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INTEGRATION PLATFORMS FOR BUSINESS DIGITALIZATION IN THE DEVELOPMENT OF THE REGIONAL ECONOMY

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Systematic analysis of the nonlinear mechanisms through which enterprise digital integration platforms drive regional economic development conducted.

Empirical research involving 326 regional samples and 245 platform enterprise cases across China demonstrates that digital platforms significantly enhance regional economic development through various nonlinear mechanisms.

Technology Spillover Effects (elasticity coefficient = 0.15, $p < 0.01$): Platforms enhance the efficiency of regional factor allocation (e.g., reducing logistics costs by 23 %) and foster industrial collaboration networks (e.g., increasing participation rates of small and medium-sized enterprises (SMEs) by 43 percentage points).

Institutional Leverage Effects: Platforms enhance policy responsiveness, increasing governance efficiency by a factor of 3.2 through real-time data sharing and compliance automation.

Spatial Heterogeneity: The technology penetration efficiency in the Eastern Regions is 1.7 times higher than that in the Western Regions, driven by advanced digital infrastructure, such as 5G coverage exceeding 85%, and robust innovation ecosystems.

Central and Western Regions: Overcoming resource constraints through the "computing power-energy substitution model" (1 kWh of green electricity equals 1.2 TFlops of computational capacity) to achieve late-mover catch-up. For instance, Guizhou's digital economy expanded 2.5 times faster than the eastern regional average by capitalizing on its renewable energy advantages.

This study quantifies the nonlinear interactions between digital platforms and regional economies by employing threshold regression models to assess sustainable digitalization in resource-constrained regions. This analysis presents a framework for spatially differentiated digital policies that balance efficiency and equity in China's regional development strategies.

Academic contributions are reflected in three breakthroughs:

Theoretical innovation. The "Digital Maturity-Regional Carrying Capacity" Four-Quadrant Dynamic Decision Model has been proposed, demonstrating the nonlinear amplifying effect of institutional innovation on technology spillovers. Specifically, the efficiency of technology penetration increases exponentially when policy intensity exceeds 0.6.

Developed the "Sovereign Cloud + Industrial Chain" Hybrid Architecture Theory, which addresses the "Dual-Spiral Paradox" of balancing efficiency and security. For instance, this approach resulted in a 78 % reduction in data leakage risks in the Liaocheng case.

Methodological breakthroughs. Six intelligent risk thresholds designed – technology dependency, ecological fragility, and computing overload—utilizing a dynamic calibration

algorithm with an error margin of less than 0.05. This established a minute-level risk circuit-breaker mechanism, resulting in an eightfold improvement in response speed. A gradient policy toolkit has been developed to promote differentiated empowerment across the eastern, central, and western regions. This includes initiatives such as domestication rate mandates for AIoT platforms in the east and "Digital Infrastructure-for-Equity" swaps in the west.

Practical Value. Extracted replicable governance mechanisms, such as the "Data Safe Box" initiative in Yuyao, Zhejiang, have increased SME participation rates from 22 % to 65 %.

Research confirms that enterprise digital platforms, by reconstructing the "technology standard diffusion-industrial chain synergy-factor marketization" transmission pathway (path coefficient $\beta = 0.38$, $p < 0.001$), have become the primary engine driving high-quality regional economic development. Their effectiveness adheres to the "technology penetration-institutional elasticity-spatial resilience" dynamic alignment principle ($R^2 = 0.79$), while also cautioning against technology dependency traps (where dependency exceeding 40 % suppresses regional innovation capacity). These findings provide theoretical foundations and China-specific solutions for addressing regional development imbalances and constructing new production relations in the digital era. Digital integration platforms redefine regional economic operations, serving as strategic tools for cultivating new productive forces.

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DIGITALIZATION IN SMALL AND MEDIUM BUSINESSES BASED ON SMART COOPERATION: FEATURES, PROBLEMS AND PROSPECTS

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Smart cooperation stands out as a vital and practical strategy for SMEs seeking to overcome common digitalization obstacles, especially significant financial limitations, technology access issues, and digital skill shortages. Collaborative methods enable SMEs to achieve scale economies, share risks, and tap into broader knowledge and resource pools.

A variety of cooperation models provide customized solutions. Technology partnerships, shared digital platforms (including government or industry-promoted ones), and knowledge exchange networks each effectively meet specific SME requirements. The best model(s) choice hinges on factors like the SME's sector, digital goals, resource constraints, and the surrounding collaborative environment.

Illustrative examples reveal concrete advantages. Analysis of typical cooperation scenarios shows that smart collaboration can result in definite positive outcomes, such as lowered digitalization expenses, enhanced operational effectiveness (e.g., via shared MES or ERP), wider market reach (through shared e-commerce), and quicker development of workforce digital skills.

Proactive management of difficulties is essential. Although highly advantageous, smart cooperation carries inherent challenges concerning trust-building, partner relationship management, information protection, and coordination complexity. Success depends on foreseeing these issues and applying suitable countermeasures, including formal agreements, transparent communication, clear governance, and often beginning with manageable projects.

Based on the synthesized findings, SMEs (especially those in settings like China) contemplating