Industrial Engineering and Innovation Management (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/ieim.2024.070420
ISSN 2522-6924 Vol. 7 Num. 4

Transforming Supply Chain Procurement: Digital Innovation and Efficiency Enhancement at CSIMC

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Keywords: Digital Supply Chain Transformation, Procurement Efficiency, Cost Optimization, Data Analytics in Procurement, Intelligent Procurement Tools

Abstract: In the fast-paced pharmaceutical sector, CNSIM, a key subsidiary of CSIMC, confronts challenges like complex procurement demands, inefficient bidding, and cost control. To tackle these, CNSIM implemented a digital supply chain procurement solution from Beijing Turelore Information Technology Co., Ltd. This solution, which integrates the procurement process on a digital platform for full online management, significantly boosts communication and execution efficiency in the procurement process and cuts costs. It also strengthens procurement oversight and risk mitigation through smart bidding tools and data integration across systems. CNSIM's case offers valuable insights into digital supply chain management, showing how tech innovation can reduce costs and enhance efficiency, thus bolstering the company's competitive edge. This approach has optimized CNSIM's supply chain and set a precedent for industry peers.

1. Introduction

In the pharmaceutical industry, efficient supply chain procurement management is essential for timely drug and medical equipment delivery, cost control, and high service quality. CNSIM, a leading company, faced challenges in streamlining cross-departmental communication, enhancing process efficiency, and mastering cost control [1]. To address these, CNSIM adopted Beijing Turelore's advanced digital supply chain procurement solution. This solution has transformed the procurement process by digitizing it, thereby improving communication, reducing costs, and strengthening procurement oversight and risk management through intelligent tools and data-driven analysis. This pioneering approach has not only brought substantial benefits to CNSIM but also set a new standard for supply chain procurement management within the pharmaceutical sector.

2. Challenges in cnsim's procurement supply chain management

2.1 Complexity of Bidding Agency Services

As Sinopharm Group's bidding agent, CNSIM manages bidding services for over 80 subsidiaries across pharmaceutical R&D, manufacturing, and distribution sectors. This diversity creates complex bidding processes and communication challenges, impacting overall efficiency[2].

2.2 Operational Inefficiencies

CNSIM's reliance on manual offline operations in procurement and bidding processes results in inefficient workflows [2] [3]. Dispersed procurement data across various systems hinders process transparency and traceability [4].

2.3 Cost Management and Centralization Challenges

Industry competition pressures necessitate expanded centralized procurement to reduce costs [3]. However, diverse procurement demands and varying cycles make traditional centralization methods ineffective [5].

2.4 Supplier Management Issues

While strict supplier qualification reviews and monitoring are essential, traditional management methods lack efficiency in information integration and risk management capabilities [6].

2.5 Compliance Requirements

Sinopharm Group's stringent procurement supervision demands comprehensive compliance throughout the entire process, from supplier selection to storage, requiring robust oversight mechanisms [7].

2.6 Data Integration Problems

The disconnect between front-end and back-end business data necessitates frequent inter-departmental communication, compromising decision-making efficiency and supply chain collaboration [8].

3. Application and digital practice of scm theory

3.1 Application of Supply Chain Management (SCM) Theory

Beijing Turelore's SCM-based digital platform solution enhances CNSIM's operations through improved process integration and external cooperation [9]. The implementation has demonstrated remarkable results, with information transfer speed increasing by 50%, inventory turnover improving by 20%, and customer satisfaction rising by 35%. The digital procurement SaaS platform enables "zero meeting, zero running" operations through digital bidding process management, online transaction portals, and integrated management platforms, all secured by shared CA certificates [10].

The solution strengthens CNSIM's operations by optimizing inventory management to reduce costs [11] [12], providing data analysis for strategic procurement decisions, and ensuring compliance through comprehensive supervision systems. Table 1 details the correspondence between CNSIM's

challenges and Turelore's solutions[4].

Table 1: CNSIM Procurement Supply Chain Management Challenges and Beijing Turelore's Solutions Correspondence Table.

Challenge	Beijing Turelore's solution	Description of the Solution
Complexity in Bidding Agency Services	Digital Procurement Platform	Implement a fully electronic tendering and procurement service process, simplifying the bidding process, reducing cross-team communication costs, and enhancing bidding efficiency.
Low Efficiency in Procurement Links	Single Platform for Procurement Operations	By consolidating all roles involved in the procurement process on a single platform, transparency and seamless process integration are achieved, thereby improving procurement efficiency.
Cost Pressure and Centralized Procurement Needs	Expansion of Centralized Procurement Scale and Intelligent Cost Allocation System	Utilize the platform's data analysis capabilities to intelligently allocate procurement costs, reduce unit purchase prices, achieve economies of scale, and minimize management costs.
Challenges in Supplier Management	Full Lifecycle Management of Suppliers	The platform provides end-to-end lifecycle management, encompassing qualification reviews, categorization, assessment, cooperation, evaluation, and grading, thereby optimizing the supplier structure.
Requirements for Procurement Supervision and Management [5]	Electronic Procurement Platform for Supervision	The platform enables procurement supervision, ensuring full-process compliance, providing real-time monitoring, and risk alerts, enhancing transparency and compliance in procurement.
Disconnected Front-end and Back-end Business Data [6]	Platform Integration with OA, Financial Systems, etc.	The platform integrates with internal systems such as OA and financial systems, breaking down information silos, achieving data sharing, and facilitating collaborative business operations, thereby improving decision-making precision and efficiency [9].

3.2 Beijing Turelore Digital Supply Chain Procurement Solution

3.2.1 Construction of Procurement Digital Platform

Beijing Turelore has built a procurement digital platform for CNSIM that achieves full-process electronic tendering and procurement services. The platform integrates modules such as unified identity authentication, procurement management, and execution, enhancing the communication and execution efficiency of cross-departmental procurement processes and reducing procurement costs.

3.2.2 Digital Platform Implementation

Turelore's platform integrates unified authentication, procurement management, and execution modules, streamlining cross-departmental processes and reducing costs.

3.2.3 Process Optimization

The solution enables transparent process integration through digital transformation, enhancing

both efficiency and risk prevention through intelligent tools.

3.2.4 Centralized Procurement

The platform expands centralized procurement capabilities with intelligent cost allocation, effectively reducing unit prices and management costs.

3.2.5 Supplier Management

Implementation of comprehensive supplier lifecycle management, from selection to exit, optimizes supplier quality and management efficiency.

3.2.6 Intelligent Bidding

AI-powered tools automate bidding document analysis and scoring, improving process accuracy and efficiency.

3.2.7 Data Analytics

The platform centralizes procurement data management and provides intelligent analysis capabilities, supporting strategic decision-making.

Table 2: CNSIM Procurement Process Transformation with Beijing Turelore's solution.

Procurement Phase	Before Implementation	After Implementation
Demand Submission	Demand department submits demands manually	Demand department submits demands online
Requirement Collection	Procurement department manually collects demands	System automatically collects and integrates demands
Inter-departmental Communication	Cross-departmental communication and coordination	Online cross-departmental communication and approval
Bidding Process	Offline bidding process	Online bidding and electronic procurement
Supplier Qualification Review	Manual review of supplier qualifications	System automatically reviews supplier qualifications
Bid Opening and Evaluation	Manual bid opening and evaluation	Intelligent bid opening and evaluation tools for automatic scoring
Contract Signing	Paper-based contract signing	Electronic contract signing and management
Order Processing	Manual order processing	Systematic automatic order processing
Inventory Management and Material Tracking	Manual inventory management and material tracking	Integrated inventory management and material tracking
Monitoring and Auditing	Manual monitoring and auditing	Intelligent monitoring and early warning system for risk prevention

Through Turelore's solution, CNSIM has achieved significant improvements in procurement efficiency, transparency, and cost reduction, establishing new standards for pharmaceutical industry supply chain management [13]. Table 2 illustrates the procurement process transformation before and after implementation.

3.3 Focused Application of SCOR Model in Procurement (Source) for Digital Innovation and Efficiency

This section provides an in-depth analysis of the solution implemented by Beijing Turelore Information Technology Co., Ltd. for China National Scientific Instruments and Materials Co., Ltd., within the context of the Supply Chain Operations Reference (SCOR) model, with a particular focus on the procurement (Source) phase. The study emphasizes the role of digital innovation in significantly enhancing the efficiency and effectiveness of CNSIM's procurement processes.

3.3.1 Digital Procurement Platform.

Beijing Turelore has crafted a comprehensive digital procurement platform for China National Scientific Instruments and Materials Co., Ltd., integrating various functional modules as illustrated in Figure 1. Constructed on a PaaS architecture, this platform enables the seamless integration of services such as ERP, CRMTMS, and other business tools, demonstrating Beijing Turelore's capability to meet CNSIM's specific requirements.

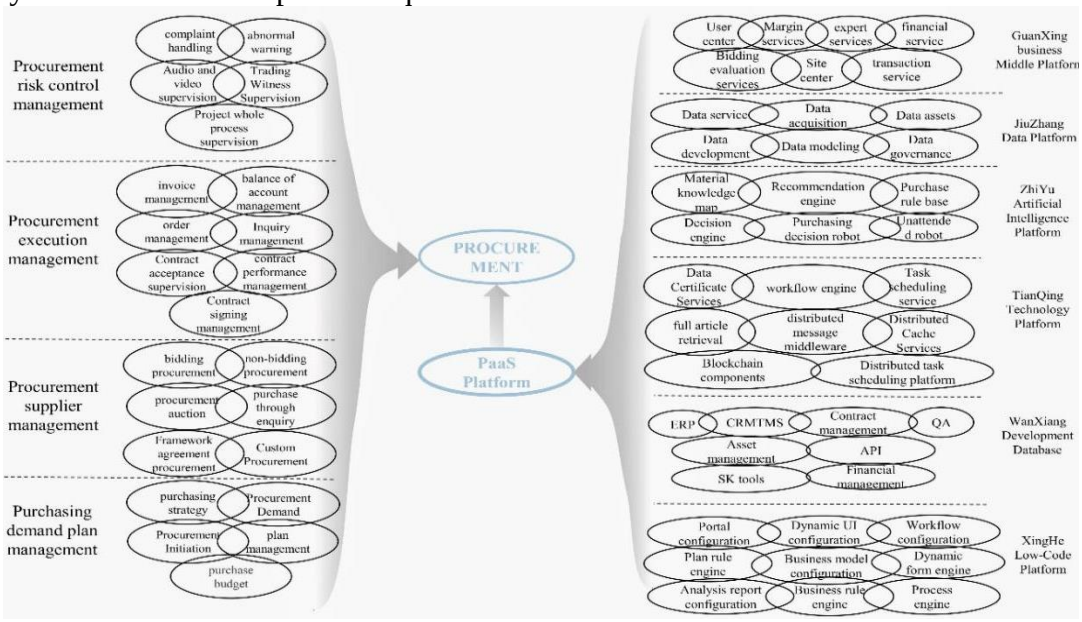

Figure 1: The Architecture of Digital Procurement Platform by Beijing Turelore

3.3.2 Enhanced Demand Plan Management.

Turelore's analytics-driven demand planning module enables precise procurement forecasting, aligning strategies with market demands.

3.3.3 Procurement Execution Management.

The platform streamlines bidding, ordering, and contract processes through automation and electronic documentation, improving operational efficiency.

3.3.4 Supplier Management

A comprehensive supplier module handles qualification, evaluation, and relationship management, fostering strong supply partnerships [14].

3.3.5 Procurement Risk Control Management

Integrated risk assessment tools and compliance checks ensure proper risk mitigation and policy adherence in procurement processes.

3.3.6 Data Services and Intelligent Analysis

Advanced analytics capabilities provide procurement insights through data modelling [15] and decision support systems, enabling informed decision-making.

3.3.7 System Integration and Automation.

Integration with ERP and CRMTMS systems ensures data consistency and process automation across the supply chain.

In conclusion, Turelore's solution for CNSIM demonstrates effective SCOR model application in procurement, achieving significant efficiency and cost improvements through digital innovation.

3.4 Industry Solution Maturity and Applicability

3.4.1 Manufacturing Industry

FAW Group's implementation demonstrates Turelore's system effectiveness in automotive manufacturing, achieving reduced procurement costs and improved supply chain transparency through automated bidding processes.

3.4.2 Energy Industry

State Grid's adoption shows the system's capability in managing large-scale energy project bidding, optimizing resource allocation and project execution transparency.

3.4.3 Real Estate Industry

Vanke Group's implementation highlights the system's success in real estate procurement, improving material procurement efficiency and risk management while reducing project timelines.

3.4.4 Information Technology Industry

Huawei's application showcases the system's adaptability in managing dynamic IT equipment procurement, ensuring supply chain efficiency and stability.

Turelore's solution has proven successful across multiple sectors through partnerships with industry leaders. These implementations demonstrate the platform's effectiveness in enhancing bidding efficiency, reducing costs, and improving supply chain transparency, establishing it as a benchmark for digital supply chain management.

3.5 Technological Adaptability and Innovation Integration

3.5.1 Multi-tiered Tenant Capability.

Turelore's cloud-native, microservices architecture supports complex enterprise needs, balancing centralized governance with local autonomy. The hierarchical structure ensures data isolation and secure access control across organizations.

3.5.2 Industry Chain Resource Aggregation.

The B-PaaS cloud-private platform integrates various business modules and external systems, enabling joint procurement strategies and creating an interconnected business network for enhanced supply chain efficiency.

3.5.3 Intelligent Upgrade Scenarios.

The solution implements advanced analytics and AI for intelligent procurement, featuring automated bidding evaluation, material standardization, and compliance monitoring. Machine learning and natural language processing capabilities enhance decision-making precision and operational efficiency.

3.5.4 Large Model Algorithm Capability.

Advanced AI algorithms, including naming entity recognition and semantic recognition, power industry-specific models. The resulting knowledge graph supports intelligent procurement decisions, supplier recommendations, and risk management.

Turelore's technological evolution demonstrates leadership in digital supply chain transformation through cloud-native technologies, microservices, and AI integration, meeting modern enterprises' dynamic needs.

4. Value realization

CNSIM has achieved significant cost reduction and efficiency enhancement and optimized the procurement process through the digital supply chain procurement solution provided by Beijing Turelore Information Technology Co., Ltd. This solution not only improves procurement efficiency but also reduces costs through technological innovation, providing a new practical case for supply chain procurement management in the pharmaceutical industry.

4.1 Cost Reduction and Efficiency Enhancement

CNSIM's implementation of Turelore's solution led to significant financial improvements, with net profit increasing 99.4% to 116.8% (690-750 million yuan), and attributable net profit rising 103.4% to 122.1% (660-720 million yuan). The platform achieved 45% higher procurement efficiency and 60% lower error rates through process automation and standardization.

4.2 Procurement Efficiency Improvement

Beijing Turelore’s procurement digital platform achieves full-process electronic management of procurement needs and types, enhancing cross-departmental communication and execution efficiency. Through this platform, CNSIM's centralized procurement scale has been expanded, significantly reducing procurement unit prices and management costs.

4.3 Supplier Management Optimization

The Beijing Turelore’s platform implements whole-life-cycle fine management of suppliers, helping CNSIM screen and match the best suppliers. This includes full-process management from entry to exit, enhancing the quality and efficiency of supplier management.

4.4 Strengthening of Procurement Supervision

Beijing Turelore’s electronic procurement platform achieves procurement supervision, enhancing monitoring, early warning, and risk prevention capabilities. The implementation of this platform ensures the compliance of the entire procurement process, improving the transparency and effectiveness of procurement supervision.

4.5 Cross-system Data Linkage

Beijing Turelore’s platform is connected with OA, financial, and other systems, breaking down data information barriers between departments and systems, forming a common, shared, and collaborative business situation around procurement business, significantly improving the accuracy and efficiency of work.

4.6 Data Analysis and Decision Support

Centralized management of procurement data provides real-time analysis and strategic decision suppor.

4.7 Lean Supply Chain Management and Beijing Turelore Solution Correlation

The digital transformation has delivered impressive results with a 30% reduction in inventory costs, 50% reduction in order fulfillment time, 45% improvement in procurement efficiency, and 60% reduction in error rates. These improvements demonstrate how technological innovation can enhance supply chain performance and competitive advantage in the pharmaceutical sector.

5. Risk analysis and challenge

5.1 Risk Analysis

5.1.1 Technological Iteration and Update Speed.

Beijing Turelore Information Technology Co., Ltd. is confronted with the imperative of maintaining a rapid pace of technological advancement in the domain of procurement bidding. The integration of cutting-edge technologies such as Artificial Intelligence (AI) and Machine Learning into the bidding process is becoming increasingly essential. Continuous investment in research and development is crucial to preserve the competitiveness of the company's offerings. Lagging in the adoption of these technologies may result in the erosion of market share and loss of clientele.

5.2 Risk Analysis

5.2.1 Technological Iteration

Turelore faces the challenge of maintaining rapid technological advancement in procurement bidding, particularly in AI and Machine Learning integration. Continuous R&D investment is crucial to maintain market competitiveness.

5.2.2 Security and Data Protection

Platform security against cyber threats and data breaches remains critical. Strong technical defenses and strategic management are essential to protect sensitive information.

5.2.3 Compliance Risk

Adherence to regulations and industry standards is vital. Regular assessments and proactive risk management ensure legal and ethical conduct.

5.3 Challenge Analysis

5.3.1 Technology Innovation

Turelore's "CHN ENERGY e-purchase Intelligent Unmanned Review System" exemplifies technological advancement, achieving 97% accuracy in procurement review automation through AI implementation.

5.3.2 Market Competition

Digital transformation acceleration requires continuous innovation in products and services to maintain competitive advantage.

5.3.3 Customer Demands

Agile response to evolving market needs through tailored solutions and enhanced customer experience is essential.

5.3.4 System Integration

Internal system integration, particularly in ERP and BPM, remains crucial for operational efficiency. The intelligent review system demonstrates successful integration capabilities.

6. Conclusion

As digital transformation progresses, CNSIM has notably advanced in supply chain procurement with Beijing Turelore's technical backing, particularly in electronic bidding and intelligent management systems. CNSIM's digital initiatives streamline and intelligently manage the bidding process through an electronic platform, ensuring transparent and centralized procurement. This enhances efficiency, standardizes operations, strengthens cost control, and minimizes risks, achieving digital procurement and an agile smart supply chain. Intelligent management at CNSIM ensures reliable data and digital support, bolstering the intelligent development of bidding and procurement. The use of intelligent quality checks and document management systems has boosted efficiency, reduced disputes, and improved customer satisfaction. Moving forward, CNSIM plans to deepen its partnership with Beijing Turelore, leveraging digital technology across the procurement supply chain. Through innovation and service optimization, CNSIM aims to enhance procurement efficiency and supply chain management, setting a benchmark for industry digital transformation.

Acknowledgment

The project 'GDZLGL2429' is supported by the Guangdong Province Higher Education Teaching Management Society's Private College Teaching Quality Management Special Committee in 2024.

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