

## ***Research on the Impact of Digital Inclusive Finance on Guangxi's Economic Growth***

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**Abstract:** The digital inclusive financial system digitizes and informationizes the inclusive financial service system, breaks through the physical limitations, expands the service scope of traditional financial services, and uses Internet technology to promote the development of financial services in underdeveloped areas and the sound operation of the financial system. Therefore, it is very forward-looking to study the relationship between digital inclusive finance and economic growth, and make suggestions on the development of digital inclusive finance in Guangxi. Based on this, this paper selects the data of 14 prefecture level cities in Guangxi from 2011 to 2020, and on the basis of theoretical analysis to put forward assumptions, conducts empirical analysis on the impact of digital inclusive finance on economic growth to verify relevant assumptions. The research results show that digital inclusive finance can effectively promote the economic development of Guangxi, while promoting economic growth through two paths, namely, improving the living standards of rural residents and promoting the optimization and upgrading of industrial structure. Based on the research results, we further put forward policy recommendations such as improving the local digital inclusive financial product system, improving rural financial coverage, giving play to government guidance, and improving the relevant legal system.

**Key words:** digital inclusive finance; Economic growth; Intermediary effect

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# **1. Introduction**

## **1.1. Research background**

The concept of "inclusive finance" was first proposed by the United Nations in 2005 with the aim of providing effective financial services to improve the living standards of the poor and ultimately eliminate the poverty gap worldwide and alleviate the lack of financial services caused by financial exclusion. Since the People's Bank of China published the United Nations' Blue Book on Inclusive Finance in 2006, China's authorities have attached great importance to the development of inclusive finance. Formal financial institutions, with the Agricultural Bank of China and rural credit cooperatives as the main body, have formed an inclusive finance system that plays a role in rural and underdeveloped areas. For a long time, inclusive finance has relied on the business outlets of commercial banks to provide services. Despite subsidies from the People's Bank of China for related businesses, financial institutions still have to pay high business costs. This conflicts with the cost-efficiency maximization principle of commercial banks and is not conducive to the further development of inclusive finance. The concept of "digital inclusive finance" was introduced in the G20 High-level Principles on Digital Inclusive Finance released in 2016, which later became widely known. It combines Internet technology with inclusive finance and provides a new path for inclusive financial services through digital means, further lowering the threshold and cost of financial services and expanding the depth and breadth of financial services. In the National Informationization Plan for the 14th Five-Year Plan, the priority action of "digital inclusive financial services" is explicitly proposed. Currently, China's financial industry has a promising future relying on digitalization and intelligence.

It is worth noting that the development of inclusive finance in Guangxi is still in its infancy. Digital financial technology was first applied and popularized in developed cities. The allocation mechanism of financial resources in the less developed areas of Guangxi has not changed significantly due to digital inclusive finance. The use of electronic payment services in Guangxi is still not active enough and lags behind the level of developed urban areas in China. Therefore, under policy goals such as rural revitalization, digital villages and the "2035 Vision", we should deeply implement the "Opinions of The State Council on Promoting High-Quality Development of Inclusive Finance", and deeply study the existing problems of inclusive finance in poverty-stricken and underdeveloped areas and the impact of introducing technological means such as artificial intelligence and blockchain to develop financial services on economic growth. Based on the background of technological change, this paper conducts an empirical analysis of the impact of digital inclusive finance on economic growth in Guangxi region, explores the relationship between the two, further sorts out and optimizes the theory of inclusive finance, and clarifies the path of the role of digital inclusive finance on economic growth in Guangxi.

## **1.2. Research significance**

### **1.2.1. theoretical significance**

Literature studies have shown that digital inclusive finance is a new financial system of "inclusive finance + digital economy" formed by the continuous innovation of Internet technology and the further optimization of the inclusive finance system. The current digital inclusive finance system compensates for the deficiency of "commercial sustainability", improves the inefficiency of traditional financial business relying on physical outlets, optimizes the cost of traditional financial services, and promotes the development of inclusive finance by using virtual currency payment methods. The impact of digital inclusion on the economy and society is not limited to a single area of economic growth, but is an all-round

and diversified impact. This broad scope of impact promotes multi-dimensional and high-quality economic development. However, there are few studies on the pathways by which the development of digital inclusive finance affects economic growth in underdeveloped and poverty-stricken areas and the deep relationship between the two. In view of this, this paper takes the economic development of Guangxi as the starting point, incorporates digital inclusive finance and Guangxi's economic growth into a unified framework, and further conducts empirical tests through panel regression to expand the boundaries of research on issues related to digital inclusive finance and economic growth, enrich the development economics of underdeveloped and poor regions in China, and promote rural revitalization. A theoretical system for consolidating the achievements of poverty alleviation.

### **1.2.2. realistic meaning**

In the report of the "Plan for Promoting Inclusive Finance Development (2016-2022)" issued by The State Council, it is clearly stated that inclusive finance has been established as a national strategy. Since 2016, digital inclusive finance has developed rapidly and played a significant role in China's poverty alleviation efforts. With the successful completion of poverty alleviation efforts, China is now in a critical period of effective connection between poverty alleviation and rural revitalization. How to continue to make good use of digital inclusive finance as an effective tool to consolidate the achievements of poverty alleviation and provide strong support for rural revitalization is the key issue to be studied. The implementation of the financial Technology Development Plan (2022-2025), which aims to provide more inclusive, green and humanized digital financial services for the people, will drive continuous innovation in the field of inclusive finance in Guangxi and enhance the vitality of regional economic development. Guangxi is located in the southwestern border area of China, with many mountains and rivers within its territory. Constrained by the natural environment, the region has weak infrastructure such as transportation and communication, and its economic development level lags behind that of the developed coastal provinces. Digital inclusive finance offers unlimited possibilities for improving the level of financial services in Guangxi, thereby promoting economic growth and achieving a "curve overtaking".

Based on an analysis of the development status of inclusive finance in China, this paper further introduces the concept of "digital inclusive finance", takes the development status of Guangxi's economy as an example, constructs a path system for digital inclusive finance to promote Guangxi's economic development, and puts forward policy suggestions through empirical analysis and discussion. It helps to promote the effective and deep integration of digital inclusive finance with the healthy economic development of underdeveloped regions, and provides effective theoretical support and reference experience for digital inclusive finance to drive the increase of national income and the improvement of farmers' living standards and thereby drive the economic development of the entire region.

## **2. Literature review**

### **2.1. Inclusive finance and economic growth**

Through a review of previous literature, most scholars at home and abroad have conducted in-depth research on the issue of "the impact of inclusive finance on economic growth" from both macro and micro perspectives. From a macro perspective, inclusive finance has a positive promoting effect on financial deepening, inclusive growth and other aspects. Lu Yongbin (2015) proposed that as China continues to build an inclusive financial system, the scope of financial services expands, thereby curbing the occurrence of profit-seeking problems of financial capital and providing more equal and extensive financial digital services<sup>[1]</sup>. Hannig and Jansen (2015) argue that inclusive finance can correct the financial

service system, make it precisely serve the real economy, improve the depth, fairness and accessibility of financial services for people who benefit less or not from the development of inclusive finance, and thereby promote economic growth<sup>[2]</sup>. Susanta (2016) found that inclusive growth pays more attention to vulnerable groups, emphasizes fair economic and social development, and vulnerable groups in developing countries can receive assistance through inclusive finance, thus enabling more funds to be focused on the real economy, further promoting economic development and eliminating poverty<sup>[3]</sup>. Xing Yan (2016) believes that inclusive finance can stimulate the national economy, improve the financing environment for small, medium and micro enterprises in China, and achieve inclusive growth<sup>[4]</sup>. Hao Yunping et al. (2018) pointed out that inclusive finance effectively enables disadvantaged groups with a lower level of inclusive economic growth to benefit more, while improving the distribution<sup>[5]</sup> of inclusive economic growth. Yu Guoqing (2024) pointed out that inclusive finance can expand the coverage and increase the availability of financial resources, boost the rapid development of new quality productivity, and thereby promote regional economic development<sup>[6]</sup>. Fan et al. (2024) found that the development of inclusive finance expands the scope of benefits for economic entities, and the role of service penetration rate and financial market environment in promoting economic development is more significant<sup>[7]</sup>.

From a micro perspective, inclusive finance has a positive promoting effect on narrowing the income gap between urban and rural areas and alleviating financing difficulties. Dupas and Robinson (2013) found that with the development of inclusive finance, the problem of financing difficulties for small, medium and micro enterprises has been effectively solved, thereby promoting investment and financing activities<sup>[8]</sup> of small, medium and micro enterprises. Kim (2016) found that in high financial risk countries and low-income countries, the implementation of inclusive finance helps eliminate income inequality between urban and rural areas, thereby affecting economic development<sup>[9]</sup>. Wang Yebin (2018), taking Guangxi region as an example, found through empirical research that the development of inclusive finance provides a solution to the urban-rural income gap problem in Guangxi region.<sup>[10]</sup> Li Jianjun (2019) found that the problem of urban-rural income gap can be effectively improved in the early stage of inclusive finance development, but there is an obvious problem of geographical latitude penetration. An information-based, widely inclusive and commercially sustainable inclusive finance system should be constructed to promote fair income distribution.<sup>[11]</sup> Further research by Li Jianjun (2020) shows that inclusive finance plays a more significant role in reducing income inequality between urban and rural areas and promoting economic growth in regions with a relatively high proportion of agricultural GDP and poor infrastructure.<sup>[12]</sup> Regarding the impact of inclusive finance on the consumption level of residents, Dong Yanmin (2023) pointed out that inclusive finance can enhance the risk-resistance capacity of families and effectively alleviate the current situation of rural poverty.<sup>[13]</sup> Nie Bo et al. (2024) found that a scientific financial evaluation index system can promote the in-depth development of rural revitalization, dynamically connect urban and rural economies, and enhance the vitality of regional economic development.<sup>[14]</sup> The effects<sup>[15]</sup> of the implementation of inclusive finance policies, as pointed out by Zhang Xing (2024), have increased financial support, alleviated the financing pressure on small and medium-sized enterprises, improved the current business environment, and promoted high-quality economic development.

## 2.2. Digital inclusive finance and economic growth

With the rapid development of digital technology, digital inclusive finance, as an emerging financial model, has become a hot issue in the development of China's real economy. Regarding the channels through which digital inclusive finance affects economic

development, scholars' current research can roughly be divided into macro and micro levels. From a macro perspective, digital inclusive finance has a positive promoting effect on inclusive growth, industrial structure upgrading, green economic development, etc. Tang Wenjin (2019) found that improving the infrastructure of digital inclusive finance in backward regions can help solve the problem<sup>[16]</sup> of economic poverty in backward regions. Tang et al. (2020) found that enhancing the breadth and depth of use of digital inclusive financial services contributes to equal opportunities, promotes inclusive growth, and ultimately promotes sustainable economic growth<sup>[17]</sup>. Fu et al. (2021) argued that digital inclusive finance can significantly promote inclusive growth<sup>[18]</sup> through both innovation and wealth channels. Zhang Lin (2021) suggests that the development of digital inclusive finance can reset resources and make their allocation reasonable, thereby promoting the upgrading<sup>[19]</sup> of regional industrial structure. Zhang He (2021) research suggests that digital inclusive finance can increase the income of vulnerable groups, effectively promote the development of private enterprises, thereby promoting the upgrading of regional industrial structure and ultimately significantly influencing regional economic development<sup>[20]</sup>. Unlike traditional inclusive finance, on the one hand, Yin et al. (2023) proposed that digital inclusive finance breaks the limitations of time and space, its inclusiveness and efficiency are more compatible with contemporary economic development, the service scope of economic entities is broader, and the availability of financial resources is stronger<sup>[21]</sup>; On the other hand, Zheng Jianzhuang (2023) et al. have a stronger<sup>[22]</sup> driving effect on economic development compared to traditional finance. An et al. (2024), using the individual fixed effect model and the mediating effect model, found that digital inclusive finance is closely related to the level of green economic development and has a positive promoting effect<sup>[23]</sup> on green economic development. Peng Kun (2025) pointed out that developing digital inclusive finance can expand the coverage of digital services and increase the economic growth rate and the quality<sup>[24]</sup> of financial services in underdeveloped regions.

From a micro perspective, digital inclusive finance also plays a positive role in narrowing the income gap between urban and rural areas, alleviating financial exclusion, easing the financing difficulties of small and micro enterprises, and promoting innovation and entrepreneurship. Foreign scholar Kapoor (2013) found that digital inclusive finance can promote educational investment, enhance the capabilities of vulnerable groups, promote the growth of small, medium and micro enterprises, thereby narrowing the income gap between urban and rural areas and promoting economic growth<sup>[25]</sup>. Manyika et al. (2016) argued that the improvement of the financing environment for micro, small and medium-sized enterprises benefited from the development of digital inclusive finance, which drove the growth<sup>[26]</sup> of the country's economic level. Arjunwadkar (2018) suggested that the development of digital inclusive finance is quite different from the traditional financial model. Digital inclusive finance helps to enhance the equity and accessibility of financial services and effectively address the financing difficulties<sup>[27]</sup> of small, medium and micro enterprises. Zhou et al. (2020) proposed that the development of digital inclusive finance increases financial accessibility and helps narrow the income gap<sup>[28]</sup> between urban and rural areas. Qian et al. (2020) found that digital inclusive finance helps increase human capital levels, improve the market environment, promote innovation and entrepreneurship in underdeveloped regions, and further drive regional economic growth<sup>[29]</sup>. Ma Yaming and Zhou Lu (2022) found that the development of digital inclusive finance promotes rural economic growth<sup>[30]</sup> by boosting rural residents' consumption, promoting regional entrepreneurship and technological innovation. Jin Jing (2022) pointed out that in a society of common prosperity, the industrial advantages of rural areas are enhanced, and the coverage of digital inclusive finance to rural areas has a positive effect<sup>[31]</sup> on agricultural product processing and service industries. The research results of Lai Junming (2022) show that the development of digital inclusive finance not only

improves the living standards of urban residents, but also increases the income<sup>[32]</sup> of residents in poverty-stricken areas such as rural areas and the central and western regions. Qian et al. (2024) proposed that the development of digital inclusive finance can change the consumption structure in rural areas, and green and low-carbon production methods will effectively drive rural economic development<sup>[33]</sup>. Pan Zongling (2024) found that empowering financial services with digital technology can further narrow the urban-rural gap and accelerate the integrated development<sup>[34]</sup> of digital inclusive finance and the rural consumer market. Huang Shiwang (2023) believes that digital inclusive finance can effectively narrow the imbalance gap in regional economic development and promote high-quality regional economic development<sup>[35]</sup>. He et al. (2024) pointed out that digital inclusive finance effectively promotes equal access to financial resource services for low-income groups and small and micro enterprises in Northeast China, injecting impetus<sup>[36]</sup> into regional economic development.

To sum up, it is found that most studies by scholars at home and abroad on the impact of digital inclusive finance on regional economic development are analyzed from the national level or macro and micro perspectives, while there are fewer studies on the impact on the economic growth of a specific region. There are significant differences in resources and environmental factors among various regions in China, and development is not the same. Research should be conducted at the regional level in accordance with local conditions. This paper will take Guangxi as the research object, select the data of 14 prefecture-level cities in Guangxi from 2011 to 2023, and conduct empirical analysis based on theoretical analysis and research hypotheses to explore the impact of digital inclusive finance on the economic growth of the 14 cities in Guangxi and analyze its influence mechanism, with the aim of providing guiding suggestions for the future development direction of Guangxi's economy.

### **3. Theoretical analysis and research hypothesis**

#### **3.1. Definition of basic concepts**

Inclusive finance adheres to the principle of commercial sustainability, advocates equality of opportunity for all, meets the financial needs of vulnerable groups by providing them with effective financial services, and ultimately achieves the goal of inclusive finance, alleviating the lack of financial services caused by financial exclusion. In particular, compared with traditional finance, inclusive finance is more characterized by fairness, universality and affordability.

At the end of 2015, in order to further accelerate the development process of inclusive finance, The State Council issued the "Plan for Promoting Inclusive Finance Development (2016-2020)", which clearly states that inclusive finance should be placed in the position of national strategy and that all market entities should be able to participate in the inclusive finance ecosystem. Let tiny financial services bring happiness to every individual and every enterprise.

The digital inclusive finance system digitizes and informatizes the inclusive financial services system, breaks through physical limitations, expands the scope of traditional financial services, uses Internet technology to promote the development of financial services in underdeveloped areas and the sound operation of the financial system, enhances information transparency and promotes information sharing. It solves the problem that some customers cannot access financial services through traditional inclusive finance and builds a more convenient, secure, efficient and low-cost financial service system. In 2021, the Central Committee of the Communist Party of China and The State Council also issued relevant documents, clearly stating that digital inclusive finance should be used to boost rural

economic development and make rural digital inclusive finance a key force in the process of rural revitalization.

Economic growth generally refers to an increase in the capacity of a country or region to produce goods and services. This is how American economist Simon Smith Kuznets views economic growth: "As a resident of a country, the ability of the country to provide me with a variety of economic products is increasing, and this ability is built on technological development, institutional advancement, and ideological progress." Therefore, economic growth can be understood more as an increase in the quantity and quality of goods produced per capita in society or in regions. In general, economic development is a rather complex concept that is associated with many economic concepts and comprehensively reflects the overall level of economic and social development.

This paper, in combination with the definitions of digital inclusive finance and economic growth, takes Guangxi Zhuang Autonomous Region as an example to explore the impact of digital inclusive finance on the economic growth of 14 cities in Guangxi and analyze its influence mechanism, with the aim of providing guiding suggestions for the future development direction of Guangxi's economy.

### **3.2. The Influence Path of Digital Inclusive Finance on Guangxi's Economic Growth**

As early as 1912, Schumpeter proposed in his book "The Theory of Economic Development" that the services provided by the financial industry, such as savings mobilization, risk management and facilitation of transactions, play a crucial role in technological innovation and economic development. The development of the financial industry can provide financial support for economic activities in a region. By improving the efficiency of capital flow and guiding the direction of capital flow, it can achieve the goal of increasing the total amount of factors and improving factor productivity, thereby promoting economic development in the region. With the continuous development of financial theory, Leyshon and Thrift(1993) proposed the financial exclusion theory from the perspective of financial geography in the 1990s. This theory starts from the fact that the distance between customers and financial institutions affects the convenience of their access to financial services, and then develops to the extent that in the entire financial system, due to factors such as financial institutions and institutions, This has led to limited access to financial services for vulnerable groups in underdeveloped areas, especially low-income people. As a result, the emergence of a digital inclusive financial services system can improve this situation, and on this basis, an assumption is made:

H1: Digital inclusive finance can effectively promote the economic growth of Guangxi.

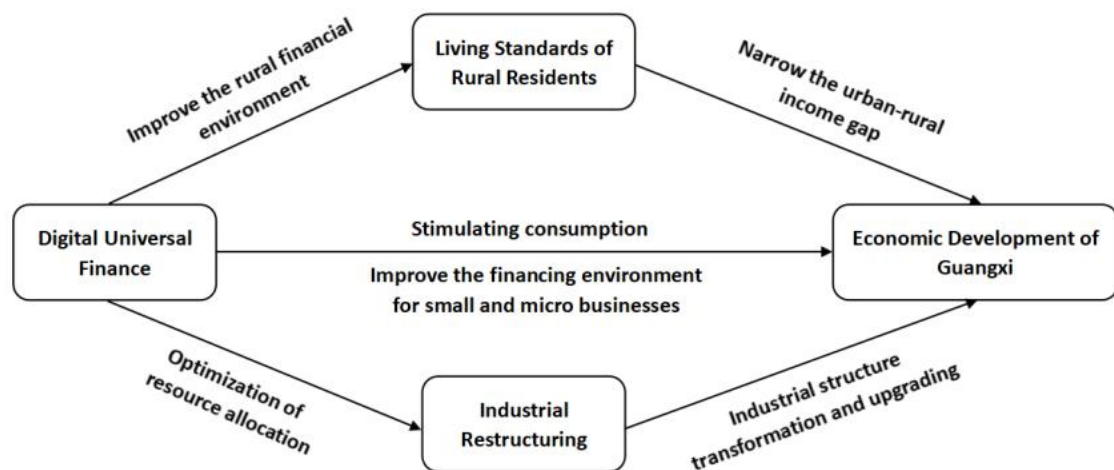
The issue of agriculture, rural areas and farmers is related to the national economy and people's lives. China insists on making it the top priority of the work of the entire Party. For years on end, Central Document No. 1 has focused on issues related to agriculture and rural areas. The focus of rural economic development has shifted. Previously, it was about winning the battle against poverty, and now it is about implementing the rural revitalization strategy and promoting prosperity for farmers and the people. In the "Opinions of the Central Committee of the Communist Party of China and The State Council on Comprehensively Promoting Rural Revitalization and Accelerating Modernization of Agriculture and Rural Areas" released in 2021, it was explicitly proposed to develop digital inclusive finance in rural areas, which shows that digital inclusive finance is a powerful tool for promoting rural revitalization. "Prosperous industries" and "affluent lives" are important components of the general requirements for rural revitalization and fundamental requirements for narrowing the gap between the rich and the poor and achieving common prosperity. And raising the income

of rural residents is an effective way to achieve industrial prosperity and affluent life in rural areas. The promotion of digital inclusive finance has enhanced financial accessibility in rural areas and contributed to the improvement of rural residents' living standards, thereby helping to narrow the income distribution gap between urban and rural areas and improve the overall economic level of the region. Based on the above analysis, propose a propositional assumption:

H2: Digital inclusive finance can improve the living standard of rural residents to promote regional economic growth.

Industrial structure has a very close and inseparable relationship with economic growth. The two are interrelated and influence each other. On the one hand, industrial technological innovation requires economic progress to drive; In the same way, the economy cannot do without industrial reform. In his book *Modern Economic Growth*, Kuznets argues that traditional industrial structures can easily leave the economy stuck at the starting line and unable to move forward because of the different labor forces among production sectors. The necessary condition for the modern economy to keep growing upward is that the efficiency of the agricultural sector in producing labor is significantly improved and the proportion of the industrial sector in the industrial structure is on the rise. For a long time, finance has played a role in the allocation of resources in the economic operation, and the development of inclusive finance brings fairness, which can make financial capital more compatible with production factors. When financial capital is concentrated in the secondary and tertiary industries, it will bring development opportunities to related industries, promoting the optimization and upgrading of the industrial structure while driving the growth of the real economy. Digital inclusive finance is an improvement and innovation of inclusive finance, on which information costs can be further reduced and industrial development can be driven. Based on this, an assumption is made:

H3: Digital inclusive finance promotes regional economic growth through industrial structure optimization.



**Figure 1.** The impact path of digital inclusive finance on Guangxi's economic growth

## 4. Empirical analysis

### 4.1. Model setting and data source



This study selected data from 14 prefecture-level cities in Guangxi Zhuang Autonomous Region. We used the Digital Inclusive Finance Index from the Peking University Digital Inclusive Finance Index Report (2011-2023) to represent the core variable. Other indicator data were taken from the Guangxi Statistical Yearbook 2011-2023, the China Economic Net Statistical Database, and the EPS Global Statistical Data Platform. As the Peking University Digital Inclusive Finance Index Report is only updated up to 2023, the sample period for this study is 2011-2023. Interpolation was used to complete the missing data for some years and regions in the control variables.

To empirically analyze the direct impact of digital inclusive finance on economic growth in Guangxi and the mediating effect of rural residents' living standards and industrial structure optimization and upgrading, this study, based on Wen Zhonglin et al. (2004), constructs a panel data model and uses stepwise regression for regression. The model of this study is set as follows:

$$\begin{aligned} \text{GDP}_{it} &= a_0 + a_1 \cdot \text{DIFI}_{it} + a_{2it} \cdot \text{GOVE}_{it} + a_3 \cdot \text{LABOR}_{it} + a_4 \cdot \text{EDUC}_{it} + \varepsilon_{it}(1) \\ \text{MV}_{it} &= b_0 + b_1 \cdot \text{DIFI}_{it} + b_2 \cdot \text{GOVE}_{it} + b_3 \cdot \text{LABOR}_{it} + b_4 \cdot \text{EDUC}_{it} + \varepsilon_{it}(2) \\ \text{GDP}_{it} &= C_0 + C_1 \cdot \text{DIFI}_{it} + C_2 \cdot \text{MV}_{it} + C_3 \cdot \text{GOVE}_{it} + C_4 \cdot \text{LABOR}_{it} + C_5 \cdot \text{EDUC}_{it} + \varepsilon_{it}(3) \end{aligned}$$

GDP is the explained variable, representing the overall economic growth level of Guangxi Zhuang Autonomous Region. The core variable is the Digital Inclusive Finance Index (DIFI), which represents the level of inclusive finance development in the 14 prefecture-level cities of Guangxi Zhuang Autonomous Region. The previous text sorted out the basic concept definitions of digital inclusive finance and economic growth, conducted theoretical analysis on them and proposed research hypotheses. We believe that digital inclusive finance promotes economic growth by improving the living standards of RURAL residents and promoting the optimization and upgrading of the industrial structure. Therefore, the mediating variables (MV) are industrial structure (IS) and the living standards of rural residents (RURAL). Through a review of previous literature, this study selects fiscal expenditure (GOVE), LABOR level (LABOR), and education level (EDUC) as control variables. Fiscal expenditure (GOVE), as an important means for the government to promote macroeconomic development, plays a crucial role in overall economic development. LABOR level is an important variable in the economic development process, and an adequate labor force is an important guarantee for economic growth. The level of education (EDUC) is closely related to the level of science and technology development and talent reserves in a region, and it is also an important variable that affects the rate of economic growth. Descriptive statistical analysis of the data indicators is shown in Table 1.

**Table 1.** Descriptive Statistical Analysis

	Number of cases	minimum value	Maximum	average value	standard deviation
<b>GDP</b>	182	356.400	5469.000	1386.500	977.023
<b>DIFI</b>	182	27.980	320.250	192.687	75.427
<b>Rural</b>	182	3516.000	15090.000	8456.491	2920.982
<b>IS</b>	182	173.460	3232.179	746.220	570.002
<b>Gove</b>	182	60.773	838.933	272.682	152.568
<b>Labor</b>	182	91.560	36202.000	1305.873	4322.694
<b>Educ</b>	182	12.000	202.660	63.131	37.727

N	182	—	—	—	—
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## 4.2. Empirical results and path analysis

### 4.2.1. The Impact of Digital Inclusive Finance on Guangxi's Economic Growth

The F-test and Hausman test were conducted before the regression estimation, with test values of 106.726 and 4.231, F-test P values of 0.0000, and Hausman test P values of 0.238>0.05. Therefore, the random effects model and the fixed effects model were selected respectively for the regression model (1). Use the random effects model as the final result. Table 2 reflects the impact of digital inclusive finance on Guangxi's economic growth, and Model (1) shows that digital inclusive finance has a positive impact on Guangxi's economic growth. The regression coefficient of digital inclusive finance in column (1) is 0.195, and the random effects model is used for regression analysis. Both regressions pass the 1% significance test, verifying that digital inclusive finance can effectively promote the improvement of Guangxi's economic level. The empirical results support hypothesis H1. In fact, there have always been service thresholds in the traditional financial industry, and the existence of financial exclusion leads to an imbalance in the overall economic development of society, which in turn affects economic growth. The popularization of digital inclusive finance breaks the constraints of distance and cost. According to its essence, its development is bound to provide more convenient and reasonable financial services for vulnerable groups such as low-income people and small and micro enterprises. At the same time, the popularization of digital inclusive finance can effectively stimulate consumption, which is one of the three engines driving economic growth and will contribute to economic growth. Secondly, digital inclusive finance can improve the financial environment in rural areas. It is more digitalized on the basis of inclusive finance and is more adapted to the complex natural environment in mountainous areas. Convenient financial services can effectively boost rural economic development and thereby improve the living standards of rural residents to promote economic growth. Finally, digital inclusive finance makes the financing environment for small and medium-sized enterprises less challenging than before, drives innovation and entrepreneurship activities in various regions, promotes the optimization and upgrading of the industrial structure, and thereby promotes economic growth.

**Table 2.** Impact of Digital Inclusive Finance on Guangxi's Economic Growth

	(1) GDP	
	Re	Fe
DIFI	0.195*** (3.617)	0.256*** (4.347)
Gove	0.513*** (6.305)	0.426*** (4.867)
Labor	0.047*** (3.365)	0.054*** (4.181)
Educ	0.224*** (4.237)	0.186*** (3.435)
Adj-R2	0.868	0.869
N	182	182

**Note:** t statistics are shown in brackets, indicating \* \* and \* \* \* respectively representing 5% and 1% significance levels, the same below.

#### 4.2.2. The Path Analysis of the Effect of Digital Inclusive Finance on Guangxi's Economic Growth

The previous section constructed the impact path of digital inclusive finance on Guangxi's economic growth. This section aims to verify the theoretical assumptions of the previous section through empirical research and regression analysis of the data. Based on the previous theoretical analysis, we propose two path assumptions: 1. Digital inclusive finance can improve the living standards of rural residents to promote economic growth in the Guangxi region. 2. Digital inclusive finance can promote the optimization and upgrading of the industrial structure to boost economic growth in Guangxi.

#### 4.3. Digital Inclusive Finance and Living standards of rural residents

Table 3 reflects the correlation between digital inclusive finance and the living standards of rural residents, and models (2) and (3) show that digital inclusive finance has a positive impact on the living standards of rural residents. After the F-test and Hausman test, the fixed-effect model was chosen for regression. The regression coefficient of digital inclusive finance in column (1) is 0.195, passing the 1% significance test, indicating that digital inclusive finance has a positive effect on the economic development of Guangxi region; The regression coefficient of digital inclusive finance in column (2) is 0.399, passing the 1% significance test, indicating that digital inclusive finance has a positive impact on the living standards of rural residents in Guangxi region; In column (3), the mediating variable of rural residents' living standards was added to the model of digital inclusive finance on economic growth for regression. The results showed that the regression coefficient of digital inclusive finance was 0.123, passing the 5% significance statistical level, and the regression coefficient of rural residents' living standards was 0.333, passing the 1% significance test. At the same time, we compared columns (1) and (3) and found that the impact coefficient of digital inclusive finance in column (3) on Guangxi's economic growth decreased compared to column (1), indicating that digital inclusive finance has improved the living standards of rural residents, thereby narrowing the income distribution gap between urban and rural areas and enhancing the overall economic level of Guangxi. The empirical results support hypothesis H2. The explanatory mechanism for this is: Digital inclusive finance has a wide coverage and can provide convenient and matching financial services for economic activities in rural areas. At the same time, digital inclusive finance effectively combines Internet technology with traditional finance, uses big data technology to evaluate and reconstruct the rural credit system, reduces the cost of risk assessment, and thereby buffers the financing pressure in rural areas. Further stimulate the innovation and entrepreneurship vitality of farmers, enhance the digitalization level of rural areas, promote the prosperity of rural industries, increase the income level of rural residents, achieve a prosperous life, and achieve high-quality economic development.

**Table 3.** Digital inclusive finance and living standard of rural residents

(1) GDP	(2) Rural	(3) GDP
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DIFI	0.195*** (7.780)	0.399*** (6.202)	0.123** (2.013)
Rural	—	—	0.333*** (4.988)
Gove	0.204*** (3.835)	0.454*** (4.754)	0.275*** (3.148)
Labor	0.045*** (4.056)	0.079*** (5.591)	0.028** (2.697)
Educ	0.132*** (2.675)	0.149** (2.518)	0.136*** (2.645)
Adj-R2	0.862	0.898	0.886
N	182	182	182
F	965.857	359.096	254.234

#### 4.4. Digital inclusive finance and industrial structure optimization

Table 4 reflects the correlation between digital inclusive finance and industrial structure optimization, and models (2) and (3) show that digital inclusive finance has a positive impact on industrial structure transformation. First, we conducted effect tests on the model using the F-test and the Hausman test, and selected the random effect model and the fixed effect model respectively to regression model (2) and (3). The regression coefficient of digital inclusive finance in column (1) is 0.195, passing the 1% significance test, indicating that digital inclusive finance has a positive effect on the economic development of Guangxi region; The regression coefficient of digital inclusive finance in column (2) is 0.252, passing the 5% significance test, indicating that digital inclusive finance has a positive impact on the optimization of the industrial structure in Guangxi region; Column (3) Further incorporating the mediating variable of industrial structure into the model of digital inclusive finance for economic growth, the results show that the regression coefficient of digital inclusive finance is 0.182 and that of industrial structure is 0.416, both of which pass the 5% significance statistical level. At the same time, we compared columns (1) and (3) and found that the impact coefficient of digital inclusive finance on Guangxi's economic growth in column (3) decreased compared to column (1) after adding the mediating variables, indicating that digital inclusive finance promotes the optimization of industrial structure and drives upward growth of the real economy. The empirical results support hypothesis H3. The reason for this is that in the context of economic globalization, the adjustment of industrial structure is of great significance for addressing the structure of China's economic growth and promoting regional economic development. The development of digital inclusive finance digitizes the real economy, enables cross-border innovation in industries, and enhances and elevates industrial competitiveness and quality. Therefore, digital inclusive finance plays a positive role in optimizing China's industrial structure. While optimizing the industrial structure, it can also promote the aggregation of industrial capital and guide the further improvement of the capital market. At the same time, the transformation and upgrading of the industrial structure is conducive to improving the traditional high energy consumption and low level extensive economic growth model, enhancing regional production efficiency, and ultimately driving regional economic growth.

**Table 4.** Digital Inclusive Finance and Industrial Structure Optimization

	(1) GDP	(2) IS	(3) GDP
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DIFI	0.195** (3.617)	0.252** (3.515)	0.182** (2.639)
IS	—	—	0.416** (10.568)
Gove	0.513** (6.305)	0.671** (6.175)	0.107 (1.447)
Labor	0.047** (3.365)	0.076** (3.597)	0.024* (2.288)
Educ	0.224** (4.237)	0.244** (3.338)	0.064 (1.481)
Adj-R2	0.868	0.821	0.922
N	182	182	182
F	965.857	714.153	386.766

## 5. Research conclusions and policy recommendations

Since the reform and opening up, China's economy has developed rapidly. In order to adapt to the trend of economic globalization, China has made many efforts to achieve common prosperity. China has been committed to developing the rural economy and driving economic growth through industrial transformation and upgrading, especially in underdeveloped regions, hoping to promote rural economic growth through the development of inclusive finance, drive economic progress through industrial reform, and push the economy of underdeveloped regions forward steadily. Through a combination of theoretical research and empirical analysis, it was found that: 1. Digital inclusive finance has contributed to economic growth in Guangxi, and the level of economic development in Guangxi has continued to rise. 2. The development of digital inclusive finance can improve the living standards of rural residents, address the imbalance in economic development, and promote economic growth. 3. Digital inclusive finance has effectively driven the transformation of the industrial structure and promoted the upgrading of the industrial structure, thereby driving the economic development of Guangxi. In light of the current economic development situation in Guangxi, the following suggestions are made for the development of digital inclusive finance in the region:

### 5.1. Improve the digital inclusive financial product system and popularize relevant financial knowledge

At present, digital inclusive finance has achieved certain results by reducing operating costs and expanding service coverage due to the advantages of its digital platforms and digital products. However, there is still much room for development in product design and service system. On the basis of clearly defining the people served by inclusive finance, tailor financial products suitable for different types of customer groups. For different groups such as small and micro enterprises, urban low-income people, and rural residents, personalized financial products and services are provided after big data calculation. At the same time, popularizing relevant financial knowledge is a prerequisite for the vigorous development of digital inclusive finance in Guangxi, as inclusive finance is positioned to serve vulnerable groups, customers inevitably have problems such as low educational attainment and weak ability to accept new things, especially in remote rural areas. We should make extensive use of digital media and other channels to effectively popularize knowledge related to digital inclusive finance in all aspects and from multiple perspectives, expand the coverage and groups of digital inclusive finance as much as possible, and carry out special activities for

vulnerable groups in traditional financial services to enable them to skillfully use related products. The public should be encouraged to participate in the practice of digital inclusive finance. At the same time, consider bringing financial knowledge into the classroom, establish a long-term mechanism to ensure the development of financial knowledge education, and offer relevant lectures and series of courses in primary and secondary schools and colleges where conditions permit.

## **5.2. Improve the coverage of rural financial services and strengthen the construction of relevant infrastructure**

The research found that digital inclusive finance has a significant effect on increasing farmers' income. Due to historical and natural factors, rural areas in Guangxi are mountainous and have backward infrastructure such as transportation and communication, which leads to a low level of economic development in the region. In the context of the current comprehensive rural revitalization, digital inclusive finance plays an important role in rural revitalization. Unlike traditional financial services that rely on financial business outlets, digital inclusive finance mainly relies on Internet finance platforms. To increase the coverage of digital inclusive finance in rural areas of Guangxi, there is an urgent need to address the problems of backward communication facilities and insufficient coverage of mobile devices in rural areas. By building infrastructure such as base stations and broadband lines, communication levels and quality can be improved, and the increase in Internet coverage can help rural residents use digital inclusive finance products more conveniently. Match the financial needs of rural areas with financial services to address the problems caused by improper operation and infamiliarity with related financial products in the actual use of rural users, and enable digital inclusive finance to cross the technological "gap" and truly serve the "agriculture, rural areas and farmers" issues.

## **5.3. Accelerate the optimization and upgrading of industrial structure and give play to the role of government guidance**

Government policy guidance plays a crucial role in the development of digital inclusive finance, as research shows, digital inclusive finance stimulates economic growth by promoting the optimization and upgrading of the industrial structure. In the course of social and economic development, the adjustment of industrial structure is often associated with finance. When financial resources are more inclined towards certain industries, social and economic resources will also move in a linked manner towards those industries, indicating that finance plays a role in resource allocation in modern economic activities. Digital inclusive finance, as a deepening of financial services, involves the entire financial ecosystem in its system construction. Currently, fintech companies represented by digital inclusive finance are springing up like mushrooms after rain. The rapid rise of emerging industries will accelerate the optimization and upgrading of the industrial structure, and the proportion of the tertiary industry will continue to increase. This structural change is bound to drive a new round of economic growth. Therefore, local governments should support the development of fintech enterprises, introduce relevant policies to increase tax reduction and exemption for related enterprises, encourage innovation and entrepreneurship, and attract tech talents. The People's Bank of China and relevant units should, in light of the economic and industrial development situation in various regions of Guangxi, look for the fulcrum of capital investment between urban and rural areas based on reality, adjust the imbalance and incoordination of regional industrial structure, and drive industrial transformation and upgrading.

#### **5.4. Improve the legal system of inclusive finance and prevent and eliminate financial risks**

While actively promoting the development of digital finance, the government should also innovate and improve the financial system and promote continuous reform of the financial system to better promote the development of digital finance in China and serve the real economy. Compared with traditional finance, digital inclusive finance is closely linked to the latest technologies. Business is handled with the help of technologies such as facial recognition, and some illegal private lending is also disguised as digital inclusive finance in the financial market to confuse the public. Therefore, the sustainable development of Guangxi's economy cannot do without the protection and escort of the government. While improving the local digital inclusive finance environment, regulatory efforts should also be enhanced. On the one hand, make good use of new technologies and establish risk assessment systems for financial institutions and platforms through big data and the Internet used in digital inclusive finance to monitor financial risks and ensure safety, so that residents can enjoy truly safe financial services. On the other hand, strengthen supervision and inspection of consumer rights protection in digital inclusive finance. Timely investigation into acts that infringe upon the legitimate rights and interests of inclusive finance consumers, keep the channels for resolving financial consumption disputes unobstructed, stabilize the social financial order, ensure the long-term healthy development of Guangxi's economy, and make digital inclusive finance an important part of promoting Guangxi's economic growth.

#### **6. Outlook and deficiency**

This study, referring to existing literature, conducts an in-depth analysis of digital inclusive finance, the current situation of Guangxi's economic development, and the relationship between the two, constructs a path system for digital inclusive finance to drive Guangxi's economic growth, with the aim of proposing suggestions and countermeasures. However, due to the large size of Guangxi and the complexity of its digital inclusive finance system, the research data only selected 14 cities in Guangxi and did not delve into the lower-level counties, towns and villages. At the same time, the research was more focused on the macro level, and the selected data was not comprehensive enough, only representing economic growth in the macro sense, without data support at the micro level, and the data acquisition channels were limited. When constructing the path system of digital inclusive finance promoting economic growth in Guangxi, the number of years selected for panel data is limited, which may ultimately lead to inaccurate analysis results and awaits further examination and verification.

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