

**THE IMPACT OF DIGITAL FINANCIAL
INCLUSION ON INCLUSIVE GROWTH IN
GANSU PROVINCE, CHINA**

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**THE IMPACT OF DIGITAL FINANCIAL
INCLUSION ON INCLUSIVE GROWTH IN
GANSU PROVINCE, CHINA**

by

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LIST OF ABBREVIATIONS

CNY	Chinese Yuan
TAM	Technology Acceptance Model
USD	United States Dollar
APEC	Asia Pacific Economic Cooperation
GDP	Gross Domestic Product
SanXi	HeXi, DingXi and XiHaiGu Region
ADB	Asian Development Bank
TFP	Total Factor Productivity
MSEs	Micro and small enterprises
DEA	Data Envelopment Analysis
SOF	Social Opportunity Function
BNM	Bank Negara Malaysia
BIS	Bank for International Settlements
UN	United Nations
ATM	Automatic Teller Machines
OECD	The Organization for Economic Cooperation and Development
SEM	Structural Equation Model
AI	Artificial Intelligence
P2P	Peer-to-Peer
PLS-SEM	Structural Equation Modeling by Using the Partial Least Square
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
CFA	Confirmatory Factor Analysis
CMB	Common Method Bias
EFA	Exploratory Factor Analysis
CR	Composite Reliability
AVE	Average Variance Extracted
HTMT	Heterotrait-Monotrait Ratio of Correlations
MSV	Maximum Share Variance
ASV	Average Share Variance
PLS	Partial Least Squares
FIn	Financial Infrastructure

DTI	Digital Technology Innovation
FL	Financial literacy
PP	Public Policy
ST	Social Trust
DFIU	Digital Financial Inclusion Usage
IG	Inclusive Growth
MYR	Malaysian Ringgit
VIF	The Variance Inflation Factor
DFI	Digital Financial Inclusion

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APPENDIX A QUESTIONNAIRE

APPENDIX B QUESTIONNAIRE

KESAN PENYERTAAN KEWANGAN DIGITAL TERHADAP PERTUMBUHAN INKLUSIF DI WILAYAH GANSU, CHINA

ABSTRAK

Dalam beberapa tahun terakhir, integrasi yang mendalam antara teknologi digital dan sektor kewangan telah menghasilkan bentuk baru kewangan yang dikenali sebagai “keuangan inklusif digital.” Keuangan inklusif digital bertujuan untuk memperluas jangkauan dan aksesibilitas layanan keuangan melalui penerapan teknologi digital, dengan tujuan memastikan bahwa manfaat pertumbuhan ekonomi dapat dinikmati oleh kelompok masyarakat yang lebih luas. Pada saat yang sama, ekonomi Tiongkok telah memasuki fase pengembangan berkualitas tinggi, di mana pertumbuhan inklusif menjadi salah satu prioritas utama. Intinya adalah memastikan bahwa pertumbuhan ekonomi yang dicapai disertai dengan keadilan, sehingga semua kelompok dapat menikmati peluang dan manfaat pembangunan. Namun, akademisi belum mencapai kesepakatan mengenai mekanisme mikro inklusi keuangan digital yang dapat mendorong pertumbuhan inklusif, terutama terkait dengan mekanisme pengaruh di tingkat regional. Mengambil contoh Provinsi Gansu di China, penelitian ini mengkaji bagaimana lima faktor pendorong inklusi keuangan digital dapat mempengaruhi pertumbuhan inklusif melalui peningkatan tingkat pemanfaatan inklusi keuangan digital. Secara bersamaan, penelitian ini juga menganalisis peran moderasi karakteristik populasi. Secara spesifik, penelitian ini menggunakan teori perkembangan keuangan dan pertumbuhan sebagai landasan teoritis utama, didukung

oleh Model Penerimaan Teknologi (TAM), teori modal sosial, dan teori institusi sebagai perspektif pelengkap, untuk membangun model teoritis komprehensif yang mencakup hubungan antara “faktor pendorong—penggunaan keuangan digital inklusif—pertumbuhan inklusif.” Model ini memilih lima faktor pendorong kunci: infrastruktur keuangan, inovasi teknologi digital, literasi keuangan, kebijakan pemerintah, dan kepercayaan sosial. Faktor-faktor ini diasumsikan memiliki pengaruh positif terhadap penggunaan keuangan digital inklusif, yang bertindak sebagai variabel perantara, dan pada gilirannya mendorong pertumbuhan inklusif. Selain itu, dengan menggunakan karakteristik demografis seperti jenis kelamin, usia, pendapatan bulanan, tingkat pendidikan, dan status perkotaan/perdesaan sebagai variabel moderator, penelitian ini menganalisis pengaruh moderasi variabel-variabel tersebut terhadap hubungan antara penggunaan keuangan digital inklusif dan pertumbuhan inklusif. Untuk memvalidasi model, penelitian ini merancang dan mendistribusikan kuesioner survei, dengan sampel penduduk perkotaan dan pedesaan di Provinsi Gansu, dan berhasil mengumpulkan 600 responden yang valid. Analisis data dilakukan menggunakan SPSS untuk analisis deskriptif dan prapemrosesan data. Model persamaan struktur terkecil kuadrat parsial (PLS-SEM) diterapkan untuk mengevaluasi validitas model pengukuran dan jalur struktural, serta menyajikan hasil analisis data akhir. Hasil penelitian menunjukkan bahwa kelima faktor pendorong memiliki pengaruh positif yang signifikan terhadap penggunaan keuangan digital inklusif, dengan peran kebijakan pemerintah dan infrastruktur keuangan yang paling menonjol. Penggunaan keuangan digital inklusif memiliki pengaruh positif yang

signifikan terhadap pertumbuhan inklusif, menunjukkan bahwa peningkatan penggunaan keuangan digital inklusif dapat secara efektif mendorong pertumbuhan ekonomi yang inklusif. Selain itu, karakteristik demografis memainkan peran penting sebagai variabel moderator dalam hubungan antara penggunaan keuangan digital inklusif dan pertumbuhan inklusif. Penduduk pedesaan, kelompok berpenghasilan rendah, dan individu dengan tingkat pendidikan rendah memperoleh manfaat pertumbuhan inklusif yang signifikan dari penggunaan keuangan digital inklusif. Kontribusi teoretis dari makalah ini terletak pada penggabungan teori perkembangan keuangan dan pertumbuhan dengan model penerimaan teknologi, teori modal sosial, dan teori institusi, yang secara inovatif membangun kerangka kerja komprehensif tentang bagaimana keuangan inklusif digital mendorong pertumbuhan inklusif, sehingga memperkaya literatur penelitian tentang dampak ekonomi keuangan inklusif digital. Dari segi empiris, dengan mengambil contoh wilayah barat China yang kurang berkembang, yaitu Gansu, penelitian ini menyediakan bukti mikro yang mendukung pandangan bahwa keuangan digital inklusif secara signifikan meningkatkan kesejahteraan kelompok berpenghasilan rendah dan mendorong perkembangan inklusif di tingkat regional. Secara praktis, penelitian ini memberikan panduan bagi pembuat kebijakan dan lembaga keuangan. Diperlukan penguatan dukungan kebijakan dan pembangunan infrastruktur digital, peningkatan sistem kepercayaan sosial dan literasi keuangan, serta peningkatan investasi dalam inovasi teknologi digital, guna sepenuhnya memanfaatkan potensi keuangan digital inklusif dalam mendorong kemakmuran bersama dan pertumbuhan inklusif. Secara

keseluruhan, penelitian ini memberikan wawasan berharga tentang bagaimana inklusi keuangan di era digital dapat mendukung perkembangan inklusif regional, serta menyediakan model teoritis dan landasan empiris yang dapat dijadikan acuan untuk penelitian selanjutnya.

THE IMPACT OF DIGITAL FINANCIAL INCLUSION ON INCLUSIVE GROWTH IN GANSU PROVINCE, CHINA

ABSTRACT

In recent years, the deep integration of digital technology and the financial industry has given rise to a new financial model: "digital financial inclusion." Digital financial inclusion uses digital technology to expand the coverage and accessibility of financial services and achieve the goal of enabling a wider range of people to share the fruits of economic growth. At the same time, China's economy has entered a stage of high-quality development, with inclusive growth receiving high value. Its core is to pursue economic growth while ensuring fairness so that all groups can share development opportunities and achievements. However, the academic community has not yet reached a consensus on the micro-mechanisms of digital financial inclusion in promoting inclusive growth, especially the impact at the regional level, which is still relatively insufficient. This study takes Gansu Province, China, as an example to explore how the five driving factors of digital financial inclusion influence inclusive growth by increasing the usage of digital financial inclusion, and examines the moderating role of demographic characteristics. In brief, this study adopts the Financial Development and Economic Growth Theory as the main theory, supplemented by the Technology Acceptance Model (TAM), Social Capital Theory, and Institutional Theory to build a holistic theoretical model that illustrates the

relationship between driving factors, the usage of digital financial inclusion, and inclusive growth. Specifically, the model selects five key driving factors, including financial infrastructure, digital technology innovation, financial literacy, public policy, and social trust. It assumes that the driving factors positively affect the use of digital financial inclusion, and digital financial inclusion usage serves as a mediating variable to further drive inclusive growth. At the same time, demographic characteristics such as gender, age, monthly income, education, and urban-rural classification are used as moderating variables to examine their moderating effects on the relationship between digital financial inclusion usage and inclusive growth. To verify the model, this study designed and distributed a questionnaire survey to collect data from residents in Gansu Province, obtaining a total of 600 valid samples. SPSS was employed for descriptive statistics and preprocessing, and partial least squares structural equation modeling (PLS-SEM) was used to evaluate the validity of the measurement and structural models, and to conduct the data analysis results. The research findings indicate that the five driving factors have a significant impact on digital financial inclusion usage, among which, public policies and financial infrastructure play a particularly prominent role. Furthermore, the digital financial inclusion usage has a significant impact on inclusive growth, indicating that enhancing the usage of digital financial inclusion can effectively promote inclusive growth. Meanwhile, demographic characteristics play an important moderating role in the relationship between digital financial inclusion usage and inclusive growth. Among which, rural residents, low-income group, and those with lower education benefit significantly from the usage of digital financial

inclusion. The theoretical contribution lies in combining Financial Development and Economic Growth Theory with Technology Acceptance Model (TAM), Social Capital Theory, and Institutional Theory to innovatively construct a framework for digital financial inclusion promoting inclusive growth and enriching the research literature about the economic effects of digital financial inclusion. Empirically, taking Gansu, an underdeveloped region in western China, as an example, added micro-level evidence to support digital financial inclusion positively improves the well-being of low-income group and promotes regional inclusive growth. In practice, this study guides policymakers and financial institutions. Specifically, strengthening policy support and digital infrastructure construction, enhancing social trust and financial literacy systems, and increasing investment in digital technology innovation will fully unleash the potential of digital financial inclusion to promote common prosperity and inclusive growth. Overall, this study provides valuable insights into how digital financial inclusion can serve regional inclusive growth in the digital age, and provides a theoretical model and empirical evidence for future research.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Since the reform and opening of China in 1978, the Chinese economy has maintained high-speed growth, and the people's living standards have improved significantly. However, problems such as a gap between the rich and the poor and unbalanced regional development have emerged in economic development. According to the poverty threshold set by China's National Bureau of Statistics (2010–2020), defined as an annual per capita income of 2,300 CNY(Chinese yuan, the official currency of China), approximately 16.6 million people in China were still living below the poverty line in 2018 (National Bureau of Statistics, 2023). Although China announced the eradication of absolute poverty in 2020, Chinese Premier Li Keqiang cited data from the China's National Bureau of Statistics showing that there are still 600 million people in China with a monthly income of less than 1,000 CNY, which is approximately 140 USD (United States Dollar) (Li, 2020). China's Gini coefficient had already exceeded the "international warning line" of 0.4 in 2000 and is expected to reach 0.5 in 2010 (Xu, 2014) and rise to 0.704 in 2020 (CSRI, 2021). Fiscal revenue from taxes and land absorption increased year by year, while income growth among ordinary people slowed (Peschel, 2022). Social problems caused by unbalanced development also frequently arise. The poor in China experience inequality across

multiple fields, including income, education, healthcare, employment, and financial services (Lu, Yu & Gao, 2018; Ye & Wang, 2021). This has brought many social issues, become a significant constraint to China's sustainable development, and contributed to the slow economic growth of Gansu Province. In particular, for rural residents, the rapid economic growth of China has also caused psychological trauma in a certain sense (Sun et al., 2020; Chen & Zhu, 2021).

To effectively address the poverty status caused by inequality in economic development across China's provinces, the Chinese President at the time, Hu Jintao, said at the 5th APEC (Asia Pacific Economic Cooperation) meeting in 2010 that China should transfer its existing development model to promote inclusive growth. Later, Chinese Premier Li Keqiang said at the 2017 Summer Davos Forum that China would take more measures to promote inclusive growth (Ilhéu, 2020). At present, achieving inclusive growth represents a crucial objective of economic development, particularly in underdeveloped regions such as Gansu Province. The connotation of inclusive growth can enable the Gansu government to address issues such as financial exclusion while avoiding the allocation of resources to urban areas with faster GDP (Gross Domestic Product) growth in pursuit of short-term achievements. Instead, it can invest resources equally and inclusively in vast rural areas with severe financial exclusion, pursuing the goal of long-term sustainable development. Furthermore, an inclusive growth approach can support Gansu Province, which has the highest poverty rate in China, in effectively implementing the central government's most critical poverty

alleviation policies. Therefore, allow all residents in Gansu to equally share in the benefits of the economy growth.

As shown in Figure 1.1, Gansu Province is located in the western inland region of China. It stretches about 1,600 kilometers from east to west, and its widest point from north to south is only 25 kilometers, connecting China's westernmost territories with China's inland like a bolt. As shown in Figure 1.2 and Figure 1.3, most areas of Gansu Province are located between plateaus and deserts, where long-term erosion by flowing water has resulted in an extensively gullied landscape, which forces urban construction along the mountainous terrain. Furthermore, Gansu Province experiences harsh climate conditions, sparse vegetation, and severe soil erosion. It is notably after flowing through Gansu that China's famous Yellow River truly becomes the "Yellow River" (Falkenheim & Cheng, 2024; Li & Chu, 2021). Since 1982, the Chinese government has initiated poverty alleviation programs in the Hexi, Dingxi, and Xihaigu regions (abbreviated "Sanxi" region) of Gansu and Ningxia Provinces. Although these programs have generated some economic achievements, Gansu Province's GDP per capita remained the lowest among all provinces in China for nine consecutive years as of 2021 (National Bureau of Statistics, 2023), accompanied by a persistently high poverty rate. Gansu province's economic challenges result from complex, long-term, and multifaceted factors.

Despite receiving policy support from the Chinese government, Gansu Province continues to experience sluggish economic growth, primarily due to the

region's distinctive economic development constraints. Gansu Province has a narrow and elongated territory, as shown in the dark-colored area in Figure 1.1. Since ancient times, it has served as a channel connecting China's interior with its western frontier. As indicated by the dark-colored area in Figure 1.2, it is located between the three major plateaus of northwestern China. A comparison of Figures 1.1 and 1.2 reveals that Gansu's territory looks like a narrow belt sandwiched between the plateaus. This elongated geographical feature makes it challenging to achieve comprehensive economic management across the province. Meanwhile, as shown in Figure 1.3, centuries of soil erosion on the Loess Plateau in Gansu Province have resulted in gully topography, which has subsequently led to sparse vegetation coverage and limited arable land in Gansu Province. Such geographical conditions not only severely restrict economic development but also pose a significant challenge to local residents' livelihoods. According to a report from People's Daily Online, the desertified land in Gansu Province has 12.17 million hectares, accounting for 28.6% of the total land area, involving eight cities and 24 counties (districts) (Li & Chu, 2021). Most areas of Gansu Province are threatened by desertification and erosion (Ai, 2017; Zhao, 2023).

Lanzhou, the capital of Gansu Province, could have been a distribution center for tourism in western China. However, the opening of the high-speed rail even allows tourists to enter destinations in other western provinces without making any stopovers in Gansu province (Yao et al., 2022; Shi et al., 2022). As a result, under the same poverty alleviation policies as other impoverished provinces, Gansu's economic development has gradually become the slowest in China. It is mainly due to the above

special reasons that led to the absence of a clear main development direction and insufficient economic vitality.



Figure 1.2 Shape Map of Gansu Province

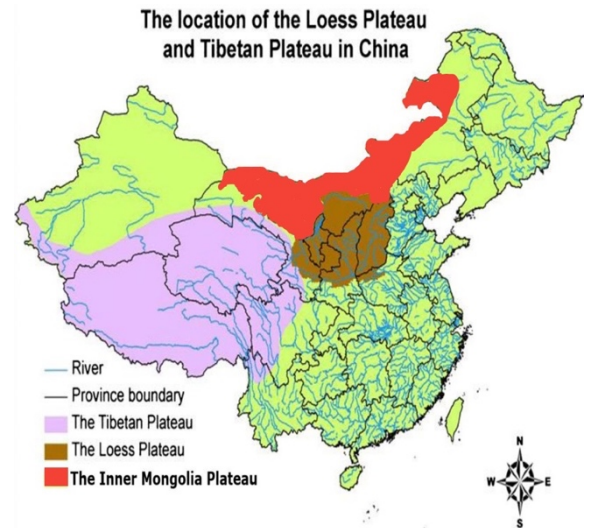


Figure 1.1 Topographic Map of the Three Plateaus of China



Figure 1.3 The Scenery of the Loess Plateau in Northwest China

In recent years, with China's internet development momentum, digital financial inclusion has broken through the barriers of traditional financial services models and become a driving force for inclusive growth. Digital financial inclusion can improve the economic conditions of billions of people and reinvigorate micro and small enterprises (MSEs) that were excluded by traditional finance (Salzmann, 2013; Manyika et al., 2016; Su and Lian, 2018; Bollaert et al., 2021; Ding, Hang & Chen, 2023). Furthermore, digital financial inclusion has low infrastructure requirements, while high inclusiveness has a significant influence on economic growth in Western China (Tang et al., 2019). By the end of 2020, the coverage of fiber-optic broadband and 4G networks in rural villages of Gansu Province had achieved 99% (Lu & Ma, 2021). Guo and Kong (2016) and Chen and Pan (2019) point out that digital financial inclusion can enable economically underdeveloped regions to achieve "Corner Overtaking." In theory, digital financial inclusion has great potential to be an effective solution to the economic challenge in Gansu.

The 2016 G20 Hangzhou Summit pointed out that countries should boost their digital financial inclusion capabilities. The Gansu branches of the People's Bank of China surveyed 114 villages in Gansu Province using questionnaires to gather information about rural families. The statistics showed that in 2021, broadband coverage reached 81.94%, smartphone coverage reached 94.26%, and the bank account ownership rate was up to 97.45%. Moreover, 62.5% of rural households possess two or more bank accounts, and 68.01% of those rural households have registered Mobile banking services. The proportion of rural households using digital

payment methods such as mobile banking, online banking, Alipay, and WeChat pay reached 90.19%, representing a year-on-year increase of 3% in 2021 (Lu & Xue, 2022). The foundational conditions for digital financial inclusion in Gansu Province are gradually improving, and their economic effects have begun to emerge.

1.2 Problem Statement

From the perspective of theoretical mechanisms, how digital financial inclusion affects inclusive growth through micro-level channels remains unclear (Liu et al., 2021; Long, Wang & Chen, 2022). Zhang et al. (2019) and Ji et al. (2021) indicate that digital financial inclusion develops more rapidly in economically underdeveloped regions, significantly enhancing household incomes among rural low-income groups and thereby promoting inclusive growth. These macro-level empirical findings confirm the overall positive effects of digital financial inclusion. However, they lack a micro-level explanation of the impact mechanisms of digital financial inclusion. For example, which factors drive the digital financial inclusion usage? Through which mediating variables is it achieved? Are certain supporting conditions required? Through what channels does digital financial inclusion affect the economy and society? These specific mechanisms need to be validated using micro-level data. In underdeveloped regions such as Gansu Province, it is unclear how digital financial inclusion improved the well-being of residents.

From the perspective of influencing factors, the willingness and extent of digital financial inclusion services usage among people in different regions are driven

by multiple factors. For example, residents' financial knowledge and skills (financial literacy) may determine their ability to use digital financial products effectively (Aisaiti et al., 2019; Hasan, Le & Hoque, 2021). The level of social trust affects people's acceptance of digital platforms and online transactions (Wang, Niu & Zhou, 2024; Sleiman et al., 2021). Local government policies and regulatory attitudes also directly influence the accumulation of risks in the financial system and the development environment of digital financial inclusion (Jones & Knaack, 2019; Noreen et al., 2022; Ding & Ding, 2024). The existing literature lacks a perspective to integrate driving factors and assess their relative impact. Especially in regions such as Gansu Province, there is no consensus on which factors are most likely to drive residents to use digital financial inclusion services. At the same time, introducing demographic characteristics as moderating variables provides more detailed information on "for whom it is most effective" (Fritz & Arthur, 2017). Thus, provides a foundation for developing targeted, financial inclusion strategies. Unfortunately, empirical research on this issue is very limited.

In terms of research areas, most studies on China's digital financial inclusion adopted macro data from developed regions in the east, while there is a lack of focus on underdeveloped regions in the west (Lin, Peng & Wu, 2022; Becha et al., 2025). However, these areas are where financial inclusion works are most needed and challenging. As the most lagging development area in China, Gansu's development of digital financial inclusion may have an impact on inclusive growth that differs from the national average. Due to its unique economic environment shaped by geographical,

climatic, and historical factors, Gansu has not experienced development like other provinces. Since 2014, Gansu's per capita GDP and total GDP have consistently ranked at the bottom for a long time (National Bureau of Statistics, 2023). Gansu's poverty rate and return-to-poverty rates have long ranked highest in China (Bu, 2018; Jiang, 2019). In 2010, Gansu officials had said at a conference of support the poor groups that "the poverty rate in Gansu Province reached 21.3%, the highest in China. Meanwhile, the rate of back to poverty is 20%-30%, up to 45% in the year with disasters, is also the highest in China" (Tang, 2010). As of 2018, Gansu has a poor population of 1.11 million and a poverty rate of 5.6%, still the highest in China (Lu & Bai, 2020). In the past 10 to 20 years, among all the provincial capitals in China, only Lanzhou, the capital city of Gansu Province, has experienced a year-on-year decrease in population (Mei, 2020). What are the effective economic measures to resolve Gansu's economic challenge? Currently, this remains an urgent question under practical exploration, with no clear answer. In fact, most of Gansu's economic growth is driven by the overall growth environment of China's economy. Against the backdrop of China's economic slowdown today, the most pressing issue for Gansu's economy is to prevent financial exclusion and the outflow of financial resources due to the "siphon effect." This is crucial to prevent Gansu's economy from entering a vicious cycle.

Xue (2022) points out that the four factors of economic development, financial investment, public transportation, and medical resources have a significant positive impact on the economic development of Gansu Province. Among these, financial investment ranks second only to public transportation in terms of influence. The

region's economic growth requires strong financial support. However, this study did not specifically analyze how financial investment affects the economic opportunities of different groups, and also overlooked the issue of the effectiveness of financial investment in financially excluded regions. Thus, reducing the practical relevance of its conclusions in addressing financial exclusion in Gansu Province.

Research finds that the degree of financial exclusion in Gansu Province is extremely high. Lin and Lan (2019) point out that the average financial exclusion index for various provinces and regions in China ranged from 0.288 to 0.962 between 2015 and 2017. The average financial exclusion index for Gansu Province is 0.833. Significantly higher than the Chinese median, classified as a severely financially excluded area. This indicates that the coverage of financial services in Gansu is extremely low, with most residents unable to effectively access them. Regional financial exclusion is serious, and requires further policy intervention and improvement. According to data from the 2021 Peking University Digital Financial Inclusion Index (2011-2020) report, Gansu Province's digital financial inclusion index is 305.50, ranking second-to-last among provinces in China. It indicates that financial exclusion remains a significant issue in Gansu Province (Guo et al., 2021). This authoritative index reflects the latest trends in the development of digital financial inclusion in China, in addition, a review of the literature reveals that most studies on digital financial inclusion and financial exclusion in China's economy have adopted this index (Wang, 2023; Wang, Quan & Ruanl, 2023; Yu et al., 2022; Shen, Hu & Zhang, 2022). However, the problem of financial exclusion in Gansu has led to

widespread cases of falling back into poverty due to disasters, illness, or education. In 2017, the rate of falling back into poverty in Longxi County, Gansu, reached 110.98%, the highest in the country (Bu, 2018).

To summarize, Gansu Province, as an underdeveloped region in China, has a weak economic foundation, a historically large impoverished population, and severe financial exclusion. Therefore, whether the advantages of digital financial inclusion, such as remote accessibility and low cost, can help Gansu overcome financial exclusion and subsequently facilitate economic transformation, upgrading, and inclusive growth is the core point of this study.

1.3 Research Questions

This study has posted three research questions as follows:

RQ1: Do the driving factors of financial infrastructure, digital technology innovation, financial literacy, public policy, and social trust significantly impact the digital financial inclusion usage in Gansu province?

RQ2: Does the usage of digital financial inclusion significantly mediate the relationship between the driving factors and inclusive growth? Specifically, does increased usage of digital financial inclusion significantly enhance inclusive growth among residents in Gansu Province?

RQ3: Do demographic characteristics, such as gender, age, monthly income, education, and urban-rural classification across groups, significantly moderate the

relationship between digital financial inclusion usage and inclusive growth in Gansu Province?

1.4 Research Objectives

Focusing on the above research questions, this study sets the following overall research objectives and specific objectives.

Overall Research Objectives:

Constructing and empirically testing a conceptual model linking driving factors of digital financial inclusion to inclusive growth through digital financial inclusion usage. Clarify the internal mechanisms by which digital financial inclusion usage influences inclusive growth, and examine the moderating effects of demographic characteristics across different groups.

Specific Objectives:

RO1: Determine the key drivers of digital financial inclusion and measure their specific impact on the digital financial inclusion usage in Gansu Province.

RO2: Determine the mediating role of digital financial inclusion usage in promoting inclusive growth and reveal how the usage of digital financial inclusion promotes inclusive growth in Gansu Province.

RO3: Introducing demographic characteristics (gender, age, monthly income, education, urban-rural) as moderating variables to explore the different effects of

digital financial inclusion usage to promote inclusive growth among groups with different characteristics in Gansu Province.

1.5 Research Significance

1.5.1 Theoretical Significance

First, this study enriches the theoretical connotation of digital financial inclusion. This study uses the Financial Development and Economic Growth Theory, the Technology Acceptance Model (TAM) , Social Capital Theory, and Institutional Theory to develop a model that explains the impact of digital financial inclusion on inclusive growth. In theory, the model fills the gaps and bridges the disconnect between different research perspectives, meanwhile, enriches the explanation of the "inclusive growth" dimension in Financial Development and Economic Growth Theory.

Second, this study builds a framework for analyzing the driving factors of digital financial inclusion. It summarizes and proposes five key driver factors of financial infrastructure, digital technology innovation, financial literacy, public policy, and social trust. Meanwhile, this framework provides a reference for future research to refine the driving factors of digital financial inclusion usage.

Next, this study reveals the inner mechanisms of digital financial inclusion. By validating the mediating role of digital financial inclusion usage, it also reveals the

underlying pathways through which driving factors influence inclusive growth. That is, primarily by improving the use of digital financial inclusion to play the role.

Finally, this study explores the moderating role of demographic characteristics. It takes demographic information, including gender, age, monthly income, education, and urban-rural into the analysis, enriching the understanding of group differences in research. Meanwhile, it emphasizes the importance of population heterogeneity. In addition, introducing moderating variables into the model can build a more refined and universal research model.

1.5.2 Practical Significance

First, this study serves the development strategy of underdeveloped areas in western China. As the poorest province in western China, achieving inclusive growth in Gansu is crucial to the goals of social stability and common prosperity. The empirical analysis focuses on Gansu Province and provides direct reference for local governments to formulate digital financial inclusion plans and poverty alleviation policies.

Second, this study enhance the effectiveness of digital financial inclusion policies. This study examines the impact of public policies and other factors on the use of digital financial inclusion and analyzes differences in demographic characteristics. It can help policymakers optimize policy design. Thus, the implementation of digital financial inclusion policies will be more effective.

Next, this study provides guidance for the practices of Chinese financial institutions. For financial service providers, such as banks, insurance companies, and Internet finance companies, the findings of this study will help them understand customers' behavior and influencing factors, enabling the institutions to adjust their product strategies. Furthermore, financial institutions should focus on improving customers' experience and trust.

Finally, this study promotes the in-depth development of financial inclusion. Achieving inclusive growth goals requires collaboration among the government, the market, and society. This study reveals that digital financial inclusion can help rural residents, low-income group, and low-educated residents achieve poverty alleviation and shared benefits, thereby strengthening the confidence of all parties in promoting inclusive finance.

1.6 Chapter Summary

This chapter clarifies the research background, points out the issues of financial exclusion and unbalanced economic growth in Gansu Province, and emphasizes the urgent need to promote inclusive growth in the region through digital financial inclusion. This study focuses on “how digital financial inclusion affects inclusive growth in Gansu Province” and proposes research questions and objectives. The study also highlights theoretical and practical significance and provides a reference for policymakers in Gansu Province and similar regions in the future.

CHAPTER 2

OVERVIEW OF THE DEVELOPMENT OF DIGITAL FINANCIAL INCLUSION AND THE STATUS OF INCLUSIVE GROWTH IN GANSU PROVINCE

2.1 Introduction

Inclusive growth is a crucial element of China's new development philosophy. It is an integral part of the national strategy and has been repeatedly emphasized in the Rural Revitalization Strategy. Digital financial inclusion is considered a powerful tool for achieving inclusive growth because it can expand the coverage of financial services, improve efficiency, and reduce costs, thereby benefiting residents who are excluded by the traditional financial system. For underdeveloped Gansu Province, developing digital financial inclusion is not only an effective way to catch up with the national average level and narrow regional gaps, but also a necessity to serve local residents and promote social fairness and justice.

2.2 The Connotation and Measurement of Financial Inclusion and Digital Financial Inclusion

2.2.1 The Connotation of Financial Inclusion and Digital Financial Inclusion

Financial inclusion, also known as inclusive finance, refers to the offering of effective and affordable financial services, including deposits, loans, payments, and insurance, to all segments and groups of society, particularly those excluded by

financial institutions, such as the poor, rural residents, and micro and small enterprises (World Bank, 2025). The United Nations (UN) first proposed financial inclusion in the "International Microfinance" campaign in 2005 with the goal to address the wealth gap between the rich and the poor and the imbalanced distribution of financial resources. In 2012, the Bank Negara Malaysia (BNM) and the Bank for International Settlements (BIS) jointly organized a seminar on inclusive finance indicators, where they proposed that inclusive finance, characterized by fairness and inclusiveness, had already attracted the attention of policymakers worldwide. Tang et al. (2020) point out that financial inclusion is a response to financial exclusion. Meanwhile, some studies argued that financial inclusion can effectively address the problem of financial exclusion (Regan & Paxton, 2003; Lauer & Lyman, 2015; Ji et al., 2021). Achieving inclusive finance is a global, multifaceted goal, and each country may develop an appropriate model for its own circumstances (Chakrabarty, 2012; Tram et al., 2021). Lu and Bai (2020) believe that the financial inclusion system can optimize financial resources and infrastructure in rural China, promoting its healthy development. Although financial inclusion can effectively address financial exclusion, relevant studies still face many challenges. Therefore, scholars begin to explore how digital technology can enhance financial services and promote financial inclusion (Ouyang et al., 2022; Li & Xiao, 2024).

Digital financial inclusion is the product that integrates financial inclusion and digital technology. Moreover, it can be regarded as the latest stage of financial inclusion. In brief, digital financial inclusion refers to a series of financial products,

business models, and service systems that use digital technologies, such as mobile internet, big data, cloud computing, artificial intelligence (AI), and others to achieve inclusive financial goals (Ozili, 2018; Das, 2019; Ferrata, 2019).

In 2013, the World Bank noted that the development of financial inclusion should focus on promoting new technologies and innovations, such as digital payments, to improve financial services (World Bank, 2014). Du (2008) and Xiao (2021) argue that financial inclusion faces a weak infrastructure constraint in China. S&P Global (2021) and the World Bank (2023) note that inadequate infrastructure challenges the demand for financial services in rural areas. With the broad application of digital technology, researchers argue that digital financial inclusion could overcome challenges from traditional finance, including reducing infrastructure requirements and transaction costs and improving service efficiency, which could break through the bottleneck of the traditional financial system (Bei & Li, 2017; Emara and Mohieldin, 2021). Manyika et al. (2016) and Timu and Kramer (2023) point out that digital financial inclusion is conducive to resolving problems such as the lack of financial products and services for rural residents. Guo and Kong (2016) and Wang et al. (2020) believe that digital financial inclusion can enable underdeveloped regions to achieve rapid economic growth. However, digital financial inclusion has made significant progress in inclusiveness, its extent to promote inclusive growth in underdeveloped regions still requires further analysis.

2.2.2 Financial Inclusion and Digital Financial Inclusion in Gansu Province

Gansu Province is a key area for the country's poverty alleviation and rural revitalization. Therefore, digital financial inclusion is expected to play a more policy-guiding role in poverty reduction, preventing a return into poverty, and promoting revitalization (Lu & Ma, 2021; Xue, 2022; Zhang, Li & Yang, 2024). In this process, digital financial inclusion is not only regarded as an extension of traditional inclusive finance but also emphasizes the importance of technology empowerment. Such as supporting low-income rural residents, small and micro enterprises (SMEs), and agricultural economic entities. In addition, reducing transaction costs and improving access to online credit, agricultural e-commerce loans, and digital insurance (Wu, 2022; Xiao & Tan, 2022; Zhang, Li & Yang, 2024).

Gansu's characteristic industries, including traditional Chinese medicine and agricultural products, such as potatoes, corn, cattle, and sheep, hold a prominent position in the local economic system. Therefore, Gansu Province focuses on digital financial inclusion is primarily on its integration with characteristic industries. Specifically, e-commerce platforms and agricultural big data connect to establish an online credit assessment mechanism, enabling farmers to obtain loans quickly (Xiong & Nie, 2022; Shui, Guo & Hu, 2024; Ma, 2025). These measures are considered to be an important manifestation of digital financial inclusion in Gansu, along with an emphasis on security, financial risk management, and financial literacy education (Lu, 2020; Lu & Ma, 2021; Jia & Li, 2024). Therefore, Gansu pays more attention to digital

financial inclusion usage and its support for agricultural products. At the same time, local governments are promoting policies that complement digital financial inclusion.

2.2.3 Measurement of Financial Inclusion and Digital Financial Inclusion

The indicators for measuring traditional inclusive finance were first proposed by Beck et al. (2007), who used the number of financial institutions, Automatic Teller Machines (ATM), loan accounts, deposit accounts, the ratio of total loans to GDP, and total deposits to GDP as indicators to measure inclusive finance. Sarma (2008) and Tram et al. (2021) selected three indicators to measure a country's financial inclusion level, including bank penetration, the availability of banking services, and the utilization of bank services. Later, Sarma (2012) proposed using the linear utility function and the Euclidean algorithm method, combining three indicators to measure financial inclusion in the country. Furthermore, the 2016 G20 Hangzhou Summit released the "Upgraded G20 Financial Inclusion Indicators System," which added digital finance-related indicators, forming 35 measurement indicators across three dimensions, including the usage of financial services, the financial products, and the financial quality (Hua, 2016).

Digital financial inclusion has a relatively short development period and is a digitalized upgraded version of financial inclusion. Manyika et al. (2016) assess the level of digital financial inclusion through various aspects, including network coverage, smartphone usage, and the number of registered identities. Guo et al. (2020) propose the "Peking University Digital Financial Inclusion Index" system from three

dimensions, including coverage, depth of use, and degree of digitization. A review of the literature found that most studies on digital financial inclusion in China adopted this index (Wang, 2023; Wang, Quan & Ruanl, 2023; Yu et al., 2022; Shen, Hu & Zhang, 2022).

2.3 The Connotation and Measurement of Inclusive Growth

In this study, "inclusive" refers to the extent to which the benefits of economic growth are fairly shared among residents, particularly among the vulnerable and the group with insufficient financial services in Gansu Province.

2.3.1 The Connotation of Inclusive Growth

Inclusive growth is a relatively macro concept that focuses on the fair distribution of growth benefits in society. It is a growth model that promotes coordinated development in both social and economic sectors to achieve sustainable development (Cai, 2009; McKinley, 2010; Corrado & Corrado, 2017; Emara & Mohieldin, 2021). In simple terms, inclusive growth means that economic growth should achieve a certain speed and scale, and it should be able to “bring everyone.” Especially, it ensures that poor and vulnerable groups benefit more from economic growth, in turn narrowing income gaps and reducing poverty.

Inclusive growth was proposed by the Asian Development Bank (ADB) in 2007, and prior to that, it had undergone three stages of development (Cai, 2009). The first stage, noted by economists Hirschman, focused on economic growth. This stage

argued that the regions with earlier economic growth initially suppress the development of economically lagging regions due to polarization effects, but later benefit lagging regions through trickle-down effects. (Hirschman, 1991; Norton, 2002). China's economic reform, which began in 1978, supports the above philosophy that certain regions achieve economic growth first, and then benefit other underdeveloped regions. In recent years, experiences in West Africa (Osabohien et al., 2019), India (Sehrawat & Giri, 2017), Latin America (Dossou et al., 2023), and China (China Economic Briefing, 2022) have shown that economic growth can reduce extreme poverty in undeveloped regions. However, judging from the fact that countries such as China have abandoned this approach of pursuing economic growth alone, this growth model is unsustainable.

The second stage is poverty-friendly growth. Although the world economy, especially in developing countries such as China, grew fast at the end of the 20th century, numerous studies have found that the relationship between economic growth and the escape from poverty is indirect (Cai, 2009; Wilkinson & Pickett, 2009; Emara & Mohieldin, 2021). Therefore, the pro-poor growth model has emerged, which is relatively friendly to the poor (Zhou, 2008; Emara & Mohieldin, 2021). This stage argues that if income inequality increases, the number of poor groups will not decrease but rather increase, even if total economic output grows (Son & Kakwani, 2008; Dang et al., 2023). In brief, focusing solely on poverty without considering deeper opportunities for equality will not solve the underlying problems.

The third stage is inclusive growth. With the increasing trend of economic development and wealth gap in the world, some studies have found that the extent of non-income inequality is gradually increasing, which is a very disadvantaged situation for sustainable economic development worldwide (Ali & Son, 2007a; Wilkinson & Pickett, 2009; Zhao, 2016; China Economic Briefing, 2023). Kornai (1992) and Andreff (2021) point out that when economic growth reaches a certain level, it is constrained by resources, institutions, and poverty, subsequently needs to transfer the economic growth model. Therefore, the ADB (Asian Development Bank) proposes the concept of inclusive growth, with the primary goal of promoting economic and social cooperation and sustainable development, and its core nature is equal opportunity for all people. The World Bank's 2006 "World Development Report: Fairness and Development" has also highlighted the concept of inclusive growth. The report addresses the issue of unequal opportunities within and among countries, arguing that equal opportunity is the key to inclusive growth. Although the theory of inclusive growth is more perfect and feasible at this stage, it faces numerous challenges in practice. Such as national priority strategies and provincial industries protection hinder the effectiveness of this concept. Through rigorous theoretical research, it is clearly demonstrated that the goals of sustainable development for humanity are a key to realizing this philosophy.

2.3.2 Inclusive Growth in Gansu Province

Gansu's inclusive growth is measured based on two dimensions, “income growth” and “achievements in poverty alleviation.” It specifically explores economic growth, common prosperity, quality of life, culture, and the ecological environment (Xu, 2018; Ma et al., 2022), not only focusing on the increase in per capita disposable income of urban and rural residents (Zhao et al., 2023), but also focuses on changes in income among registered impoverished groups and those at risk of falling back into poverty, as well as their opportunities for entrepreneurial and new employment. Thus, it indicates the direct effect of digital financial inclusion in improving income and reducing risks for residents (Zhang, Li & Yang, 2024; Jia & Li, 2024).

In western provinces such as Gansu, inclusive growth is often evaluated within the context of rural revitalization, such as thriving industries, ecological environment, rural civilization, effective governance, and prosperous livelihoods (Zhu & Gu, 2014; Lu & Ma, 2021; Xue, 2022; Shui, Guo & Hu, 2024; Song et al., 2024). The penetration of digital financial inclusion, the scale of rural e-commerce, the new industries of rural tourism, and the growth of per capita disposable income are all regarded as indicators of inclusive growth in practice, and this is reflected in official documents and local statistical indicators (Gansu Bureau of Statistics, 2021a; Gansu Bureau of Statistics, 2021b). Thus, inclusive growth in Gansu Province emphasizes not only income growth but also achievements in poverty alleviation. Additionally, financial literacy and social