CHARACTERISTICS, ISSUES, AND COUNTERMEASURES OF CHINA'S DIGITAL ECONOMY DEVELOPMENT

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Abstract: Under the wave of the new technological revolution, the digital economy is reshaping the allocation of production factors, making it a pivotal arena in global competition. While China's digital economy is advancing rapidly, it faces challenges such as platform monopolies, data security risks, and the digital divide. Digital productivity not only enhances wealth creation efficiency but also profoundly transforms production relations, necessitating the establishment of a new governance framework. Accordingly, this study proposes targeted governance strategies from the perspective of government intelligence to support high-quality economic development.

Keywords: Digital economy development; Characteristics; Government

1 INTRODUCTION

The rapid advancement of digital technologies has ushered in a new era of economic transformation, redefining traditional production models and reshaping global competitive dynamics. As a key driver of this transformation, the digital economy is not only revolutionizing the allocation of resources but also introducing unprecedented opportunities and challenges. In China, the digital economy has emerged as a vital force for high-quality growth, yet its expansion is accompanied by structural issues such as market concentration, data governance dilemmas, and uneven digital access[1]. These challenges underscore the need to re-examine existing governance frameworks and explore adaptive strategies that align with the evolving nature of digital productivity. This study delves into the characteristics, obstacles, and policy responses surrounding China's digital economic development, aiming to provide actionable insights for sustainable and inclusive progress in the digital age.

Nevertheless, China's digital economy development still faces multiple challenges, including lagging regulatory frameworks, data security vulnerabilities, and uneven regional development. In response to these issues, General Secretary Xi Jinping emphasized in the report to the 20th CPC National Congress the need to strengthen government guidance and improve institutional design, aiming to cultivate internationally competitive digital industry clusters that can provide new momentum for high-quality economic development. Currently, China is adopting a dual-drive approach combining technological innovation and institutional innovation to propel its digital economy toward a higher-quality development phase.

2 KEY CHARACTERISTICS OF DIGITAL ECONOMY DEVELOPMENT

2.1 Technology-Driven Foundations

Digital productivity fundamentally transforms economic paradigms by digitizing human understanding of objective laws through "digital-real integration," shifting resource allocation from localized to global optimization while generating innovative economic organizations and business models. Research indicates that achieving 80% adoption of intelligent computing centers during China's 14th Five-Year Plan period could drive nearly 300% growth in core AI industries. This growth stems from algorithms that digitally express physical laws, enabling software platforms to optimize data circulation. The synergistic combination of data, computing power and algorithms is revolutionizing both operational tools and decision-making processes, creating essential infrastructure for comprehensive socioeconomic digital transformation through real-time resource allocation, intelligent automation of complex decisions, and continuous optimization of industrial ecosystems via closed-loop data flows[2].

2.2 Innovation-Driven Development Models

The digital revolution is fundamentally transforming traditional industrial upgrading paradigms by overcoming the limitations of physical prototyping - long development cycles, high costs, and significant risks associated with conventional trial-and-error methods. This shift is enabled by disruptive digital twin and simulation technologies that create dynamic virtual replicas of physical systems, establishing a new innovation validation framework with three distinctive advantages: precise digital mirroring of real-world entities through similarity principles, rapid design iteration in near-zero marginal cost virtual environments, and closed-loop systems integrating description, diagnosis, prediction, and decision-making capabilities. This digital transformation has demonstrated remarkable efficiency gains across aerospace, automotive, and biopharmaceutical sectors, where virtual validation now accelerates R&D processes while dramatically reducing resource expenditures compared to traditional physical testing approaches.

2.3 Enhanced Economies of Scale

The digital economy creates increasing returns through network effects - as more users join, the value grows exponentially while costs approach zero. This stems from digital networks' unique properties: each new user adds connections that boost overall value (Metcalfe's Law), data accumulates to improve services, and ecosystem synergies multiply benefits[3]. These dynamics enable digital platforms to scale faster and achieve higher valuations than traditional businesses, as seen with major tech firms that leverage network effects for rapid growth. Essentially, digital networks rewrite traditional economic rules about scaling and value creation.

2.4 The Digital Economy Exhibits Distinct Long-Tail Characteristics

The digital economy substantially reduces enterprises' marginal production costs and diversification expenses, enabling cost-effective servicing of fragmented demand in long-tail markets. This economic paradigm not only expands market boundaries but also creates new opportunities for SMEs to pursue differentiated development strategies. By precisely capturing niche market demands, small and medium enterprises can achieve breakthrough innovations in specialized domains. Concurrently, the release of consumers' personalized needs continues to drive product market differentiation, fostering increasingly diversified industrial ecosystems.

2.5 Comprehensive Information Aggregation

The operation of market economies has long been constrained by fragmented transaction information due to technological limitations. The digital economy, leveraging its networked connectivity, real-time interaction capabilities, and advanced data processing, has successfully overcome geographical and physical barriers, making commercial transactions significantly more efficient and accessible. This innovative economic model establishes round-the-clock data collection systems that ensure comprehensive transaction records while employing sophisticated analytics to maximize data value extraction. By creating intelligent trading ecosystems, digital platforms have achieved end-to-end digital transformation - converting raw transaction data into actionable business intelligence through seamless technological integration.

3 KEY CHALLENGES IN DIGITAL ECONOMY DEVELOPMENT

3.1 Growing Concentration and Monopolistic Trends

The digital economy has fostered a competition landscape where technological capabilities and data assets become decisive competitive advantages, exhibiting strong increasing returns to scale that reinforce market dominance for leading firms. The blurring industry boundaries further amplify this effect, as digital-native companies easily cross sectors through innovation, reshaping traditional competition patterns while raising entry barriers through technological complexity and data accessibility challenges[4]. This "winner-takes-more" dynamic creates new antitrust dilemmas, requiring regulators to carefully balance innovation incentives with fair competition preservation in an environment where scale advantages and market power increasingly concentrate in few players.

3.2 Data Security and Privacy Protection Challenges

We are witnessing an unprecedented era of data explosion, where information generated by various entities grows exponentially in both volume and complexity. These data assets, carrying immense commercial value and privacy implications, have elevated security concerns to strategic importance. Currently, data security faces three fundamental challenges: technologically, emerging architectures complicate data flows, rendering traditional protection systems inadequate; legally, severe information asymmetry between data subjects and processors undermines meaningful consent; economically, extreme data concentration fosters monopolistic practices and new forms of market failure. Particularly concerning is how data monopolists leverage their dominance through algorithmic black boxes to implement discriminatory pricing a practice that harms consumers and distorts market competition. Developing governance frameworks that balance innovation with security has become pivotal for sustaining healthy digital economic growth[5].

3.3 Digital Divide and Inequality Challenges

The global digital transformation has revealed striking disparities in technological adoption across regions and demographics. These inequalities stem from both objective conditions like geographical constraints and economic development levels, as well as social factors including cultural traditions and educational attainment, collectively creating a multifaceted digital divide. This phenomenon manifests through uneven infrastructure coverage, varying technical competencies, and unequal access to digital services - fundamentally altering resource allocation patterns. While digitally-advantaged groups enter a virtuous cycle of opportunity accumulation, vulnerable populations risk exclusion from digital dividends. In China's western regions particularly, residents in remote mountainous areas face compounded disadvantages due to inadequate broadband infrastructure and digital illiteracy, limiting their access to

e-government and online education services, thereby exacerbating regional development gaps[6].

4 STRATEGIES FOR ADVANCING THE DIGITAL ECONOMY

4.1 Enhancing Technological Innovation

Cultivating digital productivity requires advancing both fundamental research and applied innovation through sustained technological breakthroughs. This drives deeper development and industrial application of digital technologies, enabling new business models and economic growth—particularly through integrating digital and physical economies. Key to this effort is focusing on cutting-edge digital research, strengthening national scientific capabilities, optimizing innovation platforms, and fostering cross-sector collaboration to develop top research talent—ensuring technology translates into real economic transformation[7].

4.2 Advancing Digital Governance

Building a digital government is pivotal to modernizing governance capabilities. This requires innovatively applying digital technologies in public services to enable intelligent restructuring of governance processes and comprehensive improvement in service efficiency. Systematically advancing "digital governance" initiatives within a legal framework will deeply integrate data governance principles into social management systems.

4.3 Promoting Data Resource Sharing

To unlock the full potential of data as a key production factor, we must systematically break down data silos and establish standardized sharing mechanisms through unified exchange platforms and scientific protocols, enabling secure and orderly public data openness while prioritizing critical public services like healthcare and education. By leveraging intelligent technologies to enhance service accessibility and convenience, we can create a virtuous cycle where cross-domain data integration directly translates into tangible social benefits - transforming data flows into improved digital services that generate higher-quality data, ultimately ensuring citizens reap the real dividends of digital transformation through more equitable and user-friendly public services.

4.4 Strengthening Data Security Protection

To comprehensively strengthen the data governance system, a coordinated three-dimensional approach must be prioritized: Legally, accelerating the improvement of data-related legislation to clarify ownership rights and delineate responsibilities among all entities, while establishing fundamental systems for data classification, grading, and cross-border flows; Regulatorily, constructing a professional data security supervision framework by establishing dedicated agencies with technical enforcement capabilities and implementing graduated penalty mechanisms encompassing fines, operational suspensions, and criminal liabilities; Corporately, strictly enforcing platform accountability by mandating comprehensive lifecycle security management systems covering critical aspects like encrypted storage, granular access control, and geographically-distributed disaster recovery, supplemented by third-party audits and real-time compliance reporting[8]. These three dimensions form an interconnected, closed-loop system - legal frameworks provide the basis for supervision, regulatory enforcement drives corporate compliance, and enterprise-level implementation in turn validates the completeness of legislation, ultimately creating a new trinity governance paradigm integrating legal, regulatory, and technological elements.

5 CONCLUSION

The digital economy, with its inherent attributes of data-centric operations, collaborative openness, and equitable accessibility, serves as a catalyst for both disseminating and optimally deploying informational, intellectual, and technological assets across economic systems.conventional economic development models. This requires establishing integrated digital industrial clusters that incorporate technological innovation, digital governance, data sharing mechanisms and security safeguards into a unified framework.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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