



The Impact of Digital Transformation in Urban Supply Chains on Corporate Supply Chain Stability

Mingxu Liu ^{1,*}, Xin Guan ²

¹National University of Singapore, Singapore, Singapore

²School of Public Policy and Management, University of Chinese Academy and Sciences, Beijing, China

*Corresponding author: e1582674@u.nus.edu

Abstract. As the global supply chain landscape evolves, supply chain stability has become a critical indicator of competitiveness for enterprises and even nations. This study examines the impact of urban supply chain digitalization on corporate supply chain stability using a panel data sample of Shanghai and Shenzhen A-share listed companies from 2009 to 2024. Employing a difference-in-differences model and empirical research methodology, we systematically investigate the effects of supply chain innovation and application pilot initiatives. Findings reveal that urban supply chain digital transformation significantly promotes the stability of corporate supply chains. Further heterogeneity analysis reveals that the impact of urban supply chain digital transformation on corporate supply chain stability exhibits heterogeneity across equity ownership and industry sectors. Specifically, compared to non-state-owned enterprises and non-manufacturing firms, state-owned enterprises and manufacturing enterprises derive greater benefits from urban supply chain digital transformation in terms of supply chain stability. Therefore, governments should further optimize supply chain digital transformation efforts through advanced enterprise leadership, differentiated policy support, and the dissemination of urban best practices to promote high-quality development among Chinese enterprises.

Keywords: Supply Chain Digitalization; Supply Chain Stability; Difference-in-Differences model.

1 Introduction

The report to the 20th National Congress of the Communist Party of China states that high-quality development is the primary task in building a modern socialist country in all respects. We must adhere to the theme of promoting high-quality development and focus on enhancing the resilience and security of industrial and supply chains. High-quality development and improved supply chain stability require a solid material and technological foundation. With advances in science and technology, digital information technology has become a key factor in enhancing supply stability. The 2017 State Council General Office Guiding Opinions on Actively Promoting Supply

© The Author(s) 2026

D. Magni et al. (eds.), *Proceedings of the 2026 3rd International Conference on Applied Economics, Management Science and Social Development (AEMSS 2026)*, Advances in Economics, Business and Management Research 389,

https://doi.org/10.2991/978-94-6239-672-2_13

Chain Innovation and Application explicitly called for building a smart supply chain system supported by big data, networked sharing, and intelligent collaboration. Subsequently, the pilot program for supply chain innovation and application officially launched in 2018, establishing 55 pilot cities and 266 pilot enterprises. Building upon these pilot initiatives, demonstration creation efforts commenced in 2021. To date, three batches of demonstrations have been publicly announced, encompassing 33 demonstration cities and 246 demonstration enterprises. The 2025 “Special Action Plan for Accelerating the Development of Digital and Intelligent Supply Chains” emphasizes leveraging the role of leading supply chain enterprises. It calls for utilizing new technologies such as artificial intelligence, the Internet of Things, and blockchain to advance the digital, intelligent, and visual transformation of supply chains through a “one chain, one strategy” approach. This aims to enhance capabilities in demand forecasting, intelligent decision-making, risk perception, and self-repair, thereby improving supply chain operational efficiency and resilience. A relevant research report from the Development Research Center of the State Council indicates that enterprises still face numerous challenges in achieving high-quality development: low supply chain collaboration efficiency, with some enterprises still grappling with information silos and complex management processes; uneven digital transformation, where small and medium-sized enterprises (SMEs) have weaker digital capabilities and struggle to integrate into large enterprises' collaborative networks; and weak independent innovation capabilities in core technologies coupled with insufficient talent supply. Through policy support and cross-departmental, cross-regional collaborative governance, the Urban Supply Chain Innovation and Application Pilot Program can effectively address these issues, driving high-quality enterprise development through urban pilot transformations.

Since the pilot program commenced, research on supply chain digitalization has become a focal point in academic circles, covering a broad spectrum of topics. Regarding risk management, Zhang Shushan et al. (2021) indicate that supply chain digitalization enhances enterprises' risk-bearing capacity by mitigating information asymmetry and financing constraints among supply chain nodes, while also compelling management to engage in learning behaviors, thereby safeguarding supply chain security and stability^[1]. Huang Yingfei et al. (2025) found that supply chain digitalization reduces operational and financial risks by enhancing profit stability and improving financial health, thereby encouraging enterprises to voluntarily shorten debt maturities^[2]. International research similarly indicates that SCD can improve cost-effectiveness, promote communication and information efficiency, and enhance supply chain resilience to improve performance after disruptions (A. Al Tera et al., 2024)^[3].

At the efficiency level, Liu Haijian et al. (2022) indicate that supply chain digitalization drives corporate performance improvement through mechanisms of management empowerment and innovation empowerment^[4]. Han Xian (2024) and Feng Taozhu et al. (2025) both focus on the impact of supply chain digitalization on total factor productivity (TFP). The former achieves this by promoting innovation output, enhancing industrial credit, and reducing inter-firm collaboration costs^[5], while the latter accomplishes it through two key mechanisms: enhancing supply chain resilience

and increasing supply chain transparency^[6]. Additionally, related studies demonstrate that supply chain digitalization can enhance the resilience of new retail enterprises (Ni & Tian, 2025)^[7] while promoting high-quality corporate development through potential mechanisms that boost adaptability, absorptive capacity, and innovation capabilities (Huang et al., 2025)^[8]. Regarding green development, supply chain digitalization also plays a significant role. It substantially enhances the quantity and quality of corporate green innovation, mediated by supply chain financing capacity and firm environmental awareness (An et al., 2024)^[9]. Supply chain digitalization can significantly enhance corporate ESG performance. The stimulating impacts are mainly attained through enhancing corporate governance, total factor productivity, and mitigating financial limitations (Zhu & Zhang, 2024)^[10].

In recent years, academic research on supply chain resilience has been extensive, but direct studies on supply chain stability remain scarce. Both supply chain resilience and stability fundamentally address issues on the supply side, serving as objectives established to enhance supply chain risk resistance. There is no essential difference between the two. Scholars such as Du Haoyang (2025) summarized various definitions of supply chain stability, concluding that it refers to the capacity of supply chain members to collaborate synergistically in resisting external uncertainties and thereby maximize the achievement of the organization's overall objectives^[11]. Supply chain resilience refers to the capacity to recover to normal or even improved operational states by adjusting supply chain structures and processes when confronted with internal/external shocks and uncertainties (Yao Zhenghai et al., 2025 & Huang Yejing & Chen Feiyu, 2025)^{[12][13]}. Thus, supply chain stability and resilience share consistent underlying logic.

Regarding the factors influencing supply chain stability, some scholars analyze both internal and external dimensions, arguing that marketization levels and internal controls are key determinants of supply chain stability (Du Haoyang & Dai Hanshuo, 2025)^[11]. Others adopt a supply-demand perspective, suggesting that optimizing factor allocation and unleashing consumption potential can effectively enhance corporate supply chain stability (Yin Haoliang, 2025)^[14]. Additionally, some scholars examine spatial structural differences, highlighting that population mobility, technology transfer, and cross-regional investment significantly impact the stability of interregional supply chains (Ma Junfeng et al., 2025)^[15]. These studies provide a systematic theoretical foundation for understanding the formation mechanisms influencing supply chain stability.

In summary, existing research in the field of supply chain stability still has shortcomings. On the one hand, there is a scarcity of literature directly examining supply chain stability, with most studies relying on indirect indicators such as supply chain resilience or risk-bearing capacity, lacking systematic analysis. On the other hand, current research perspectives are confined to the enterprise or industry level, failing to address regional policy interventions and thus unable to reveal the heterogeneity of policy spaces. Therefore, this study adopts a city-level approach and employs a difference-in-differences method to analyze the impact of supply chain innovation and application pilot programs on supply chain stability. It aims to provide theoretical depth and practical value for enhancing regional supply chain stability.

This paper holds significant theoretical and practical value. Theoretically, this study broadens existing analytical perspectives and enriches research dimensions in the fields of supply chain policy and supply chain stability. Leveraging the differentiated policy implementation scenarios across pilot cities, it further reveals the moderating effects of key factors—such as regional collaborative governance and policy support intensity—on the outcomes of supply chain digital transformation. This deepens academic understanding of the impact mechanisms and boundary conditions of supply chain digitalization, providing crucial empirical support and theoretical foundations for systematically constructing theoretical models of supply chain digital transformation. At the practical level, this study clearly reveals the intrinsic pathways through which supply chain digitalization empowers stable supply chain operations and validates the tangible outcomes of digital transformation. It not only provides robust justification for extending and deepening pilot policies but also offers replicable and scalable practical solutions for non-pilot cities advancing their own supply chain digitalization efforts.

2 Research Design

2.1 Variable Definition

2.1.1 Dependent Variable.

Supply Chain Stability (SCS). Drawing on existing literature, academia typically uses the proportion of sales to the top five customers as an indicator of a company's resilience against supply chain risks on the sales side. A high proportion of sales to the top five customers indicates that the company has established long-term, stable cooperative relationships with a small number of major clients. This enhances order predictability, facilitating production scheduling, inventory management, and logistics planning. It also reduces the bullwhip effect, thereby improving supply chain stability. Therefore, this paper selects sales to the top five customers as a proxy variable for supply chain stability.

2.1.2 Independent Variable.

Supply Chain Digitalization Dummy Variable (SCD). Derived from the interaction between the treatment dummy variable *Treat* and the period dummy variable *Post*. When a city serves as a pilot city for supply chain innovation and application, it is classified into the treatment group, with *Treat* assigned a value of 1. Conversely, when a city is not a pilot city, it belongs to the control group, with *Treat* assigned a value of 0. Based on the timing of the supply chain innovation and application pilot policy, the *Post* value is set to 0 for samples observed before 2018 and to 1 for samples observed in 2018 and later.

2.1.3 Control Variables.

Based on the research content and building upon prior studies, this paper selects enterprise size, operating revenue, net profit, administrative expenses, total assets, and total liabilities as control variables. (Table 1)

Table 1. Variable Definition

Variables	Variables Name	Variables Symbol	Measurement Method
Dependent Variable	Supply Chain Stability	SCS	Top Five Customers by Sales Revenue
Independent Variable	Supply Chain Digitalization	SCD	Interaction between the experimental group dummy variable (Treat) and the period dummy variable (Post)
Control Variables	Enterprise Size	Size	Wind Database Data
	Operating Revenue	Revenue	Wind Database Data
	Net Profit	Profit	Wind Database Data
	Administrative Expenses	Admi	Wind Database Data
	Total Assets	Assets	Wind Database Data
	Total Liabilities	Liabilities	Wind Database Data

2.2 Model Specification

This study treats the supply chain innovation and application pilot program as a quasi-natural experiment and employs a double difference model to examine the impact of supply chain digitization on supply chain stability. The econometric model is presented in Equation (1):

$$SCS_{i,t} = \beta_0 + \beta_1 SCD_{i,t} + \sum_{k=1}^n \gamma_k Control_{k,i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

$SCS_{i,t}$ denotes the supply chain stability of firm i in year t . $SCD_{i,t}$ represents the supply chain digitalization level of city i in year t . This variable is the interaction term between the grouping dummy variable Treat and the time dummy variable Post. $Control_{k,i,t}$ is the set of control variables used in this study. μ_i represents the firm fixed effect, λ_t represents the time fixed effect, and $\varepsilon_{i,t}$ represents the random disturbance term.

2.3 Sample Selection and Data Sources

This study selected Shanghai and Shenzhen A-share listed companies from the Wind database between 2009 and 2024 as the initial research sample. The data underwent the following screening: First, samples of companies labeled as ST or *ST were excluded. Second, samples from the financial sector were removed. Finally, tail trimming at the 1% and 99% levels was applied to certain continuous variables. Ultimately, the study obtained a sample dataset comprising 22,038 records.

3 Empirical Analysis

3.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the primary variables in this study. As shown in Table 2, the maximum value for supply chain stability among the sample enterprises is 21,100,000, while the minimum is 25.3. This indicates significant disparities in supply chain stability levels across the sample enterprises. The sample encompasses small-to-medium, large, and extra-large enterprises, reflecting differences among entities at various scales and demonstrating good sample differentiation. The mean value of the supply chain digitalization dummy variable is 0.297, indicating that 29.7% of pilot cities participated in supply chain innovation and application initiatives after 2018. This indirectly confirms the positive effectiveness of the supply chain innovation and application pilot program.

Table 2. Descriptive Statistics

Variables	(1) Sample size	(2) Average	(3) Standard deviation	(4) Minimum value	(5) Maximum value
Supply Chain Stability	22038	165000	550000	25.3	21100000
Supply Chain Digitalization	22038	0.2971232	0.4570016	0	1
Enterprise Size	22038	3986.907	6714.223	137	45916.76
Operating Revenue	22038	579203.6	1322904	12409.98	9074895
Net Profit	22038	27349.18	87326.68	-192247.7	564768.2
Administrative Expenses	22038	25606.39	41373.68	1834.231	293955.3
Total Assets	22038	971000	2080000	45700	15400000
Total Liabilities	22038	537000	1390000	5180	10400000

3.2 Baseline Regression Results

Table 3 presents the results of the baseline regression. It can be observed that supply chain digitalization is statistically significant at the 1% level in both Column (1) (without control variables) and Column (2) (with control variables), with all model coefficients being positive. The findings indicate that urban supply chain digitalization significantly enhances the stability level of corporate supply chains.

Moreover, from Column (2), we can observe that a company's operating revenue and net profit exert a positive influence on supply chain stability, while company size and management expenses exert a negative influence. Additionally, after incorporating control variables, the model coefficients decreased while the R^2 value increased,

indicating that the inclusion of control variables improved the model's fit and enhanced its explanatory power.

Table 3. Baseline Regression Results

	(1)	(2)
	Supply Chain Stability	Supply Chain Stability
Supply Chain Digitalization	36928.878*** (10476.968)	36349.799*** (8855.140)
Enterprise Size		-13.167*** (3.569)
Operating Revenue		0.297*** (0.018)
Net Profit		0.367** (0.113)
Administrative Expenses		-1.326* (0.534)
Total Assets		0.008 (0.027)
Total Liabilities		0.072 (0.039)
Constant	154197.682*** (3574.186)	12819.589 (15508.257)
Firm/Year fixed effects	Yes	Yes
N	22036	22036
R2	0.622	0.739
F	12.424	64.809

Note: *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively. The values in parentheses represent the estimated robust standard deviation.

3.3 Addressing Endogeneity: PSM

To minimize potential sample selection bias, this study employs propensity score matching (PSM) to screen the sample. Specifically, pilot cities serve as the treatment group sample, with all control variables as covariates, and are matched to cities not included in the pilot-the control group sample-to eliminate inherent differences in core characteristics between the two groups. The matched results are then regressed, with findings presented in Table 4.

As shown in Table 4, the regression results after PSM matching still indicate that the digitalization of urban supply chains significantly promotes the stability of corporate supply chains. Therefore, the regression results in this paper are robust.

Table 4. Results of PSM-DID

	(1)	(2)
	Supply Chain Stability	Supply Chain Stability
Supply Chain Digitalization	23289.175* (10854.151)	35722.871*** (10182.769)
Enterprise Size		-14.301*** (4.162)
Operating Revenue		0.298*** (0.021)
Net Profit		0.317* (0.131)
Administrative Expenses		-1.015 (0.680)
Total Assets		0.018 (0.032)
Total Liabilities		0.064 (0.044)
Constant	146317.557*** (3672.201)	4250.270 (17311.085)
Firm/Year fixed effects	Yes	Yes
N	20264	20264
R2	0.586	0.715
F	4.604	53.627

Note: 1. The regression sample consists of PSM 1:1 nearest neighbor matched samples, with weights being the matching weights; 2. The regression uses robust standard errors.

3.4 Robustness Checks

3.4.1 Parallel Trends Test.

Based on the assumptions of the difference-in-differences method, the experimental and control groups in the pilot cities must satisfy the parallel trend assumption. This allows us to assess whether variables in both groups exhibit similar magnitudes of increase or decrease, thereby testing whether the impact of policy shocks on supply chain stability is influenced by pre-existing trends. Using 2018—the year supply chain innovation and application pilot programs commenced—as the base period, the test results are presented in Figure 1.

As shown in Figure 1, prior to the pilot program, the impact of urban supply chain digitization on corporate supply chain stability was insignificant, indicating no significant difference between the two data sets before policy implementation. The regression results passed the parallel trend test. After policy implementation, the regression coefficient for urban supply chain digitization shifted from insignificant to significant, demonstrating that the Supply Chain Innovation and Application Pilot Program exerts a certain influence on supply chain stability.

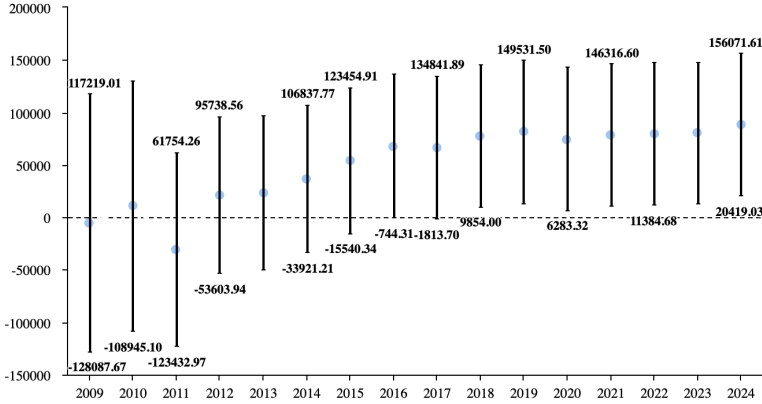


Fig. 1. Parallel Trends Test

3.4.2 Placebo Tests.

To eliminate the impact of other unknown factors on corporate supply chains, this study employs a time placebo test with policy implementation dates advanced and a spatial placebo test with randomly matched samples. The results are presented in Table 5 and Figure 2, respectively.

Table 5. Time Placebo Test

	(1) Supply Chain Stability
Supply Chain Digitalization	29103.2** (3.25)
Spurious Time Interaction Term (2015)	15952.1 (1.52)
Enterprise Size	-13.18*** (-3.69)
Operating Revenue	0.297*** (16.79)
Net Profit	0.367** (3.25)
Administrative Expenses	-1.329* (-2.49)
Total Assets	0.00787 (0.29)
Total Liabilities	0.0717 (1.85)
Constant	8609.0 (0.53)
N	22036

First, we conducted a time placebo test by advancing the pilot period by three phases and re-running the double difference test. As shown in Table 5, when the policy pilot period was moved forward to 2015 and the definitions and interactions for Treat and Post were redefined, the spurious time interaction term became insignificant. This indicates that the benchmark regression results are free from potential confounding effects related to time trends.

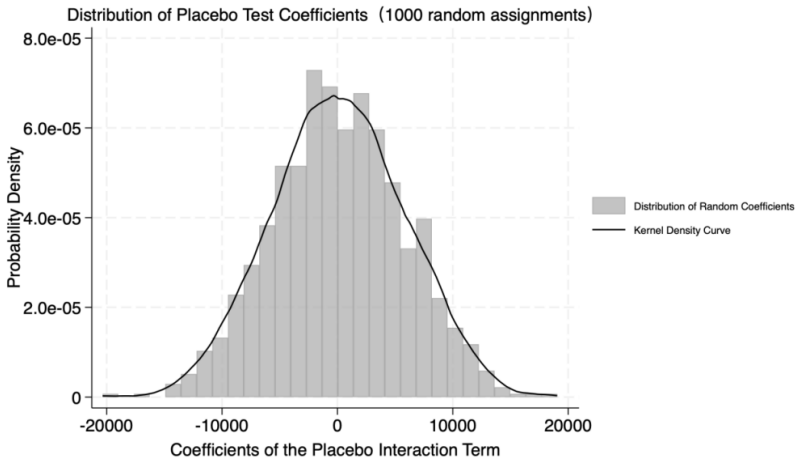


Fig. 2. Spatial Placebo Test

Subsequently, this paper conducts a spatial placebo test. Specifically, treatment groups are randomly generated from the sample and re-run through DID regression, repeating this random process 1000 times. Figure 2 displays the distribution of estimated coefficients for the Treat-Post interaction term. The regression coefficients for supply chain digitization cluster around zero, far below the true value of 36,349.799. This indicates that after 1,000 random samples, the model estimates are insignificant. The observed stability levels in sample firms' supply chains are not attributable to other random factors but stem from the policy shock of supply chain innovation and application. Therefore, the conclusions drawn in this paper are reliable.

4 Heterogeneity Analysis

The nature of equity ownership may influence the extent to which urban supply chain digital transformation promotes stable supply chain development for enterprises. Additionally, the pilot program involved enterprises from diverse industries, and different sectors may respond differently to supply chain digital transformation. Therefore, this study categorizes the sample enterprises by equity ownership and industry type into state-owned enterprises and non-state-owned enterprises, as well as manufacturing and non-manufacturing sectors. The results of the grouped regression analysis are presented in Table 6.

Table 6. Ownership and Industry Heterogeneity Analysis

	(1)	(2)	(3)	(4)	(5)
	Full Sample	State-owned	Non-state-owned	Manufacturing	Non-manufacturing
Supply Chain Digitalization	36349.8*** (8855.1)	57597.1*** (19312.4)	31731.2*** (10887.9)	57035.4*** (12901.6)	23040.8*** (8824.2)
Enterprise Size	-13.17*** (3.569)	-15.14*** (4.190)	-13.93** (6.059)	-25.35*** (6.646)	-2.289 (1.443)
Operating Revenue	0.297*** (0.0177)	0.300*** (0.0231)	0.317*** (0.0297)	0.330*** (0.0306)	0.205*** (0.0187)
Net Profit	0.367*** (0.113)	0.291 (0.181)	0.411*** (0.148)	0.438*** (0.169)	0.0870 (0.117)
Administrative Expenses	-1.326** (0.534)	-1.978*** (0.500)	-1.007 (0.880)	-0.663 (0.816)	-1.770*** (0.373)
Total Assets	0.00783 (0.0273)	-0.0841*** (0.0308)	0.0437 (0.0438)	-0.0312 (0.0405)	-0.0268 (0.0175)
Total Liabilities	0.0717* (0.0388)	0.158*** (0.0435)	0.0582 (0.0646)	0.218*** (0.0674)	0.0683*** (0.0254)
Constant	12819.6 (15508.3)	116591.0*** (21074.5)	-19068.4 (19050.9)	11295.8 (19953.2)	52573.4*** (9814.2)
Firm/Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	22036	5803	16120	15532	6472

Table 6 reveals that all regression results within groups are statistically significant. Therefore, this study alternates between Fisher's exact test and Chow's test to examine the differences in coefficients between groups, thereby analyzing whether genuine heterogeneity exists between the two sets of test results. The p-value for the inter-group coefficient difference test is less than 0.1, indicating the test is passed. Therefore, by comparing the regression coefficients of the two groups, this paper draws the following conclusions: Compared to non-state-owned enterprises, urban supply chain digital transformation has a more significant effect on promoting the stable development of supply chains in state-owned enterprises. Compared to non-manufacturing enterprises, urban supply chain digital transformation has a more significant effect on promoting the stable development of supply chains in manufacturing enterprises.

The analysis of reasons for heterogeneous test results is as follows: Regarding equity heterogeneity, both state-owned and non-state-owned enterprises experienced enhanced supply chain stability due to the city-level supply chain digitalization pilot program, reflecting the inclusive value of supply chain innovation and application policies. However, the digital transformation of city supply chains had a stronger enabling effect on the stability of state-owned enterprises' supply chains. This may stem from state-owned enterprises' superior resource allocation, industrial standing,

and policy coordination compared to non-state-owned enterprises, enabling them to better capture the dividends of city-level digital transformation. Non-state-owned enterprises also benefit significantly, but their marginal gains are slightly weaker due to resource constraints and differing objectives. Regarding industry heterogeneity, manufacturing benefits more significantly than non-manufacturing from urban supply chain innovation and application pilot policies, likely due to industry characteristics. The long, multi-stage nature of manufacturing supply chains maximizes the value of digital transformation.

5 Conclusions and Recommendations

This study employs a difference-in-differences approach to empirically examine the impact of urban supply chain innovation and application policy pilots on corporate supply chain stability, utilizing data from Shanghai and Shenzhen A-share listed companies between 2009 and 2024. It further conducts heterogeneity analysis across two dimensions: equity ownership and industry attributes. The findings reveal: First, city-level promotion of supply chain digitalization significantly enhances the stability of enterprises' supply chains within the jurisdiction, validating the effectiveness of the policy pilot. Second, regarding ownership structure, state-owned enterprises respond more actively to city supply chain digitalization policies, with their supply chain stability improvements markedly outperforming non-state-owned enterprises. Third, concerning industry attributes, manufacturing enterprises benefit more significantly from city supply chain digitalization, achieving greater improvements in supply chain stability compared to non-manufacturing enterprises.

Based on the above research findings, this paper proposes the following recommendations:

First, fully leverage the leading role of state-owned enterprises to accelerate the digital transformation of small and medium-sized enterprises (SMEs). It is recommended to implement a digital collaboration plan spearheaded by state-owned enterprises, with SMEs providing supporting components. Encourage leading state-owned enterprises to open supply chain data interfaces, share digital platform capabilities, and proactively integrate non-state-owned upstream and downstream enterprises into city-level digital supply chain ecosystems. This will foster a virtuous development pattern where leading enterprises drive progress and SMEs collaborate effectively. Simultaneously, establish innovative support tools such as targeted subsidies and supply chain finance to effectively reduce SMEs' transformation costs in areas like technology integration, system upgrades, and talent acquisition. This will alleviate their financing constraints and enhance their willingness and capacity to participate in the digital ecosystem.

Second, based on the structural characteristics and operational logic of supply chains across different industries, formulate differentiated support policies tailored to each sector. While consolidating and strengthening the core advantage of manufacturing supply chain stability, we should systematically identify pain points in non-manufacturing sectors such as agriculture, retail, logistics, and services, and

promote targeted, adaptable solutions. For instance, in the agricultural supply chain, deepen the “Internet Plus” ent of digital and intelligent agricultural product trading platforms, and enhance the intelligence and coverage of cold-chain logistics. In the retail sector, promote models such as centralized procurement and distribution, intelligent restocking, and omnichannel inventory coordination to support enterprises in integrating online and offline supply-demand information, thereby optimizing product supply efficiency and response speed. Through tailored approaches and precise empowerment, we will drive coordinated development across multiple industry supply chains, comprehensively enhancing the risk resilience and overall robustness of the entire supply chain system.

Finally, establish an interactive working mechanism that incorporates bottom-up experience while refining top-down systems to enhance the universality and sustainability of supply chain digital transformation. On one hand, create diversified, regular platforms for summarizing and feeding back experiences. Systematically collect successful practices from pilot initiatives across regions through periodic reporting, field research, and case compilation. Categorize and refine these practices based on regional characteristics, industry types, and enterprise scales to avoid one-size-fits-all implementation. On the other hand, top-level design must be strengthened to improve the institutional safeguards for supply chain digital transformation. This includes refining cross-departmental coordination mechanisms, promoting the construction of supply chain information interconnection platforms between cities and between urban and rural areas, and establishing risk prevention, control, and supervision systems covering data security, platform governance, and emergency response. Furthermore, resource allocation and talent support are equally critical. It is recommended to establish a dedicated industrial fund for supply chain digital transformation, guiding financial institutions to develop tailored financial products that provide enterprises with long-term, stable funding support. Simultaneously, deepening industry-education integration should be pursued to promote joint training programs between universities and enterprises, cultivating versatile professionals proficient in supply chain management, digital technologies, and industrial knowledge. This approach will fundamentally address the talent bottleneck hindering corporate transformation.

In summary, the digital transformation of urban supply chains is not only an effective pathway to enhance corporate supply chain stability but also a strategic fulcrum for advancing industrial chain modernization and strengthening economic resilience. Moving forward, efforts should focus on policy coordination, industry adaptation, and capacity building to systematically advance supply chain digitalization from “pilot exploration” to “comprehensive deepening,” thereby providing robust support for constructing a secure, efficient, and intelligent modern supply chain system.

References

1. Zhang Shushan, Hu Huaguang, Sun Lei & Xia Minglu.(2021). Supply Chain Digitization and Supply Chain Security and Stability—A Quasi-natural Experiment. *China Soft Science*, (12), 21-30+40.
https://kns.cnki.net/kcms2/article/abstract?v=cpyCR_1GzmDNEGiPxG1O-9Auj_8xn_eV4

- Vx_I8tbbvfZLPcLBhty96maFOZCjn9wdVnglShztW7xhiavccWMV0Vs5pVzxoGxqkL_tC0TPPwcApkUDFd9tt7dKUzHF8BmBbmBz7SVd0db2ld5qsscenzB1rGTtBd06ySo2xjsJu uq92aNigGLpXa1YioLigFMV&uniplatform=NZKPT&language=CHS
2. Huang Yingfei, Zhao Dawei, Zhang Xiao & Pan Haoyu.(2025).Supply Chain Digitalization and the Corporate Debt Maturity Selection. *FINANCIAL THEORY & PRACTICE* ,(02),68-78. <https://link.cnki.net/urlid/41.1078.F.20250424.1439.002>
 3. Al Tera, A., Alzubi, A., & Iyiola, K. (2024). Supply chain digitalization and performance: A moderated mediation of supply chain visibility and supply chain survivability. *Heliyon*, 10, e25584. <https://doi.org/10.1016/j.heliyon.2024.e25584>
 4. Liu Jianhai, Hu Guanghua, Zhang Shushan & Sun Lei.(2023).Supply Chain Digitalization and Firm Performance: Mechanism and Empirical Evidence. *Business and Management Journal*,45(05),78-98.<https://doi.org/10.19616/j.cnki.bmj.2023.05.005>.
 5. Han Xian.(2024). Does Supply Chain Digitalization Enhance Enterprise Total Factor Productivity? - A Quasi-Natural Experiment Based on National Supply Chain Innovation and Application Pilots. *South China Finance*, (10), 33-45. <https://link.cnki.net/urlid/44.1479.F.20241206.1605.002>
 6. Feng Taozhu, Guan Zhaoyu & Dang Xiaoxu.(2025).Research on the Impact of Digitalization of Supply Chain on High Quality Development of the Manufacturing Industry. *JOURNAL OF XI'AN UNIVERSITY OF FINANCE AND ECONOMICS*,38(03),25-37. <https://doi.org/10.19331/j.cnki.jxufe.2025.03.001>.
 7. Ni Dehui & Tian Wen.(2025).Research on the Mechanism of Supply Chain Digitalization's Impact on the Resilience of New Retail Enterprises. *Journal of Commercial Economics*,(23),113-116. https://kns.cnki.net/kcms2/article/abstract?v=cpyCR_1GzmA_157sT20qMcu_OED9S7StO fJWe6jrKkOmrfful9bXMrfW8XZvX2_Oa2Fa1uDexdeapqw6nnLonJI_xdou6JJn_3XfV AiX7x6qLPgBafik_tvW8AuC8CbdQbaZTpJ1Ecp4gfgNx4RdamRK2STQXLzo3mejTcX yHKDKA1XiiZXQ=&uniplatform=NZKPT&language=CHS
 8. Huang Jing, Yan Hongrui, Xiang Wang & Zheng Ting.(2025).Can Supply Chain Digitalization Promote High-quality Development of Enterprises?—An Analysis Based on the Perspective of Enterprises Dynamic Capabilities. *LUOJIA MANAGEMENT REVIEW*,(05),1-28. https://kns.cnki.net/kcms2/article/abstract?v=cpyCR_1GzmD0mXY6K99dRM8zG0gEFdl_n_loVymqXvWtrjEyL_XVS5MgxmNMRlJmIgLTYlV8yZCni0zUP1prxt3U9OuozFv3 JEc9JXEbLyMnGnJMpQe7skMFkGpoRB48xgpHNbRcuGEP4RsWKdkfl8pydtaj1bn41Q RMW_oq7cFnh9HZa1_w=&uniplatform=NZKPT&language=CHS
 9. An, S., Gu, Y., Pan, L., & Yu, Y. (2024). Supply chain digitalization and firms' green innovation: Evidence from a pilot program. *Economic Analysis and Policy*, 84, 828–846. <https://doi.org/10.1016/j.eap.2024.09.024>
 10. Zhu, Y., & Zhang, Z. (2024). Supply chain digitalization and corporate ESG performance: Evidence from supply chain innovation and application pilot policy. *Finance Research Letters*, 67, 105818. <https://doi.org/10.1016/j.frl.2024.105818>
 11. Du Haoyang & Dai Hanshuo. (2025). Does ESG Rating Discrepancy Affect Supply Chain Stability?. *FINANCIAL THEORY & PRACTICE*, (09),48-59. <https://link.cnki.net/urlid/41.1078.F.20251120.1105.010>
 12. Yao Zhenghai, Li Haoze & Yao Peiyi.(2025). The Impact of ES Performance on Supply Chain Resilience Companies. *JOURNAL OF CAPITAL UNIVERSITY OF ECONOMICS AND BUSINESS*, 27(02), 95-112. <https://doi.org/10.13504/j.cnki.issn1008-2700.2025.02.007>.

13. Huang Yejing & Cheng Feiyu.(2025).The Impact of Openness of Productive Services Industry on Stability of Manufacturing Supply Chains. SHANGHAI JOURNAL OF ECONOMICS,(11),101-115.<https://doi.org/10.19626/j.cnki.cn31-1163/f.2025.11.008>.
14. Yin Haoliang. (2025). The Impact of Market Access Deregulation on Supply Chain Stability in Distribution Enterprises: A Dual Perspective Mechanism Test Based on Supply and Demand. Journal of Commercial Economics, (21), 150-153.
https://kns.cnki.net/kcms2/article/abstract?v=cpyCR_1GzmCJTycQm8iZBdnUVaE3RWuCkDx11wzpldQEvhgA8WnWnRxxuTW22-V-C5w5GjChN4M4LG-kl0XVRBCAQIPncro3ot7TZcMfoWR3Q87LV-i_k9GOoZGioloNm_X83hBk9NI2tUWDowbZe1ETOlAmVqjnJoG8aZ-2YQZLFiAk2xRgRjosam1mupl&uniplatform=NZKPT&language=CHS
15. Ma Junfeng, Du Zhiqiang, Gao Yating & Zhang Lisha. (2025). Differences in City Spatial Structure, Factor Mobility and Cross-Regional Supply Chain Concentration. FINANCE AND ECONOMICS, (07), 119-132.
https://kns.cnki.net/kcms2/article/abstract?v=cpyCR_1GzmDVylIv3Q0PzGT-O5tBsc-H0AWexNAT6JEOlnzHI6xvwTey1c2dSrtJaACU3wUuJJa1T9njuJf3fTdqFYmrLgUl8s8adD8wSt5S38wCRous0-whjG9gYHk72sasCcNG5IPcQQEWIwmTFZdilerXBcrNBMGur1mSoW4tsXI634AGeP5M9oZJ5tP&uniplatform=NZKPT&language=CHS

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

