Research on the Digital Economy and Consumption Upgrade of Residents

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Abstract. Amidst the global digitalization wave, the digital economy is no longer an auxiliary factor for economic growth, but a core factor, profoundly influencing Chinese consumer behavior. However, existing research exhibits deficiencies in systematically elucidating the mechanisms of impact and dissecting regional and group disparities. Based on the achievements made both domestically and internationally over the past decade, this paper focuses on exploring how the digital economy influences the consumption upgrading of Chinese residents. Through a literature review, this paper systematically analyzes the pathways through which the digital economy impacts residents' consumption upgrading, from the supply side, such as transforming production methods, fostering emerging business forms, and driving industrial upgrading, and from the demand side, such as changing consumption concepts and behaviors, raising income levels, and providing consumer credit support. Meanwhile, it delves into the heterogeneous characteristics among urban and rural areas, different regions, and various groups, and elaborates on their impact effects based on multidimensional empirical data. The study finds that the digital economy promotes consumption upgrading through multiple paths, exhibiting significant heterogeneity, with industrial upgrading and marketization level playing a mediating role. The conclusions provide theoretical support and practical guidance for policy formulation, aiding in the unleashing of consumption potential.

Keywords: digital economy, resident consumption, consumption upgrading.

1. Introduction

As the global digitalization wave sweeps across, the digital economy has fully integrated into every aspect of economic and social development in various countries, becoming the core driving force for economic growth. China has excelled in the field of digital economy, with its e-commerce transaction scale consistently ranking among the top globally. Mobile payment has achieved large-scale application, and technologies such as big data and artificial intelligence have opened up many new application scenarios in production and daily life. This vigorous development trend has brought about a brand-new opportunity for transformation in consumer spending, not only altering traditional consumption patterns but also demonstrating strong momentum in driving the expansion of consumption scale and the optimization and upgrading of consumption structure.

With the deepening integration of the digital economy and the consumption sector, academic discussions on the relationship between the two have become increasingly in-depth. Ren found that the digital economy has brought about new changes in Chinese residents' consumption, characterized by strong growth momentum and diversified consumption content [1]. Zhang established a mediational effect framework to investigate the empirical enhancement of Internet plus development on the consumption patterns of residents, examining the role of e-commerce as a primary conduit [2]. Zhong conducted an empirical investigation into the influence of the digital economy on household consumption patterns, utilizing the spatial Durbin model for analytical purposes. The empirical findings indicated that the digital economy exerts a substantial positive influence on regional household consumption, with the potential to stimulate a rise in consumption levels among contiguous localities [3].

Existing research has primarily focused on the impact of the digital economy on total consumption or analyzed its effect on consumption structure from a single dimension. While this has laid a foundation for understanding the correlation between the two, there is still room for expansion in terms of systematically sorting out the impact mechanism and deeply analyzing regional and group

differences. Meanwhile, the policy level also pays close attention to the role of the digital economy in promoting consumption upgrading. The aim is to provide more precise theoretical support for policy formulation.

2. Background of Digital Economy and Residents' Consumption Upgrading

The world today is undergoing profound changes unseen in a century, with a new round of technological and industrial revolutions accelerating the reshaping of the global landscape. The digital economy, supported by digital technology, has penetrated into all areas of production and life, becoming an important driving force for economic growth [4]. It fosters new consumption scenarios in education, healthcare, entertainment, and other fields, cultivates new forms of consumption, and provides growth for expanding domestic demand [4]. The rapid development of the digital economy has greatly changed the consumption patterns of residents.

In addition, China's domestic cycle is more vibrant, with expanding domestic demand becoming the core driving force of economic growth. Consumption upgrading is prominent, and with rising household income and changing consumption attitudes, demand is shifting towards quality and individuality, leading to continuous optimization of the consumption structure. According to the Statistical Bulletin on National Economic and Social Development of the People's Republic of China in 2023, as of the end of 2023, the national e-commerce transaction volume reached 46.8273 trillion yuan, an increase of 9.4% over the previous year, and the national online retail sales were about 15.42 trillion yuan. Digital consumption has become an important part of consumers' daily lives. In this context, the correlation between the digital economy and residents' consumption upgrading has become a research focus.

3. The Path and Empirical Study of the Impact of the Digital Economy on Residents' Consumption Upgrade

3.1. Analysis of Action Path

3.1.1. Supply-Side Action Path

On the supply side, the transformation of production methods serves as the core driving force, aligning with the logic of industrial structure theory and Marx's consumption theory, which posits that production determines consumption. Specifically, digital technology enables enterprises to achieve mass customization production. For instance, the apparel industry utilizes 3D measurement and big data analysis to offer personalized design services to consumers, thereby satisfying their demand for differentiated products [5]. By utilizing new technologies such as big data, cloud computing, and blockchain, enterprises can better grasp and discern market demands, drive the transformation of production methods from standardization and large-scale production to personalization, differentiation, precision, and flexibility, continuously optimize product and service supply, increase consumer choices, and continuously improve the matching degree between supply and demand [6]. The emergence of new business models has further optimized the consumption environment. The sharing economy (such as bike-sharing and co-working spaces) has improved resource utilization efficiency and reduced consumption costs. The platform economy (such as e-commerce platforms and lifestyle service apps) has streamlined transaction processes by integrating supply and demand information, facilitating the rapid circulation of goods, and enabling consumers to access various goods and services more conveniently [4].

The digital economy has given rise to numerous new business forms and models. New business forms such as live streaming for product promotion, distance education, online healthcare, smart home, online office, intelligent transportation, and the sharing economy are thriving. New consumption scenarios are emerging endlessly, and consumers' consumption content and experience are becoming more diverse [6]. The driving effect of industrial upgrading is equally significant. The

digital economy promotes the extension of industries towards the high end of the value chain. For instance, smart manufacturing enhances product quality, and digital services expand high-end consumption scenarios, directly stimulating residents' demand for high-quality goods and services [6]. This also confirms the supporting role of industrial evolution in consumption as outlined in the theory of industrial structure. Informatization and Internet technology have improved the allocation efficiency of production factors, continuously giving rise to new business forms and models. The integration of traditional production methods with information technology can promote continuous innovation among enterprises, thereby driving the optimization and upgrading of the entire industry.

3.1.2. Demand-Side Action Path

On the demand side, changes in consumption attitudes and behaviors are key, which is closely related to the core viewpoint in consumer behavior theory that consumers pursue utility maximization. Social media and e-commerce platforms enable consumers to easily access product information and other people's consumption experiences, stimulating consumption desires. Meanwhile, the popularity of mobile payment has reduced the time cost and psychological threshold of consumption, for example, the elderly are more receptive to online shopping through simplified payment processes [4]. The development of digital technology can alleviate the problem of information asymmetry, broaden residents' information acquisition channels and methods, optimize residents' consumption decisions, and manifest and strengthen the demonstration effect and ratchet effect of consumption [6]. The increase in income level provides a foundation for consumption upgrading, and the digital economy creates a large number of new employment opportunities (such as freelance professions like platform anchors and online education lecturers), increasing residents' disposable income [5]. The digital economy provides residents with more sources of income. The popularization of the Internet and digital technology has reduced the information search costs for residents' entrepreneurship and employment, improved the efficiency of labor factor resource allocation, and offered more flexible work models, giving rise to a large number of freelance jobs [5]. Consumer credit support alleviates liquidity constraints, while digital finance reduces residents' precautionary savings through services such as credit and insurance, enabling low-income groups to participate in quality consumption through installment plans and other methods, thereby unleashing potential demand [5]. Digital inclusive finance enhances residents' access to financial services through mobile payments, digital credit, and digital insurance, encouraging residents to develop a positive and optimistic consumption mindset and actively increase their consumption [5].

3.2. Empirical Research Support

Numerous scholars have empirically examined the role of the digital economy in promoting the upgrading of consumer spending. Liu, using panel data from 31 provinces and municipalities across the country from 2000 to 2018, measured the development level of the digital economy from four dimensions: the degree of digital infrastructure penetration, the scale of the digital economy industry, the scale of digital infrastructure investment, and the coverage of online consumption. Through empirical analysis using a panel quantile model, he found that the scale of the digital economy industry, the degree of digital infrastructure penetration, the scale of investment in digital "new infrastructure," and the coverage of online consumption have a significant positive impact on consumer spending [4]. Xiang conducted an empirical analysis on the relationship between the digital economy and household consumption, utilizing the Generalized Method of Moments (GMM), mediation effects, and dynamic panel models. He found that the development of the digital economy directly or indirectly enhances the consumption level of residents, exhibiting a significant output threshold effect on household consumption [4]. Based on panel data from 31 provinces in China spanning from 2008 to 2020, Zhang empirically tested using panel data regression models, panel threshold models, and mediation effect models. The results indicated that the digital economy has a significant and positive impact on the upgrading of household consumption. This conclusion remains valid even after excluding endogeneity issues and undergoing a series of robustness tests. The consumption upgrading effect of the digital economy exhibits a nonlinear characteristic of marginal

increase [7]. In summary, scholars have employed various research methods and data samples to confirm from multiple dimensions that the digital economy promotes the upgrading of residents' consumption and has revealed its threshold effect.

4. Analysis of Regional Differences and Heterogeneity

4.1. Urban-Rural Differences

The urban-rural digital divide leads to disparities in consumption upgrading. Urban areas have well-developed digital infrastructure, and residents possess high digital literacy, enabling them to fully enjoy the dividends of the digital economy, with online shopping, online education, and other forms of consumption becoming more prevalent [4]. In rural areas, digital infrastructure lags, residents lack digital skills, and consumption remains predominantly offline [8]. Lu's research utilized panel data from China spanning from 2011 to 2020, demonstrating that the digital economy can significantly narrow the urban-rural consumption gap. This conclusion remains valid after verification [8]. Furthermore, it has a notable effect on narrowing the consumption gap in food, tobacco, education, culture, entertainment, and healthcare between urban and rural areas, but the effect on narrowing the housing consumption gap is not significant [8]. Zhang's heterogeneity analysis indicates that the digital economy has a positive effect on the consumption upgrading of urban and rural residents, with a greater impact on rural residents than urban residents [7]. Using three-year panel data from the China Family Panel Studies (CFPS), Zhou found that the digital economy can increase rural household consumption in terms of scale and raise the proportion of household expenditure on enjoyment in terms of structure, but it has no significant impact on development expenditure. Income is an important factor in promoting rural residents' consumption through the digital economy [9]. In summary, existing research generally indicates that the digital economy has a positive effect on narrowing the urban-rural consumption gap and promoting consumption upgrading among urban and rural residents, but its impact varies across different consumption sectors in urban and rural areas, and its effect on rural residents' consumption upgrading is relatively stronger. The income mechanism plays a key role in improving rural household consumption.

4.2. Regional Economic Disparities

From the perspective of regional economic levels, the digital economy in eastern China has developed maturely, deeply integrating with the manufacturing and service industries, giving rise to a plethora of high-end consumer products and services (such as smart home appliances and high-end medical services), thus exerting a stronger promoting effect on consumption upgrading [10]. In contrast, due to the lagging development of the digital economy, the single industrial structure, and lower income levels of residents, the driving effect of the digital economy on consumption upgrading in central and western China is relatively weak [4]. The regional heterogeneity analyzed by Zhang indicates that the regression coefficients of the digital economy in the eastern, central, and western regions are 0.610, 0.338, and 0.241, respectively, all at the 1% significance level [10]. However, the digital economy has a greater impact on unleashing consumption potential in the western region than in the eastern region, which may be related to the lower base in the western region and the higher marginal benefits of digital infrastructure investment [11].

4.3. Differences in Group Characteristics

In terms of group characteristics, differences in age, income, and education level lead to different paths of consumption upgrading. Young people have a high acceptance of digital technology and are more likely to try new consumption models (such as metaverse socializing and online fitness), making them the main force in digital economy consumption. Elderly people, due to their lack of digital skills, still primarily consume in traditional ways [4]. High-income groups focus on consumption quality and personalization, willing to pay for high-end products, while low-income groups pay more

attention to cost-effectiveness and have a slower pace of consumption upgrading [4]. The heterogeneity analysis of Zhou shows that the impact of the digital economy on rural consumption upgrading varies with income and age. It is more likely to encourage low-income rural households to spend more money, mainly helping elderly households expand their consumption scale, and promoting non-essential consumption that improves the quality of life for non-elderly households [9]. In addition, groups with a higher level of education can better utilize the dividends of the digital economy (such as screening high-quality goods through data analysis), and have a stronger endogenous driving force for consumption upgrading [10].

5. Policy Suggestions

Improving digital infrastructure is the foundation for promoting the digital economy and facilitating consumption upgrading. More investment should be made in digital infrastructure in rural areas and central and western regions, expanding the coverage of fiber-optic broadband and 5G networks in remote areas, and narrowing the digital divide between urban and rural areas and among different regions. For example, in rural areas, it should promote the construction of digital villages, strengthen the construction of infrastructure such as mobile base stations and internet broadband, and improve the network access rate and convenience of use for rural residents. Liu's research also emphasizes that the higher the penetration of digital infrastructure, the higher the consumption expenditure of residents, and digital infrastructure is the material basis for the normal operation and healthy development of the digital economy [4]. Liying Zhang and Xingchao Ma suggest promoting the process of rural infrastructure construction through a comprehensive project to cover information into every village and household [12].

Driving the digital transformation of industries is crucial. It is necessary to promote the deep integration of digital technology and traditional industries, while supporting manufacturing enterprises in utilizing big data, artificial intelligence, and other technologies to achieve intelligent production, making products more personalized and of better quality. Service enterprises are encouraged to develop new models that integrate online and offline services, such as telemedicine and online education, to expand high-end consumption scenarios. Zhang proposed actively promoting industrial upgrading led by the digital economy, continuously exploring new paths for the integration of digital technology with industries, and facilitating the intelligent transformation and upgrading of traditional manufacturing and service industries [10].

Optimizing digital financial services plays a crucial role in unleashing consumption potential. It is necessary to expand the coverage of digital inclusive finance, develop financial products tailored to different income groups, and alleviate liquidity constraints faced by low-income groups. It is also important to strengthen the supervision of digital finance, ensure the financial security of consumers, and enhance residents' trust in digital financial services. Financial institutions are encouraged to integrate digital financial services into various consumption scenarios, increase the provision of consumer loans, implement preferential interest rate policies, and promote the quality and upgrading of consumption [5]. Ma pointed out that it is necessary to accelerate the development of digital finance, stabilize residents' future consumption expectations, and create a smart, borderless, and inclusive mobile financial service model through strengthening strategic planning and improving working mechanisms [5].

Enhancing residents' digital literacy is the guarantee for fully leveraging the role of the digital economy. Digital skills training tailored to different groups, especially the elderly and rural residents, should be carried out to improve their ability to apply digital technologies. Through grassroots organizations such as communities and village committees, digital technology training courses should be held to teach practical skills such as smartphone usage, online shopping, and mobile payment. Zhang and Chen believe that accelerating the cultivation of digital talents and enhancing the digital literacy and skills of the nationals are key measures to bridge the digital divide and promote coordinated development of urban and rural consumption [10].

6. Conclusion

The digital economy sector (DE sector) serves as a strong driver for Chinese residents' consumption enhancement, with this effect materializing through diverse supply-side and demand-side pathways. On the supply side, it reshapes production modes, fosters new business forms, propels industrial advancement, and refines the supply of goods and services. On the demand side, it alters residents' consumption notions and behaviors, boosts their income, offers consumer credit assistance, and stimulates consumption demand. A large number of empirical studies have verified the DE sector's positive impact on residents' consumption expenditure and consumption enhancement from various angles.

The DE sector's influence on consumption enhancement presents notable heterogeneous features. In terms of the urban-rural divide, it can reduce certain consumption gaps and exerts a unique role in advancing rural consumption. From a regional perspective, the eastern region gains more obvious benefits, while the western region holds greater potential for effective release. At the group level, groups differing in age, income, and educational background show variations in the pathways toward consumption enhancement.

Industrial upgrading and marketization level act as key mediating roles in the DE sector's influence on consumption enhancement—it indirectly facilitates residents' consumption enhancement by driving industrial upgrading and raising marketization level. In the future, efforts should be made to further tap into the DE sector's advantages, develop targeted policies, narrow existing gaps, unlock consumption potential, and thus promote high-quality economic development.

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