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Study on Digital Transformation Strategies for Corporate Procurement Management

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Abstract: With the acceleration of the global digital wave, enterprise procurement management is facing multiple challenges such as cost pressure, supply chain collaboration demand, and insufficient information ability. Based on dynamic capability theory, resource-based view, and value chain theory, this paper constructs a four-level research framework of "driving factors-transformation paths-strategic actions-performance evaluation". Firstly, through literature analysis and case review, it summarizes the internal and external driving factors such as external market competition pressure, supply chain coordination demand, policy and regulatory environment, as well as enterprise information foundation, organizational culture, and talent reserve, and analyzes their mechanism of action on procurement digital transformation. Secondly, the procurement digital transformation path is divided into two types: gradual upgrading and leap-forward reconstruction, and the strategic and tactical level strategies, such as top-level design, data governance, process remodeling, supplier collaboration platform construction, and intelligent decision support, are proposed. Thirdly, the implementation guarantee mechanism was designed from the four aspects of organization management, technology platform, talent culture, and risk control. Finally, the performance evaluation index system covering cost, cycle, quality, risk, and digital maturity was constructed, and the evaluation method and continuous improvement mechanism based on balanced scorecard and ROI/TCO analysis were proposed. The results show that the systematic strategy design and multi-dimensional guarantee can effectively improve the procurement efficiency of enterprises, reduce operating costs, enhance supply chain resilience, and provide theoretical and practical guidance for enterprises to achieve sustainable competitive advantage.

Keywords: Procurement management; Digital transformation; Dynamic capability; Transformation pathways; Performance evaluation

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1. Introduction

Driven by the new generation of information technologies such as big data, cloud computing, and artificial intelligence, enterprise procurement management is evolving from the traditional manual approval and information island mode to the direction of end-to-end transparency and intelligence. Facing the increasingly

fierce market competition, complex and variable supply chain environment, and strict compliance requirements, the informatization level of most enterprises in our country is still in the initial stage, and problems such as process fragmentation, data lag, and insufficient risk early warning need to be solved. Based on dynamic capability theory, resource-based view, and value chain theory, this paper aims to construct a four-level framework of "driving factors-transformation path-strategic measures-performance evaluation", systematically analyze the influence mechanism of external market pressure and internal capability conditions on procurement digital transformation, and put forward operational paths and strategies. It provides theoretical and practical guidance for enterprises to improve procurement efficiency, optimize cost structure, and enhance supply chain resilience [1].

2. Literature review

2.1. Evolution of procurement management theory

Procurement management, a core function within corporate supply chains, has seen its theoretical focus evolve from a "transaction cost perspective" to a "supply chain collaboration perspective."

(1) Traditional procurement management

From the 1970s to the 1980s, scholars approached procurement management through the lens of transaction cost economics, emphasizing centralized purchasing and economies of scale to reduce transaction costs and gain bargaining power. Williamson's transaction cost theory suggests firms should balance internalization and outsourcing to minimize costs from information asymmetry, incomplete contracts, and opportunistic behavior. Traditional procurement thus focused on supplier selection, contract negotiation, and standardized processes, prioritizing cost control and risk mitigation.

(2) Modern supply chain procurement management

Entering the 21st century, the rise of supply chain management shifted focus toward overall supply chain performance and collaboration. Christopher's theories of agile and resilient supply chains highlighted the need for procurement to align with production, logistics, and sales to enhance responsiveness and risk resistance. This era introduced "strategic sourcing," emphasizing alignment with corporate goals through supplier relationship management (SRM), joint innovation, and risk-sharing mechanisms to build stable, long-term supplier networks.

(3) Procurement innovation in the digital era

In recent years, digital technologies have driven profound changes in procurement management. Leveraging ERP systems, e-procurement platforms, e-tendering, and supplier collaboration tools, scholars have explored pathways and value-creation mechanisms for "digital procurement." Gunasekaran *et al.* argue that digital procurement goes beyond process automation, enabling data-driven decision-making and dynamic capability enhancement [2]. Its core lies in achieving end-to-end transparency, visibility, and intelligence, encompassing real-time demand forecasting, smart negotiations, risk alerts, and performance monitoring. Overall, procurement management theory has progressed from singular cost control to supply chain collaboration and now toward digital intelligence. Building on this, this study integrates dynamic capability theory and resource-based view to explore procurement management strategies in the context of digital transformation.

2.2. Research on digital transformation

In recent years, digital transformation has become a key measure for enterprises to cope with changes in the external environment and improve internal operational efficiency. Digital transformation is not only a simple

information upgrading, but also a deep reshaping of the business process, organizational structure, and business model of enterprises supported by the new generation of information technologies such as big data, cloud computing, Internet of things, and artificial intelligence [2]. Its core features lie in end-to-end process reengineering, data-driven decision making, and business model innovation. The research shows that the driving factors of digital transformation include not only external factors such as market competition pressure, customer demand changes, and policy and regulation promotion, but also internal factors such as senior leadership's digital vision, organizational agility, technology infrastructure, and data governance capabilities.

To help companies assess their digitalization level, scholars have proposed various maturity models, such as Gartner's five-stage model (Initialize, Enable, Integrate, Optimize, Transform) and Capgemini's Digital Footprint Index. These models assess enterprises from the dimensions of strategic planning, technology application, process management, and customer experience. Provide self-diagnosis and improvement suggestions for transformation pathways [3]. In terms of implementation path, Westerman *et al.* put forward a three-step strategy of "enlightenment, pilot, and expansion" [4]: first, formulate digital vision and strategy, second, carry out small-scale pilot in key business areas, and finally promote successful experience to the whole enterprise and continue to optimize.

In addition, the study emphasizes that change management, culture shaping, and talent training should be paid attention to in the process of transformation, so as to reduce organizational resistance, resolve risks, and ensure the implementation of transformation. Although existing studies have systematically expounded the connotation, drivers, maturity assessment, and implementation path of digital transformation, the digital transformation strategy system for procurement management functions has not yet formed a complete framework, which urgently needs to be further explored [4].

3. Theoretical framework and conceptual definitions

3.1. Core concepts

(1) Digital transformation of procurement management: This refers to the comprehensive overhaul and enhancement of procurement processes, organizational structures, decision-making mechanisms, and supplier collaboration through digital technologies like big data, cloud computing, IoT, and AI. It aims for transparency, intelligence, and agility in procurement activities, not only improving efficiency and reducing costs but also enabling data-driven strategic decisions and enhancing supply chain resilience and innovation.

(2) Digital capability: The set of internal resources and competencies required for digital transformation, including technical infrastructure (e.g., cloud and big data platforms), data management and analytics, system integration, and organizational proficiency in digital technologies. Digital capability underpins end-to-end process reengineering and intelligent decision-making, serving as the foundation for dynamic adaptation and continuous improvement.

(3) Digital platform: The technological backbone supporting procurement digitalization, encompassing e-procurement systems, supplier collaboration platforms, and data analytics tools [5]. These platforms use standardized interfaces and modular architectures to automate and streamline processes like demand issuance, order management, contract approvals, and performance monitoring, while providing real-time data and decision support.

(4) Digital process: Optimized business processes reengineered using digital platforms and capabilities. Emphasizing end-to-end visibility, real-time information sharing, and closed-loop management, digital

processes encompass online, automated, and intelligent operations across demand forecasting, supplier selection, price inquiries, contract management, logistics tracking, and performance evaluation. They enable rapid market responsiveness, timely risk detection, and continuous efficiency gains [6].

3.2. Theoretical foundations

According to dynamic capability theory, enterprises should maintain competitive advantage through the ability to sense, capture, and reconstruct internal and external resources in a rapidly changing environment. The proposed that dynamic capability consists of three elements: "opportunity identification", "resource reorganization", and "organizational learning" [6]. In the digital transformation of procurement management, enterprises need to continuously monitor market and technology dynamics, timely introduce and integrate emerging digital technologies, and transform technology advantages into actual performance through internal process and organizational structure adjustments.

The Resource-based view (RBV) emphasizes that a company's competitive advantage stems from its unique, hard-to-imitate resources and capabilities. In the process of digital transformation, enterprises should build a resource system with data assets as the core, including high-quality procurement data, advanced analysis models, and professional talent teams, so as to form digital capabilities that are difficult to replicate [7]. Through long-term investment and protection of these critical resources, enterprises can obtain sustained advantages in procurement efficiency, risk management, and supplier collaboration.

The value chain theory, proposed by Porter, divides enterprise activities into a series of value-added links and emphasizes the coordination and optimization among all links. Under the background of the digital transformation of procurement management, enterprises need to link the procurement process with the upstream supplier management, downstream production and sales process, and break the information island to realize the visualization and optimal configuration of the value stream. By embedding digital processes and intelligent analysis tools in each node of the value chain, enterprises can maximize the overall value, not just a single point of cost reduction [8].

3.3. Research framework

Based on the above core concepts and theoretical basis, this paper constructs a four-level research framework of "driving factors-transformation paths-strategic actions-performance evaluation", as shown in **Figure 1**.

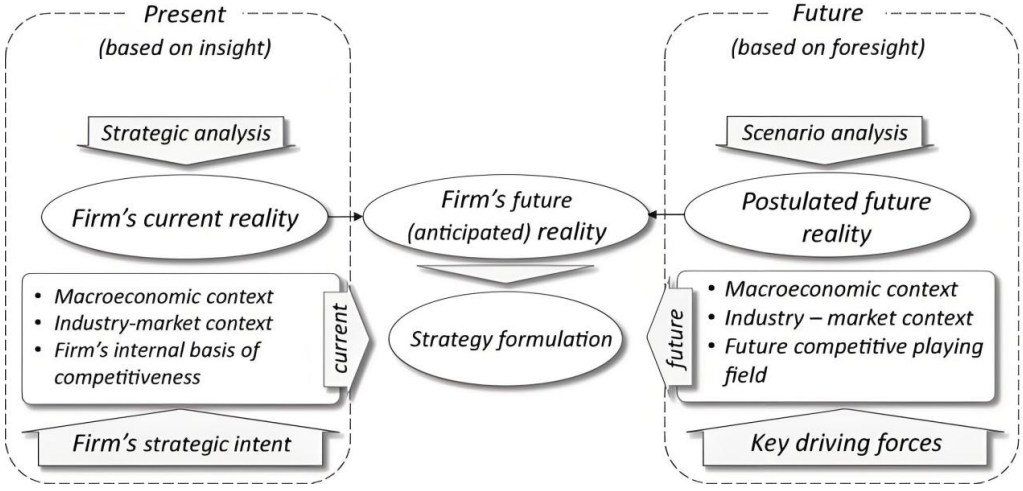

Figure 1. Research framework

As shown in the figure, the first layer of "driving factors" includes external market competition pressure, supply chain coordination demand, policy and regulatory environment, as well as internal information foundation, organizational culture, and talent reserve. The second layer "transformation path" divided the digital evolution of procurement into two modes: gradual upgrade and leap-forward reconstruction. The third layer of "strategic initiatives" put forward key strategies such as top-level design, data governance, process remodeling, supplier collaboration platform construction, and intelligent decision support at the strategic layer, tactical layer, and operational layer, respectively. The fourth layer of "performance evaluation" is based on five dimensions of cost, cycle, quality, risk, and digital maturity, using balanced scorecard, ROI/TCO, and other methods for quantitative evaluation, and continuously optimizing transformation practices through a continuous feedback mechanism. Based on the dynamic capability theory and resource-based view, the framework emphasizes resource integration and capability cultivation, and draws lessons from the value chain theory to highlight the collaborative optimization of the end-to-end value stream, which provides systematic logical support for the in-depth analysis and strategy design of the subsequent chapters [9].

4. Analysis of driving factors

4.1. External driving factors

(1) Market competition pressure

As globalization intensifies and industry consolidation grows, enterprises face dual competition from multinational giants and emerging digital firms. The inefficiencies and information asymmetries of traditional procurement models struggle to meet demands for rapid responsiveness, compelling companies to adopt digital tools to enhance bargaining power, shorten procurement cycles, and maintain cost advantages and market agility [10].

(2) Supply chain collaboration needs

Modern supply chains extend beyond single enterprises, forming complex networks of multiple nodes and stakeholders. Real-time sharing of demand forecasts, inventory statuses, and logistics progress is essential for optimizing inventory and sharing risks. Digital platforms and processes can dismantle information silos, fostering collaborative decision-making among supply chain partners and boosting overall operational efficiency and resilience.

(3) Regulatory and policy environment

Governments worldwide are rolling out policies to promote digital economies and smart manufacturing, such as China's "Made in China 2025" and the "14th Five-Year Plan" for digital transformation, offering institutional support and financial subsidies for procurement digitalization. Meanwhile, stricter compliance and audit requirements, covering data security and green procurement, push enterprises to upgrade systems for full-process traceability and risk forecasting.

4.2. Internal driving factors

Internal drivers are pivotal to the success of procurement digitalization, encompassing IT infrastructure, organizational culture and change readiness, and talent and capability reserves. First, IT infrastructure sets the starting point and pace of digital transformation. Robust ERP systems, unified data platforms, standardized interfaces, and stable network architectures provide the backbone for collecting procurement demands, managing

supplier data, approving contracts, and monitoring performance. Conversely, fragmented systems and data silos cause delays, redundant efforts, and cost overruns, hindering the adoption and value of digital tools. Second, organizational culture and change readiness form the "soft power" for transformation success. Strong commitment from top leadership, backed by sustained investment, ensures robust resource allocation and policy support. Effective cross-departmental collaboration—between IT, business units, procurement, and finance—facilitates communication and alignment. A tolerant attitude toward setbacks during pilots encourages employee innovation and participation, breaking entrenched process habits. Third, talent and capability reserves are the "hard core" of transformation. Enterprises need not only IT specialists skilled in system development and maintenance but also analysts adept at data analytics and professionals well-versed in procurement and supply chain management. Ongoing training, job rotations, internal and external exchanges, and incentive programs enhance digital literacy and collaborative innovation, enabling employees to master digital tools, interpret data insights, and translate them into decision-making support. Additionally, building a data-centric resource pool with strong governance, quality control, and security measures creates an enabling environment for talent to thrive. Together, IT infrastructure, organizational culture, and talent capabilities reinforce each other, forming the internal engine for procurement digitalization and ensuring strategies are effectively implemented to deliver expected outcomes.

5. Mechanisms of driving factors on procurement digitalization

External and internal drivers shape procurement digitalization by influencing enterprise cognition, resource allocation, and organizational behavior, affecting pathway choices and implementation outcomes. Externally, market competition and supply chain collaboration need heightened pressures on cost control and responsiveness, prompting senior leaders to prioritize digital transformation, accelerate vision-setting, and allocate budgets, thus sparking organizational change momentum. Regulatory environments provide institutional support and incentives—like subsidies, tax breaks, and compliance mandates—encouraging firms to view digitalization as a means to reduce risks and enhance transparency. Internally, IT infrastructure determines how quickly firms can achieve data collection, system integration, and process automation. Well-equipped enterprises can efficiently reengineer end-to-end processes through low-cost integrations, while those with weaker systems face delays and higher costs for upgrades or redevelopment. Organizational culture and change readiness shape employee acceptance and adoption of digital tools by fostering innovation-friendly environments. Leadership support, cross-departmental collaboration, and tolerance for pilot setbacks create a culture of experimentation and adaptability. Finally, talent and capability reserves decide whether digital technologies translate into productivity. Specialized IT teams and data analysts enable informed decisions in technology selection, platform development, and data governance. Continuous training and incentives ensure employees adopt new tools and processes, building dynamic digital capabilities over time. In sum, external drivers provide the "motivation" for transformation through strategic intent and resource support, while internal drivers supply the "capability" through technical readiness, organizational alignment, and talent strength. Together, they shape pathway choices (incremental or leapfrog), strategy mixes (top-level design, process reengineering, platform building), and ultimate performance outcomes.

6. Transformation pathways and strategy design

When choosing procurement digitalization pathways, enterprises can opt for incremental upgrades or leapfrog

restructuring based on their IT foundations and change needs. Incremental upgrades involve phased, modular adoption of tools like e-procurement, contract management, and supplier collaboration, validated through pilots and gradual rollout to minimize risks and costs. Leapfrog restructuring, guided by top-level design, entails dismantling traditional processes, rebuilding technical architectures, and rapidly deploying integrated digital platforms for end-to-end transparency and intelligence. This suits firms with strong IT capabilities and urgent needs for efficiency and agility. Strategically, enterprises should form a digital transformation leadership group to define the vision, goals, and phased roadmap for procurement digitalization. Optimizing organizational structures to break functional silos, fostering cross-departmental collaboration, and streamlining decision-making are critical. Robust data governance and cybersecurity systems—through data standards, access controls, and quality protocols—ensure data security and reliability across collection, transmission, and storage.

Tactically, the focus is on process reengineering and intelligent applications. Enterprises should map out core processes—demand forecasting, supplier selection, price inquiries, and contract approvals—leveraging robotic process automation (RPA) and workflow engines to automate repetitive tasks. Cloud-based supplier collaboration platforms enable supplier onboarding, performance tracking, information sharing, and joint innovation. Big data and AI-driven tools provide demand predictions, price trend analyses, and risk alerts, delivering dashboards and smart recommendations to enhance decision-making speed and accuracy. Operationally, system integration and standardized interfaces are vital. Microservices and API gateways ensure seamless connections between procurement, ERP, finance, and logistics systems, maintaining data consistency and process continuity. Tailored training programs for executives, key staff, and general users, blending online and offline formats, boost system adoption. Promotional campaigns and incentives strengthen employee buy-in and engagement. A performance metrics system—covering cost, cycle time, quality, risk, and digital maturity—enables regular evaluation, with PDCA cycles incorporating user feedback to refine systems and processes, ensuring iterative upgrades and sustainable competitive advantage.

7. Implementation safeguards

To ensure smooth procurement digitalization, organizational and managerial safeguards are paramount. Enterprises should establish a transformation leadership group with senior executives, IT, procurement, and finance representatives, defining roles and decision-making authority. Regular progress meetings address bottlenecks, while cross-departmental collaboration fosters deep integration between business and technical teams across project phases—planning, requirement reviews, testing, and operations. Robust project management and performance systems tie digitalization goals to departmental KPIs, motivating accountability and continuous improvement.

Technical and platform safeguards form the backbone. Stable, scalable IT infrastructure—leveraging cloud computing, big data, and microservices—ensures procurement systems handle high concurrency and growth. Integrated e-procurement, supplier collaboration, and analytics platforms with standardized interfaces connect seamlessly with ERP, finance, and logistics systems, eliminating data silos for smooth end-to-end workflows. Comprehensive cybersecurity measures—network protection, access controls, encryption, and compliance audits—safeguard data confidentiality, integrity, and availability throughout its lifecycle. Talent and cultural safeguards drive sustained progress. Enterprises should build digital-focused training systems, combining internal programs, external certifications, and academic partnerships to develop hybrid talent skilled in business and

technology. Incentive programs reward standout contributions and innovative solutions, fostering organizational vitality.

Awareness campaigns and change management initiatives cultivate an open, experimental culture, encouraging employees to embrace new tools and processes, steadily accumulating digital capabilities. Risk management and contingency planning underpin steady progress. Early risk assessments identify technical, business, compliance, and supply chain vulnerabilities, with tailored strategies like backups, disaster recovery, approval checkpoints, and third-party audits. Rapid-response contingency plans and drills minimize disruptions from system failures or security breaches. Through these multidimensional safeguards, enterprises can navigate complex environments, steadily advancing procurement digitalization to achieve efficiency gains and value creation.

8. Performance evaluation and feedback

To ensure procurement digitalization achieves its intended outcomes, a performance evaluation system should be established, encompassing five key dimensions: cost, cycle time, quality, risk, and digital maturity. In the cost dimension, metrics such as total procurement costs, discount rates from negotiations, and inventory holding rates before and after transformation quantify savings. The cycle time dimension tracks the average duration from demand submission to order fulfillment, assessing improvements in process automation and approval efficiency. The quality dimension focuses on supplier compliance rates, delivery accuracy, and contract execution rates to gauge supply chain collaboration and risk control. The risk dimension monitors supply disruptions, accuracy of price volatility alerts, and security incidents to evaluate the effectiveness of early warning systems.

In the digital maturity dimension, regular self-assessments based on established maturity models measure the depth of technology adoption, data governance quality, and organizational culture change. For evaluation methods, combining the balanced scorecard with ROI/TCO analysis captures both financial and non-financial performance. The balanced scorecard integrates the five dimensions into four perspectives—financial, customer, internal processes, and learning and growth—for a holistic assessment. ROI and TCO analyses quantify the investment returns and lifecycle costs of digital platforms and tools, guiding future resource allocation decisions. Evaluation results should be shared with senior management and relevant departments through regular reports and visualized dashboards, ensuring transparency and timely feedback. A PDCA (Plan-Do-Check-Act) cycle should be established to incorporate identified issues and improvement suggestions into the next optimization phase, iteratively refining procurement processes and system functionalities. Through this closed-loop feedback mechanism, enterprises can continuously enhance performance at various stages of digital transformation, achieving sustained optimization and value creation in procurement management.

9. Conclusion

Drawing on dynamic capability theory, resource-based view, and value chain theory, this study constructs a four-tier framework of “drivers—transformation pathways—strategic measures—performance evaluation.” It systematically analyzes the roles of external drivers (market competition, supply chain collaboration, regulatory environment) and internal drivers (IT infrastructure, organizational culture, talent reserves) in procurement digitalization. The study proposes incremental upgrades and leapfrog restructuring as pathways, with comprehensive strategies spanning top-level design, process automation, supplier collaboration, intelligent

decision support, system integration, training, and performance feedback. It further outlines safeguards across organizational management, technical platforms, talent culture, and risk control to support implementation. Findings show that integrating strategy systems with robust safeguards, continuously refined through iteration, can enhance procurement efficiency, reduce costs, and strengthen supply chain resilience, delivering sustainable competitive advantage for enterprises.

Disclosure statement

The author declares no conflict of interest.

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