology has entered the logistics industry for pilot projects, focusing on electronic shipping documents and supply chain evidence; intelligent equipment AGV, automated sorting, and unmanned warehouses have begun to be implemented. Logistics finance, insurance, and other value-added services have deeply integrated with information platforms.

The main contradiction in this stage: The platforms have grown wildly, with a lack of credibility and frequent problems of performance fulfillment and compensation; the interconnection of platforms is insufficient, and the platforms are mutually isolated; the digitalization shortcomings of small and medium-sized logistics enterprises are still significant; the cost of new technologies is high, and some applications remain at the concept pilot stage; data security and data ownership issues have gradually emerged. The core of this stage has shifted: Logistics informatization has shifted from mainly system software construction to dual-wheel drive of platform business model innovation and technological innovation, with platforms becoming an important carrier for reconfiguring logistics resource allocation.

3.4. Phase IV: (2019 - 2024): Deep Application of Digitalization and the "Intelligent Dominance Framework"

The policy documents such as " Outline for Building a Leading Transportation Nation"[25] and " "14th Five-Year Plan" for Modern Logistics Development '"[26] have elevated smart logistics, logistics digitization, and intelligence to the national strategic level. In 2024, the text is guided by "Artificial Intelligence + Modern Logistics", and the technical list has expanded to include large models, vehicle-road collaboration, low-altitude economy, and unmanned driving. The

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

density of policy documents has reached an unprecedented level of "Artificial Intelligence + Modern Logistics"[2].

The industrial practice presents multiple characteristics: Network freight platforms are becoming standardized, AI intelligent quotations and intelligent scheduling have become standard features; Industrial supply chain digitization is deepening, with the integration of manufacturing and logistics, and the large-scale implementation of industrial internet identification resolution, 5G, and the Internet of Things in factory logistics and warehousing; Large-scale application of intelligent equipment - unmanned warehouses, AGVs, intelligent sorting, cold storage type cold chain intelligent equipment, vehicle networking, ADAS active safety systems have been widely implemented; Blockchain is more used for electronic bills, shipping document certification, and supply chain finance; Multi-modal transport information platforms are developing, promoting "One Bill System"; SaaS services are widely empowering a large number of small and medium-sized logistics enterprises. The pandemic objectively accelerated the demand for contactless operations and visual full-chain control, forcing the logistics to upgrade to digitalization.

It is worth noting that "Intelligence" in this stage is no longer merely a technical sub-issue, but gradually gains a frameworkal status: it is used to redefine the goals of logistics informatization (from "cost reduction and efficiency improvement" to "enhancing the core competitiveness of the industry" and "improving economic operation efficiency"), reorganizes the technical spectrum (AI is placed above the Internet of Things, big data, and blockchain as the "leading technology"), and redefines the time rhythm ("acceleration", "in-depth promotion", "deep integration" become frequent modifiers). The main issues of this stage are: The intelligent application has achieved remarkable results in leading enterprises, but the threshold for intelligent transformation of small and medium-sized enterprises is still relatively high; Industry data silos have not been completely solved; Cross-industry and cross-departmental data sharing still faces institutional obstacles; The industry scenarios of new technologies such as large models in the logistics field still need to be explored; Data security, privacy protection, and data element circulation mechanisms urgently need to be improved.

However, the transition of these four stages cannot be read as a progress narrative of "problems being solved one by one". Standardization was listed as a constraint factor in 2003, remained a core obstacle of public platforms in the 2010s, and repeatedly appeared in the form of "data standards" in 2018, 2019, and 2023. Small and medium-sized enterprises' informatization was hoped for in 2007 through the SaaS/ASP model, remained a structural shortcoming of "more than 70% of small logistics enterprises have no information system support" in the 2010s, and re-entered the agenda as a policy object of "small and medium-sized enterprises digital empowerment" in the 2020s. The occurrence of the "Intelligence Shift" does not presuppose the resolution of old problems; it is more like a change in the way of problem re-assertion: those problems that cannot be broken through within the "integration" framework are re-encoded as objects waiting to be solved by "intelligent technology".

4. The Driving Mechanism of the Shift: Policy Rhythm, Technological Narrative and the Reconfiguration of the Industry Knowledge System

Based on the textual evidence from the "China Logistics Yearbook" from 2003 to 2024, this paper constructs a driving-constraint analysis framework for the evolution of logistics informatization, as shown in Figure 2, to explain why intelligence became the dominant discourse framework at a specific stage.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

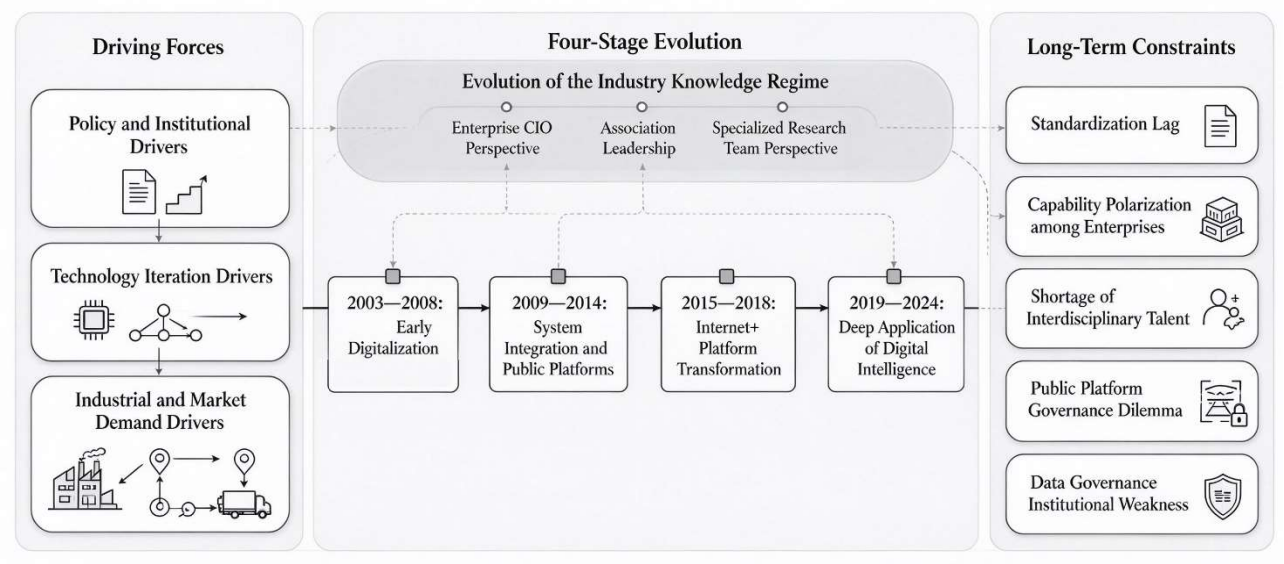


Figure 2. Driving-Constraint Analysis Framework of Logistics Informatization Evolution

Note: This framework illustrates the interaction among external driving factors, industry evolution, and long-term constraints, while the industry knowledge system plays a role as an endogenous condition.

4.1. Multiple Driving Mechanisms

4.1.1. "Compressed Supply" of Policy Timing

Unlike the gradual advancement of policy discourse during the period from 2003 to 2010, which mainly focused on "basic environment", "standards" and "public platforms", the policy output after 2016 has seen a significant increase in density, hierarchy and coverage. Documents such as "Internet +" Efficient Logistics (2015, 2016), the "14th Five-Year Plan" for Modern Logistics Development " (2022)[26], "Action Plan for Effectively Reducing Logistics Costs Across Society" (2024)[27], and “Data Elements ×” Three-Year Action Plan (2024-2026)[28] have elevated logistics digitalization/automation from a departmental issue to a cross-departmental industrial policy target. The response method of the yearbook text to this policy rhythm is synchronization: the structure of the annual articles is increasingly close to the mapping of policy documents, and the overlap between the titles and the policy keywords has significantly increased. This is not a simple " adapting to ", but a knowledge production strategy - during the period of policy density, citing policies becomes the most effective rhetorical resource for giving industry judgments authority and urgency.

4.1.2. The Generational Change of Technical Narratives and the Pre-resolution of Uncertainty

From 2003 to 2010, the annual reports focused on discussing RFID, GPS, and SOA with the issues of "high cost", "few cases", and "inconsistent standards". Since 2016, the way these technologies appeared in the texts has changed: the technical uncertainties have been resolved in advance, and the technologies are presented as "already existing conditions". In 2024, "artificial intelligence + modern logistics" is the policy action direction, rather than a proposition that needs to be argued. This rhetorical transformation mechanism is worthy of in-depth study: it is partly due to the fact that the application of logistics technology in China has indeed accumulated large-scale scenarios in areas such as e-commerce, express delivery, and automated warehousing, but it is equally important that "intelligence" as a comprehensive performance indicator has a stronger narrative closure ability than "Informatization" - it can integrate heterogeneous issues such as standardization, platform integration, empowerment of small and medium-sized enterprises, and supply chain collaboration into a future vision with a

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

sense of direction, thereby alleviating the discourse fatigue accumulated in the "integration" stage.

4.1.3. The Underlying Driving Force of Industrial Market Demand

Market demand is the underlying driving force. Firstly, manufacturing enterprises and trading companies reduce the total logistics cost and enhance the response speed of the supply chain, which forces the construction of internal logistics and upstream-downstream collaboration informatization; secondly, the road freight market has extremely dispersed resources, giving rise to platform demands such as vehicle-cargo matching and online freight transportation; thirdly, the explosive growth of e-commerce has led to the integration of warehousing and distribution and the informatization of end delivery; fourthly, special logistics such as hazardous materials, cold chain, and pharmaceuticals, due to safety supervision and quality control requirements, have a rigid demand for full-process traceability informatization; fifthly, the development of supply chain finance requires reliable and traceable logistics business data, which drives the demand for logistics data certification and digital supervision.

4.2. Endogenous Factors: Evolution of the Industry Knowledge System

The shift of the author of the yearbook columns from enterprise executives (Tang You San) to association leaders (Dai Dingyi) and then to the specialized research department of the association (Yan Qinghua's team) was accompanied by changes in the writing genre: in the early articles, the anchor points were more often "my on-site judgment and enterprise cases" ("As someone who has been working in the field of logistics informatization for sixty-seven years..."), while in the later articles, the reliance on industry survey data, policy documents, and case collections became increasingly prominent. This change enhanced the systematicness and coverage of the text, but also altered the production mode of "future expectations": in the early texts, the expectations carried the risks and falsifiability of personal judgment ("In 2004... a batch of excellent cases will emerge"), while in the later texts, the expectations were more deeply embedded in the circular argument of policy-cases-data, and the tension between forward-looking statements and current descriptions weakened. In other words, the "intelligent turn" of the yearbook discourse is not only a change in content, but also a change in the discourse production system: it has shifted from a relatively close-knit knowledge practice based on enterprise micro-experience to a more closely coupled expression system that is tightly coupled with policy rhythms and industry governance structures.

4.3. Long-term Structural Constraints

By combining the annual texts of the yearbook, five types of constraints have persisted throughout all cycles and will not be automatically eliminated by intelligence:

(1) Institutional lag in the standard system: From the absence of early document standards to the lack of uniformity in data interfaces, coding, and cross-platform interoperability standards. Intelligence has higher requirements for data quality and interoperability, and the gap in standards continues to be reproduced in new forms.

(2) Polarization of market entities: Headline enterprises have abundant funds and talents, and the implementation effect of intelligence is outstanding; a large number of small and medium-sized logistics enterprises have low profit margins and weak IT investment capabilities. Even with the lowering of thresholds by the SaaS model, there are still issues such as insufficient scene adaptation and data security concerns, and they continue to be in a subordinate position as "empowered entities" in discourse.

(3) Insufficient supply of multi-skilled talents: There is a long-term shortage of talents who can simultaneously master logistics business and information technology, which hinders the implementation of the system and the landing of new technologies in scenarios.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

(4) Governance difficulties of public platforms: Government-led platforms tend to focus more on construction than operation; market-oriented platforms tend to pursue short-term profits. The balance between public attributes and commercial profitability has long been difficult to achieve.

(5) Shortcomings in data governance system: The data silos have transformed from technical issues to institutional problems across departments and entities. Data ownership, open boundaries, security and privacy, as well as circulation mechanisms have become new bottlenecks for intelligence.

5. The Degree of Completion of the Intelligent Transformation: The Rise of Infrastructure Narratives and the Persistence of Structural Continuity

5.1. The "Lagging of the System" has not been Alleviated by Intelligence; Instead, it has been Reproduced in New Forms.

In 2003, the text listed "the lack of logistics standards" as one of the three major issues; in the 2020s, the issue of standards transformed into "inconsistent standards", "incompatible interfaces", and "absence of data standards", persisting in refined forms. The requirements for standardization imposed by intelligent technologies are not lower, but higher. The yearbook often narrates smart logistics cases in terms of "closed loops" of individual enterprises or platforms, suggesting that cross-system standardization interconnection has not yet been completed; at the same time, it repeatedly mentions issues such as "data islands" and "inconsistent data standards", indicating that the intelligent narrative presents standardization as a "progressing" accompaniment process rather than a necessary prerequisite for resolution. This enables the standardization gap to persist under the "intelligentization" title, without negating the transformation itself.

5.2. Small and Medium-sized Enterprises have been "Re-problematized", but the Mechanism of Marginalization Remains Unchanged.

In 2007, the text placed great hopes on the SaaS/ASP model, viewing it as an "effective path for the informatization of small and medium-sized enterprises' logistics". Decades later, in the policy texts and yearbooks of the 2020s, small and medium-sized enterprises once again became the objects of "digital empowerment", but the way they were described had changed: in the early stage, the informatization of small and medium-sized enterprises was a market supply issue (lack of cheap and applicable software and service models); in the intelligent stage, it was increasingly described as a capacity-building issue and a policy support target. This re-problematization has its rationality, but it may obscure a more fundamental continuity: the informatization predicament of small and medium-sized logistics enterprises stems from their subordinate position in the supply chain power structure and their extremely low profit margins, making any technological upgrade that requires upfront investment - whether called informatization or intelligence - face an asymmetry in the attribution of returns. The yearbook texts have occupied the majority of space with the intelligent cases of large enterprises (COSCO, Sinotrans, JD, SF Express, Chuanfa, etc.), while the "empowerment" of small and medium-sized enterprises is indirectly presented through policy language and platform entry. The production of the intelligent discourse itself is participating in the reproduction of a visible hierarchy: who is presented as an intelligent actor, who is presented as an empowered object.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

5.3. "Data Islands" have Evolved from a Technical Issue to a Systemic One, and the Intelligent Narrative Tends to Respond to Systemic Issues with Technical Solutions.

The texts from 2004 to 2005 attributed information islands to system heterogeneity and standard deficiencies, expecting to solve them through technical architectures and standards such as SOA and ebXML. As early as the 2004 texts, the island problem was clearly stated as "the fragmentation of the management system" issue, pointing out that "the fragmentation of the management system is the main factor affecting the unified logistics market and also the main obstacle to establishing a public information platform and unified logistics information standards"; in the platformization stage of the 2010s, this judgment was repeatedly confirmed in platform construction practices. In the 2020s, blockchain, data hubs, etc. were introduced as "bridging the islands" solutions, but the successful cases of department data openness, government regulatory information sharing, and cross-platform interoperability in the yearbook texts still took the form of local pilot projects and "cooperative alliances". Technology can reduce the cost of connectivity, but it cannot solve the institutional problem of the dispersion of information management rights. The more an intelligent system emphasizes "data-driven" and "full-chain visibility", the more it exposes that institutional coordination is the bottleneck; yet it attributes this bottleneck to being a process issue that can be solved by technology, rather than a structural problem that requires political-administrative breakthroughs.

6. Conclusion

Returning to the comparison at the beginning: In 2003, it was said, "Without logistics informatization, there would be no modern logistics industry," and in 2024, it was said, "Artificial intelligence + modern logistics." In fact, they are both following the same approach - they all describe a certain level of technology as the prerequisite for the survival of the industry. This approach is more capable of explaining the issue than the technical content itself. The legitimacy of logistics informatization is not merely because the tools are more user-friendly, but rather a judgment about the conditions for the future of the industry: If this progress is not made, the logistics industry will not be able to become what it should be.

In the yearbook text, this judgment expands from "enterprise efficiency" to "industry integration," and then to "economic circulation infrastructure." The essence of the intelligent transformation is that the scale of this judgment has changed, and it is not just about technological upgrading. After logistics is described as the "veins" of the real economy, intelligence is no longer just an industry issue; it also concerns efficiency, competitiveness, economic security, and smooth circulation. This makes the intelligent discourse very persuasive, but it also makes it bear a task that it cannot fulfill itself: digesting the lag in institutional coordination through technological narratives.

The issues of standardization being delayed, small and medium-sized enterprises still being marginalized, and data silos behind the decentralization of management rights - these themes have repeatedly appeared across twenty years in the yearbook. They indicate that whether the intelligent transformation is "completed" cannot be judged by how quickly the technology list is updated. If the intelligent discourse regards itself as the solution to these old problems, but in the annual review, it says "not yet solved" as a processual and being absorbed by technology state, then the problem will be constantly identified, re-stated, but never enter the agenda of institutional decision-making.

This judgment has direct implications for understanding the future direction of China's logistics informatization. The next stage agenda emerging in the yearbook text - data element marketization, open and interconnected logistics data, and the deep integration of artificial

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

intelligence and supply chains - all place cross-organizational and cross-departmental data governance at the center. These issues are technically solvable, but politically highly political. If the intelligent narrative continues to replace the selection of governance structure with the richness of technological solutions, then "the transformation" will occur more at the discourse level than at the structural level of industry operation. For researchers focusing on China's logistics transformation, the continuous text of the yearbook column over twenty years provides precisely the empirical basis for identifying the tension between this discourse change and structural continuity; for industry actors, acknowledging the existence of this tension might be the first step towards transforming "intelligentization" from a condition statement into a testable institutional practice.

This study's limitation lies in: conducting qualitative and discourse analysis based on secondary industry texts from the yearbook, lacking large-scale quantitative statistical verification; future research can combine LDA topic models to conduct topic mining on the yearbook texts, or combine enterprise micro-research to conduct quantitative empirical studies on the logistics intelligent transformation, to further test the proposition of "discourse change and structural continuity tension" proposed in this paper.

References

[1] Tang, Y. S. (2004). Status of China's logistics informatization in 2003 and development trends in 2004. In China Logistics Yearbook (pp. 489–491). China Society Press.

[2] Yan, Y. Q., Wang, P. P., & Fan, W. (2025). Digitalization of China's logistics in 2024. In China Logistics Yearbook (pp. 529–538). China Fortune Press.

[3] Dai, D. Y. (2005). Review and prospect of China's logistics informatization. In China Logistics Yearbook (pp. 556–559). China Materials Press.

[4] Dai, D. Y. (2006). Construction of China's logistics informatization in 2005. In China Logistics Yearbook (pp. 609–612). China Economic Publishing House.

[5] Wu, Z. H. (2007). Construction of China's logistics informatization in 2006. In China Logistics Yearbook (pp. 438–442). China Materials Press.

[6] Jiang, Z. Q. (2008). Construction of China's logistics informatization in 2007. In China Logistics Yearbook (pp. 335–340). China Materials Press.

[7] China Federation of Logistics & Purchasing. (2009). New trends in the development of logistics and purchasing informatization. In China Logistics Yearbook (pp. 405–409). China Materials Press.

[8] Yan, Q. H. (2010). Construction of China's logistics informatization in 2009. In China Logistics Yearbook (pp. 531–536). China Materials Press.

[9] Yan, Q. H. (2011). Construction of China's logistics informatization in 2010. In China Logistics Yearbook (pp. 422–427). China Fortune Press.

[10] Yan, Q. H. (2012). Construction of China's logistics informatization in 2011. In China Logistics Yearbook (pp. 458–464). China Fortune Press.

[11] Yan, Q. H. (2013). Construction of China's logistics informatization in 2012. In China Logistics Yearbook (pp. 454–459). China Fortune Press.

[12] Liu, Y. H. (2014). China's logistics technology in 2013. In China Logistics Yearbook (pp. 483–491). China Fortune Press.

[13] Yan, Q. H. (2015). Construction of China's logistics informatization in 2014. In China Logistics Yearbook (pp. 459–469). China Fortune Press.

[14] Yan, Q. H. (2016). Construction of China's logistics informatization in 2015. In China Logistics Yearbook (pp. 500–512). China Fortune Press.

[15] Yan, Q. H. (2017). Construction of China's logistics informatization in 2016. In China Logistics Yearbook (pp. 477–482). China Fortune Press.

ISSN: 2692-7608 DOI: 10.6981/FEM.202611_7(11).0015

[16] Yan, Q. H. (2018). Construction of China's logistics informatization in 2017. In China Logistics Yearbook (pp. 463–474). China Fortune Press.

[17] Yan, Q. H. (2019). Construction of China's logistics informatization in 2018. In China Logistics Yearbook (pp. 398–409). China Fortune Press.

[18] Yan, Q. H., & Jin, T. Y. (2020). Construction of China's logistics informatization in 2019. In China Logistics Yearbook (pp. 466–474). China Fortune Press.

[19] Yan, Q. H., & Jin, T. Y. (2021). Construction of China's logistics informatization in 2020. In China Logistics Yearbook (pp. 422–428). China Fortune Press.

[20] Yan, Q. H., & Wang, P. P. (2022). Construction of China's logistics informatization in 2021. In China Logistics Yearbook (pp. 522–530). China Fortune Press.

[21] Yan, Q. H., & Wang, P. P. (2023). Construction of China's logistics informatization in 2022. In China Logistics Yearbook (pp. 395–401). China Fortune Press.

[22] Yan, Q. H., & Wang, P. P. (2024). Construction of China's logistics informatization in 2023. In China Logistics Yearbook (pp. 499–504). China Fortune Press.

[23] State Council of the People's Republic of China. (2009, March 13). Notice of the State Council on Issuing the Logistics Industry Adjustment and Revitalization Plan (Guofa [2009] No. 8). https://www.gov.cn/zwgk/2009-03/13/content_1259194.htm

[24] State Council of the People's Republic of China. (2015, July 4). Guiding Opinions of the State Council on Actively Promoting the "Internet Plus" Action (Guofa [2015] No. 40). https://www.gov.cn/zhengce/content/2015-07/04/content_10002.htm

[25] Central Committee of the Communist Party of China & State Council of the People's Republic of China. (2019, September 19). Outline for Building a Leading Transportation Nation. https://www.gov.cn/zhengce/2019-09/19/content_5431432.htm

[26] General Office of the State Council of the People's Republic of China. (2022, December 15). Notice of the General Office of the State Council on Issuing the "14th Five-Year Plan" for Modern Logistics Development (Guobanfa [2022] No. 17). https://www.gov.cn/zhengce/content/2022-12/15/content_5732092.htm

[27] General Office of the Central Committee of the Communist Party of China & General Office of the State Council of the People's Republic of China. (2024, November 27). Action Plan for Effectively Reducing Logistics Costs Across Society. https://www.gov.cn/zhengce/202411/content_6989622.htm

[28] National Data Administration et al. (2024, January 5). Notice on Issuing the “Data Elements ×” Three-Year Action Plan (2024–2026) (Guoshu Zhengce [2023] No. 11). https://www.cac.gov.cn/2024-01/05/c_1706119078060945.htm