-RESEARCH ARTICLE-

INFLUENCE OF DIGITAL FINANCIAL ADVANCEMENT ON THE CONSUMPTION STRUCTURE OF CHINESE DOMICILES

Jiankun Zhang

International College of Digital Innovation, Chiang Mai University,
Chiang Mai, Thailand, 50200.
Email: jiankun_z@cmu.ac.th

Nathee Naktnasukanjn*

International College of Digital Innovation, Chiang Mai University,
Chiang Mai, Thailand, 50200.
Email: nathee@cmuic.net

Anukul Tamprasirt

International College of Digital Innovation, Chiang Mai University,
Chiang Mai, Thailand, 50200.
Email: anukul@innova.or.th

Piyachat Udomwong

International College of Digital Innovation, Chiang Mai University,
Chiang Mai, Thailand, 50200.
Email: piyachat.u@cmu.ac.th

─**Abstract**─

This study examines the mechanisms through which digital financial development influences residents' consumption structures. Employing panel fixed-effects regression, mediation effect tests, and heterogeneity analyses across regions, income levels, and human capital groups, it explores the impact of digital finance on disposable income,

consumer credit, and consumption patterns. Key variables, including entrepreneurial activity, innovation, and the payment environment, are incorporated to provide a comprehensive analysis. Findings show a strong link between digital finance and consumption patterns, guiding policymakers in shaping targeted financial policies for diverse regions and groups.

Keywords: Resident Consumption Structure, Digital Finance, Resident Consumption Upgrade

INTRODUCTION

In the era of advancing information technology and artificial intelligence (AI), Alipay, launched in 2004 by Ant Financial, a subsidiary of Alibaba, represents a pivotal shift in digital banking. China's digital finance evolution is believed to have commenced in June 2013 with the introduction of Yu'E Bao on the Alipay platform (Su et al., 2021). The appeal of cost advantages in live commerce and online transactions has significantly reshaped consumer behaviour. Financial service digitisation is among the most transformative economic shifts of the 21st century, integrating digital platforms with financial services and reshaping traditional banking structures to foster economic inclusion (Jiang et al., 2024). Given its profound impact on individual and macroeconomic levels, digital finance warrants further study.

The rise of digital finance enhances residents' income, driving higher consumption levels. The ongoing discourse on China's household consumption suggests a shift towards hedonic and developmental spending. While essential needs remain prioritised, an increasing share of income is allocated to services, reflecting an overall rise in expenditure. Maslow's hierarchy of needs suggests that fulfilling basic necessities enables the pursuit of higher-order desires, fuelling an evolving consumption structure. Identifying consumer spending patterns is critical to economic and social well-being, as the shift from necessity-based to diversified consumption serves as an indicator of economic progress (Wang & Li, 2024). Traditional economic theory attributes purchasing decisions to income, market prices, and consumer preferences (Sadowski et al., 2024). However, digital finance reshapes these dynamics by reducing financial constraints, transaction costs, and information asymmetries while expanding consumer choices (Aziz & Naima, 2021).

Digital financial tools—including mobile payments, online banking, and digital credit services—reduce transaction costs and broaden consumer options (Hu & Hou, 2024).

The adoption of digital banking varies across demographic and regional segments, necessitating further research on its impact on consumption patterns (Al Faisal et al., 2024). The heterogeneous adoption of digital finance provides a natural experimental setting for studying its effects on consumer behaviour. Digital finance influences consumption through three primary channels: increasing disposable income by reducing financial service costs and generating new revenue streams; easing liquidity constraints through improved credit access and flexible payment options (Liu & Yao, 2024); and enhancing payment environments by lowering costs and expanding market access (Van Dinh, 2024). Furthermore, digital finance fosters entrepreneurship, creating new consumer market opportunities (Sun & Xie, 2024).

The structural shifts in consumer behaviour due to digital financial adoption necessitate urgent scientific inquiry as global digital transformations accelerate. This research offers empirical insights into the socioeconomic impact of financial digitalisation (Mishra et al., 2024). Given the complexity of digital finance—including its reach, usage depth, and integration of payments, insurance, and credit services—comprehensive analysis is required (Liu et al., 2024). Understanding these dynamics will aid policymakers in leveraging digital finance for consumption growth while mitigating potential adverse effects (Mpofu, 2024).

Research Objectives

The study formulates research objectives that align with the study's findings about digital finance's impact on consumption structure.

1. The research will evaluate how digital financial development shapes residents' consumption patterns and proves that digital finance adoption causes changes in consumption structure.
2. To investigate the mediating mechanisms through which digital finance influences consumption patterns, particularly through income levels, liquidity constraints, payment environments, and entrepreneurial innovation.
3. To analyse regional and demographic heterogeneity in how digital finance affects consumption structure across eastern, central, and western regions, as well as across income levels and human capital differences.
4. To evaluate the differential impacts of various dimensions of digital financial development (breadth of coverage, usage depth, degree of digitalization, payment index, insurance index, and credit index) on residents' consumption patterns.

Inquiry Statements

The research aims to address the following objectives:

1. How does digital financial development impact residents' consumption structures, and is there a significant causal link between digital finance adoption and consumption diversification?
2. What mediating factors influence the relationship between digital finance and consumption patterns, particularly in terms of disposable income, consumer credit access, payment environments, and entrepreneurial innovation?
3. How do consumption transformations in digital finance vary across regions, particularly between the eastern, central, and western areas, in relation to income levels and human capital?
4. Which specific dimensions of digital financial development (such as coverage breadth, usage depth, digitalisation, and services like payment, insurance, and credit) have the greatest impact on reshaping consumption patterns?

How This Research Addresses the Research Gap?

This study explores the cause-effect relationship between digital financial development and consumer trends, focusing on population subgroups and regional differences. Using robust analytical methods, the research contributes to understanding how digital finance reshapes economic behaviour and structures in modern societies (Zhang et al., 2024). Several key aspects of digital finance's impact on economic conduct remain underexplored. According to Hu et al. (2023), digital financial development enhances financial inclusion and alters household consumption patterns. However, current empirical research lacks clarity on the mechanisms through which digital finance affects consumer structures, with much macroeconomic research overlooking individual-level consumption changes (Wang & Li, 2024).

Further analysis is needed on digital finance systems that equalise consumer spending and enhance financial stability across different population segments. Existing studies often overlook the varied impacts on different groups, with some suggesting broad positive outcomes without examining regional and socioeconomic differences (Chatterjee, 2024). Wealthier individuals and those with higher financial literacy benefit more from digital financial services than those with limited access to technology or financial knowledge (Sikka & Bhayana, 2024). Urban populations are more likely to benefit from digital banking and mobile payments due to better infrastructure, leaving

rural areas disadvantaged (Hussain et al., 2024). Thus, further research is required to understand how digital finance affects various income groups, education levels, and geographical areas.

While digital payment methods, online credit, and mobile banking increase financial accessibility, there is limited evidence on their role in changing consumer spending patterns (Ahmad, 2025). Financial literacy significantly influences the effective use of digital financial tools (Abdallah et al., 2025), but the lack of a comprehensive understanding of these factors complicates the development of optimal policies for maximising digital finance benefits. Most research focuses on developed economies with advanced digital financial systems, established regulatory frameworks, and widespread technological adoption, while few studies explore digital finance's impact in emerging markets and developing countries, where financial exclusion remains a critical issue (Bakry et al., 2024). Countries with underdeveloped financial systems and weak regulations may experience different effects from digital financial services compared to nations with robust financial infrastructures (Van Dinh, 2024). Understanding digital finance in such environments is crucial for crafting policies that foster inclusive financial growth.

LITERATURE REVIEW

Digital Finance

Digital financial services such as e-money, mobile money, card payments, and electronic transfers enable individuals to conduct transactions and save through digital means (Fernandes et al., 2021; Nasir et al., 2021). Payment methods like credit cards and mobile devices offer greater convenience, security, and protection by reducing vulnerabilities associated with physical currency (Chen et al., 2021). Digital banking also serves as a gateway for financial modernisation, providing small enterprises with opportunities to build credit histories and utilise secure financial instruments (Ali et al., 2019). While existing studies explore various impacts of digital finance on the economy, its direct influence on consumption patterns remains underexplored. Research has focused more on digital finance controls (Hu et al., 2024), financial inclusion, and economic growth (Chen et al., 2021), leaving its effects on consumption change largely unaddressed. There is also a lack of studies on regional and demographic variations, particularly in rapidly digitalising economies where digital adoption varies significantly across population segments (Yang et al., 2024).

Digital Financial and Consumption Behaviour

DFS is set to become a central component of future financial systems, driven by technological advancements (Sharma & Díaz Andrade, 2023). It will encompass services such as credit, payments, savings, and insurance, all facilitated via mobile phones and electronic payment systems (Anakpo et al., 2023; Babarinde et al., 2020). While DFS expands financial access, challenges such as security, privacy, and resistance to full adoption, particularly in less developed regions, persist (Hu et al., 2020; Rana et al., 2020). These issues, which include technological barriers, lack of awareness, and digital illiteracy, underscore the need for a new era of financial inclusion and resilience.

Consumption patterns are analysed through models that compute the marginal propensity to consume and price elasticity across expenditure categories. Models like the extended linear expenditure system (ELES) and the approximate ideal demand system (AIDS) examine the dynamic relationship between price and income (Deaton & Muellbauer, 1980; Lluch, 1973). Moving beyond traditional economic models, economic demand theory, alongside Maslow's hierarchy of needs, refines the definition of consumption structure. In China, the evolving consumption patterns align with the "survival-development-enjoyment" framework, reflecting Maslow's theory (Lijuan, 2025; Thakor, 2020).

Digital finance has transformed how individuals and organisations manage monetary transactions, leading to broad consumer adoption and significant behavioural shifts (Hu et al., 2023). It enhances financial inclusion, allowing consumers to access credit, conduct seamless transactions, and manage their finances more effectively. Research has highlighted the critical role of digital finance in shaping consumption behaviours (Shofawati, 2019). Studies on digital finance and consumption behaviour focus on three key aspects: (1) its direct effects on household purchasing patterns, (2) the reduction of liquidity constraints through DFS, and (3) regional and economic level variations in the outcomes of digital services (Wang & Li, 2024). Although DFS benefits economic activities, it also presents challenges, such as low financial literacy, complex regulations, and restricted accessibility (Bakry et al., 2024).

The Impact of Digital Finance on Household Consumption

The adoption of digital finance has extended financial services to individuals and households previously excluded from traditional banking, providing new opportunities

to engage in economic activities through mobile payments, digital lending platforms, and fintech credit evaluations (Agarwal & Assenova, 2024). Research indicates that digital financial products enable households to increase consumption by enhancing access to funds, thus encouraging more spending (Sikka & Bhayana, 2024). The streamlined digital payment systems reduce transaction barriers, making spending more efficient (Putrevu & Mertzanis, 2024). Mobile wallet adoption increases purchase frequency and volume as users prefer non-cash payments (Xu et al., 2024).

Digital finance has reshaped household expenditure patterns, leading to higher overall consumption. Access to credit and financial services has shifted spending from essential items to discretionary and luxury goods (Chatterjee, 2024). Digital credit services, such as buy-now-pay-later schemes, enable consumers to afford previously inaccessible purchases (Liu et al., 2022). The widespread use of digital finance has also facilitated greater participation in e-commerce, significantly altering traditional consumption habits. Online platforms leveraging digital payment systems encourage consumers to spend more on electronics, fashion, and travel (Gai et al., 2024). This shift in consumer behaviour presents challenges for businesses, policymakers, and financial institutions, who must adapt to emerging digital consumption patterns.

Digital Finance as a Tool for Alleviating Liquidity Constraints

The key strength of digital finance lies in its ability to provide credit services to individuals excluded by traditional financial institutions. Digital lending platforms use big data, machine learning, and transaction histories to assess creditworthiness, offering loans to consumers without conventional credit records and reducing financial exclusion (Ahmad, 2025; Sikka & Bhayana, 2024). This access to digital credit positively impacts household consumption, enabling consumers to manage their expenses over time (Putrevu & Mertzanis, 2024). In developing nations, mobile microfinance platforms help users manage education, healthcare, and durable goods purchases by alleviating short-term cash shortages (Bakry et al., 2024). Mobile finance facilitates smoother consumption patterns by enabling users to better plan finances and transfer funds instantly. The combination of mobile banking and digital wallets allows users to track expenses and set savings goals, leading to more balanced spending (Agarwal & Assenova, 2024). Digital financial services mitigate the economic effects of inconsistent income, with instant payment solutions for gig economy workers ensuring a more stable cash flow for daily expenses (Xu et al., 2024).

Heterogeneous Effects of Digital Finance on Different Consumer Groups

The positive impact of digital finance is unevenly distributed across socioeconomic groups. While high-income users benefit from enhanced investment performance and returns, low-income consumers primarily use digital credit for daily spending (Chatterjee, 2024). Those with advanced financial knowledge manage borrowing, budgeting, and investment more sensibly, whereas individuals with less financial awareness face higher risks of poor debt management (Gai et al., 2024). Urban consumers, benefiting from better financial infrastructure, internet access, and fintech exposure, utilise digital financial services more than rural populations, who face barriers like limited digital literacy, inadequate infrastructure, and cybersecurity concerns (Liu et al., 2022; Van Dinh, 2024). Addressing the digital divide requires policy interventions to extend mobile banking and digital literacy programs to rural areas.

Governments and financial institutions must address security vulnerabilities, privacy concerns, and exclusion barriers in digital financial services (Desyatnyuk et al., 2024). Sustainable development of digital finance requires a balance between technological progress and financial protection principles. Further research is needed to assess the long-term economic impact of digital finance, particularly in relation to blockchain, DeFi, and AI-powered financial models (Van Dinh, 2024). Comparative research across countries helps identify best practices for fostering inclusive economic growth. Digital finance can transform consumer behaviour, alleviate cash flow issues, and bridge financial access gaps, but its full potential requires focused policies and continuous research to address underlying challenges (Mahdzan et al., 2022).

METHODOLOGY

This section uses provincial panel data from 2012 to 2022, covering 31 Chinese provinces. Sources include the China Statistical Yearbook, provincial yearbooks, CNNIC Internet reports, and the People's Bank of China. Data from the China Regional Financial Transaction Report and Peking University's Digital Financial Inclusion Index are also used. The analysis examines residents' consumption structure based on per capita spending across eight categories, identifying changing trends.

Control Variables

Control variables, based on academic and theoretical frameworks, include factors affecting residents' consumption propensity. Instrumental variables comprise metrics

such as website numbers, CN domain names, and the Internet penetration rate. Additionally, an historical variable is derived by multiplying the 1983 Internet penetration rate with provincial postal and telecommunications data.

Intermediate Variables

Intermediate variables represent regional entrepreneurial activity and innovation, impacting the supply side. These include bank card spending rates, maximum income per capita, credit balances per capita, and income shortfalls per capita. Consistent with Engel's law, this chapter uses the proportion of development and enjoyment consumption expenditures as a proxy for consumption structure in robustness testing, concluding the analysis.

Statistical Description

The regression analysis, based on a sample of 341, examines survival, development, and enjoyment consumption. Survival consumption averages 0.414 (41.4%), indicating moderate variability, while development consumption averages 0.088 (8.8%) with less variability. Enjoyment consumption averages 0.681 (68.1%) with moderate variability. These findings align with economic theory, highlighting survival consumption as a priority, influenced by income, age, family size, and preferences. The results reveal a clear shift in consumption structure, with a decrease in survival expenses and an increase in development and enjoyment spending.

Table 1: The Statistical Description of the Explained Variables

Variable Name	Sample Size	Average	Standard Deviation	Minimum Value	Maximum Value
Survival Consumption	341	0.414	0.040	0.251	0.502
Development Consumption	341	0.088	0.010	0.049	0.107
Enjoyment Consumption	341	0.681	0.051	0.501	0.804

Econometric Equation

The results are thus based on a short panel fixed effects approach and focus specifically on the consumption structure of residents.
The regression model is as follows:

$$\text{ConsC}_{it} = \beta_0 + \beta_1 D F_{it} + \beta_2 X_{it} + \varphi_i + \varphi_t + \xi_{it} \qquad (1)$$

$$\text{ConsC}_{it} = \beta_0 + \beta_1 D F_{it} - 1 + \beta'_2 X_{it} + \varphi_i + \varphi_t + \xi_{it} \qquad (2)$$

Here, i and t refer to the province and time respectively within the context of this model. The focal point, Cons, encapsulates the elucidated variable pertaining to residents' consumption structure. Meanwhile, the pivotal explanatory variable is represented by DF_{it}, signifying the core underpinning of digital financial development. The variable X_{it} incorporates other controlling factors capable of influencing residents' consumption structure. The nuanced interplay of province and year is encapsulated in the fixed effects φ_i and φ_t, respectively, while ξ_{it} represents the stochastic component, introducing a level of random perturbation. In Model 2, a one-period time lag is applied to the digital financial development variable in the robustness test. This adjustment is strategically made to address potential endogeneity issues arising from reverse causality.

Estimation

Baseline Regression

Model (1) meticulously analyses residents' consumption structure as the dependent variable, uncovering the intricate impact of digital financial development. The detailed results of this regression analysis are presented comprehensively in Table 2. The analysis demonstrates a direct relationship between the dependent and independent variables: a one standard error change in digital financial development results in a 0.012 standard error increase in consumption structure, after controlling for correlated variables. Practically, a 10% improvement in overall digital financial development leads to a 1.2% change in consumption structure, highlighting the substantial impact of digital finance on residents' consumption patterns.

Table 2: Baseline Regression

Dependent Variable Consumption Structure	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Digital Finance	0.031**	0.026**	0.018**	0.013***	0.010**	0.012***
	(2.145)	(2.298)	(2.405)	(3.408)	(2.382)	(3.303)
GDP Per Capita			0.094**	0.217***	0.114***	0.103**	0.101**
			(2.358)	(4.528)	(3.048)	(2.330)	(2.527)
Financial Development			0.034*	0.125***	0.058**	0.052	0.032
			(1.977)	(4.523)	(2.255)	(1.512)	(1.141)
Urbanization				0.259***	0.382***	0.373***	0.410***
				(4.226)	(10.415)	(10.570)	(9.008)
Human Capital				0.008	0.021	0.015	-0.003
				(0.446)	(1.212)	(0.781)	(-0.180)
Education Expenditure					-0.034**	-0.021	-0.049***
					(-2.233)	(-1.348)	(-3.676)

Dependent Variable Consumption Structure	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Medical Expenditures				0.058**	0.062**	0.043**
				(2.625)	(2.741)	(2.636)
Social Security Expenditures				-0.016	-0.012	-0.032*
				(-0.901)	(-0.604)	(-1.893)
Old Age Dependency Ratio					0.018	-0.033*
					(0.796)	(-1.724)
Child Dependency Ratio					-0.079**	-0.088**
					(-2.292)	(-2.522)
Per Capita Disposable Income						0.083***
						(6.699)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	341	341	341	341	341	341
R^2	0.040	0.046	0.205	0.389	0.412	0.519

Note: Tables 3 and 4 report a similar pattern, where *** denotes significance at 1%, ** at 5%, * at 10%, while t statistics are in parentheses.

Sub- Indicator Regression

The results of the regression analysis showing how the secondary and tertiary indicators of digital financial development affect the complex system of residents' consumption, as presented in Table 3, speak for themselves. Regression analysis reveals significant effects of the secondary and tertiary indices of digital financial development on residents' consumption structure.

Table 3: Sub-Indicator Regression

Dependent Variable Consumption Structure	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Breadth of Coverage	0.008***					
	(2.904)					
Use Depth		0.015***				
		(4.040)				
Degree of Digitalization			0.003*			
			(1.850)			
Payment Index				0.009*		
				(1.712)		
Insurance Index					0.003*	
					(1.722)	
Credit Index						0.015***
Breadth of Coverage						(3.699)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	341	341	341	341	341	341
R^2	0.515	0.526	0.506	0.509	0.507	0.526

Specifically, a 1 standard deviation increase in digital finance development results in a 0.008 standard deviation rise in consumption structure. A 10% increase in coverage breadth correlates with a 0.8% rise, while a 10% increase in usage depth leads to a 1.5% growth. The digitalisation degree has a smaller effect, with a 0.3% rise for a 10% increase. In the tertiary tier, the payment index has the most notable impact, with a 10% increase leading to a 0.9% rise in consumption structure. The insurance index shows minimal impact, while the credit index demonstrates the greatest influence, with a 10% increase resulting in a 1.5% rise.

Robustness Check

To enhance the robustness of the analysis, a one-period lag is applied to the digital finance development variable, addressing potential endogeneity by suspending the main explanatory variables in time. Table 4 shows that with digital finance as the independent variable, using fixed effects and various control variables, the coefficients associated with IVs and GMMs are both positive and significant. This demonstrates that digital finance positively impacts the consumption structure. With a coefficient of 0.583, an increase in digital finance is linked to a more diversified and efficient consumption structure. The results remain consistent across different fixed effects regressions, with digital finance coefficients ranging from 0.001 to 0.115, and significance levels between 1% and 5%. These findings highlight the vital role of digital finance in fostering economic development. Control variables, with coefficients between -0.255 and 0.120, reveal the complexity of consumption influencers, with digital finance being just one factor. Additionally, the significance of province and year fixed effects reflects regional and temporal variations.

Table 4: Robustness Test Results 1

Dependent Variable Consumption Structure	Model 1 Fixed effects+IV	Model 2 Fixed effects+IV+GMM	Model 3 Fixed effects + IV1 (post office)	Model 4 Fixed effects + IV2 (telephone)
Digital Finance	0.003***	0.001**	0.583**	0.115***
	(3.326)	(2.092)	(2.203)	(4.450)
Control Variables	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Unrecognizable Test	0.000	0.000	0.006	0.058
Weak Instrumental Variables Test	23.936	23.936	10.681	13.797
Overidentification Test	0.410	0.410		
Obs.	341	341	341	341
R^2	0.290	0.288	0.256	0.283

Mediation Effect Test

Test 1

This study uses per capita disposable income and consumer credit data to measure residents' income levels and liquidity constraints, testing their role as intermediary factors. The detailed empirical results are presented in Table 5. The findings clearly demonstrate that digital finance significantly influences the consumption structure by easing liquidity constraints. Models 1 and 2 confirm the impact of digital finance on consumption patterns, emphasising its importance. The IR Cutting analysis in the Probit models reveals a positive relationship between digital finance and disposable income, highlighting its role in improving residents' economic welfare, as shown in Models 3 and 4. Additionally, Models 5 and 6 show significant positive effects for both digital finance and consumer credit, underscoring their importance in supporting consumers. These empirical results reinforce the theoretical discussion on digital finance's transformative role in reshaping consumption patterns.

Table 5: Mechanism Test 1

	Model 1 Consumption Structure	Model 2 Disposable Income	Model 3 Consumption Structure	Model 4 Consumption Structure	Model 5 Consumer Credit	Model 6 Consumption Structure
Digital Finance	0.010**	0.032***	0.012***	0.012***	0.005**	0.009***
	(2.382)	(25.002)	(3.303)	(3.303)	(2.047)	(3.303)
Disposable Income			0.053***			
			(6.699)			
Consumer Credit						0.128***
						(7.415)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	341	341	341	341	341	341
R^2	0.412	0.822	0.403	0.519	0.474	0.520

Note: ***, **, * denote significant at 1 percent, 5 percent, and 10 percent level respectively; t-statistics in parentheses.

Test 2

Digital finance has mitigated income fluctuations, enhanced residents' propensity to consume, and improved payment methods, thereby alleviating financial burdens and optimising consumption regulation. Table 6 presents the results of the correlation regression analysis conducted. Table 7 presents regression results from six models examining variables such as consumption structure, premium income, payment

environment, and digital finance to predict personal financial service usage. In Model 2, premium income shows a significant positive correlation, but its significance weakens in Model 3, likely due to year fixed effects. Digital finance, however, consistently shows a strong positive correlation in both Model 4 and Model 6, highlighting its favourable impact on personal financial service utilisation. These results emphasise the key roles of consumption structure, payment environment, and digital finance in shaping personal financial service usage.

Table 6: Mechanism Test 2

	Model 1 Consumption Structure	Model 2 Premium Income	Model 3 Consumption Structure	Model 4 Consumption Structure	Model 5 Payment Environment	Model 6 Consumption Structure
Digital Finance	0.012***	0.558***	0.001**	0.012***	0.136***	0.002**
	(3.303)	(38.591)	(2.454)	(3.303)	(9.350)	(1.993)
Premium Income			0.001*			
			(1.813)			
Payment Environment						0.003***
						(4.833)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	341	341	341	341	341	341
R^2	0.519	0.763	0.530	0.519	0.363	0.582

Note: The following symbols are used to represent the levels of significance: 1% level = ***; 5% level = **; 10% level = *. The t-statistics associated with hypotheses testing are presented in parentheses.

Test 3

Entrepreneurship has emerged as a key driver of technological innovation, fostering market competition and significantly influencing the development of digital finance. To maintain a competitive edge in a highly contested market, entrepreneurs must persist in innovating, introducing new products and services, and enhancing product quality. This culture of innovation not only caters to the diverse needs of residents but also stimulates changes in consumption patterns. The research confirms that regression analyses across multiple models support the hypothesis that digital finance plays a significant and positive role in shaping consumption structures. Models 1 and 2 demonstrate its direct and statistically significant impact on consumption growth, establishing digital finance as a key catalyst. Models 3 and 4, incorporating entrepreneurial activity and innovation, highlight their substantial positive influence, reinforcing their constructive role in consumption dynamics. Models 5 and 6 introduce the payment environment as an

intermediary variable, revealing its strong mediating effect on the relationship between digital finance and consumption. This underscores how an improved payment environment enhances accessibility and ease of consumption. Collectively, these findings emphasise the direct impact of digital finance and the crucial intermediary roles of entrepreneurship, innovation, and payment infrastructure in shaping consumption patterns.

Table 7: Mechanism Test 3

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Consumption Structure	Entrepreneurial Activity	Consumption Structure	Consumption Structure	Innovation Level	Consumption Structure
Digital Finance	0.012***	0.131*	0.011***	0.012***	0.136***	0.010***
	(3.303)	(1.882)	(3.046)	(3.303)	(3.356)	(3.303)
Entrepreneurial Activity			0.051			
			(0.428)			
Innovation Level						0.008*
						(1.812)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	341	341	341	341	341	341
R^2	0.519	0.316	0.572	0.519	0.191	0.613

Note: The symbols **, *, and & indicate statistical significance at the 1%, 5%, and 10% respectively. The t-statistics are shown in the parentheses.

Heterogeneity Analysis

Heterogeneity Analysis 1

Thus, to compare the differences in the effect of the digital financial on residents' consumption structure across the regions, this study stratified the sample into three regions: eastern, central and western regions, corresponding to the main economic zones. Regression analysis shown in Table 8. Moreover, Table 8 presents empirical evidence of the complex interaction between digital finance and consumption structures across China's regions. In Model 1, digital finance exhibits a highly significant positive effect, with coefficients of 0.030 in the eastern region, 0.011 in the central region, and 0.006 in the western region, underscoring its key role in driving consumption growth. Model 2 confirms that even after controlling for income, education, and age, digital finance maintains a positive and significant impact on consumption patterns across all

three regions. A comparison between Model 3 and Model 1 reveals that digital finance coefficients are not inversely proportional, as Model 3 reports a significantly higher coefficient. Causal inference is further validated through weak instrumental variable tests and overidentification assessments.

Table 8: Heterogeneity Analysis 1

Dependent Variable Consumption Structure	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Fixed effects			Fixed effects+IV+GMM			Fixed effects+IV2		
	East	Central	West	East	Central	West	East	Central	West
Digital Finance	0.030**	0.011***	0.006**	0.073**	0.071*	0.036***	0.443**	0.302**	0.254*
	(2.659)	(4.335)	(2.323)	(2.046)	(1.707)	(3.222)	(2.506)	(2.292)	(1.746)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unrecognizable Test				0.056	0.026	0.001	0.014	0.047	0.000
Weak Instrumental Variables Test				10.926	11.009	10.603	10.228	14.131	12.375
Overidentification Test				0.496	0.163	0.864			
Obs.	121	88	132	121	88	132	121	88	132
R^2	0.244	0.359	0.173	0.194	0.387	0.234	0.472	0.362	0.270

Heterogeneity Analysis 2

To assess differences in digital finance's impact on consumption structure, the sample is divided into high- and low-income groups using prefecture-level per capita disposable income. Sub-sample regression results are shown in Table 9.

Table 9: Heterogeneity Analysis 2

Dependent Variable Consumption Structure	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Fixed Effects		Fixed Effects+IV+GMM		Fixed Effects+IV2	
	Low Income	High Income	Low Income	High Income	Low Income	High Income
Digital Finance	0.009***	0.028**	0.007***	0.012***	0.255***	0.458***
	(3.477)	(2.290)	(2.635)	(5.531)	(3.159)	(3.999)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Unrecognizable Test			0.001	0.013	0.071	0.036
Weak Instrumental Variables Test			10.190	15.832	20.025	20.881
Overidentification Test			0.315	0.897		

Obs.	225	116	225	116	225	116
R^2	0.105	0.205	0.451	0.468	0.550	0.489

In Model 1, the digital finance coefficient is 0.009 for low-income groups and 0.028 for high-income groups, indicating a significant positive impact on both groups' consumption structures. In Table 9, Model 2, after controlling for income, education, and age, digital finance remains positively and significantly associated with consumption in both income groups. Model 3 shows a notably larger coefficient than Model 1, highlighting a more complex relationship between digital finance and consumption structures. For low-income groups, digital finance reduces costs, enhancing consumption potential by alleviating financial constraints. High-income groups prioritise consumption quality and experiences, with digital finance offering greater choice and enriched consumption patterns.

Heterogeneity Analysis III

To examine the moderating effect of human capital on digital financial development and consumption patterns, this study categorises samples by regional education levels. The sub-sample regression results are presented in Table 10. In Model 1, digital finance significantly influences the consumption structure across different human capital groups, suggesting its role in driving consumption growth. Model 2, which includes control variables such as income and education, maintains a strong positive effect, underscoring the independent impact of digital finance. Model 3 establishes a causal link, with a larger coefficient than Model 1, highlighting a more complex relationship. Digital finance lowers diversified consumption costs, facilitating consumption upgrades for lower human capital groups. In contrast, higher human capital groups focus on consumption levels and experiential factors, reflecting evolving preferences shaped by digital finance.

Table 10: Heterogeneity Analysis 3

Dependent Variable Consumption Structure	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Fixed Effects		Fixed Effects+IV+GMM		Fixed Effects+IV2	
	Low Human Capital	High Human Capital	Low Human Capital	High Human Capital	Low Human Capital	High Human Capital
Digital Finance	0.004**	0.016**	0.029***	0.106***	0.141**	0.124**
	(1.780)	(1.758)	(2.623)	(2.593)	(2.104)	(2.499)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Unrecognizable Test			0.000	0.043	0.022	0.046

Weak Instrumental Variables Test			19.518	13.262	21.405	20.348
Overidentification Test			0.638	0.613		
Obs.	176	165	176	165	176	165
R^2	0.212	0.217	0.424	0.455	0.327	0.765

CONCLUSION & FUTURE DISCUSSION

Digital financial development is transforming modern economies by significantly influencing consumer behaviour. Research indicates that digital finance enhances consumption patterns by improving financial access, liquidity control, and spending habits. Mobile payments, digital credit, and online banking act as economic accelerators, facilitating transactions and credit provision for underserved populations. By increasing spending diversity and efficiency, digital finance contributes to economic stability and financial inclusion. However, its impact varies across socioeconomic groups; wealthier individuals leverage digital finance for savings and leisure, whereas lower-income households rely on digital loans for essential needs.

The study's findings hold critical implications for policymakers, financial institutions, and consumer welfare advocates. As digital transformation accelerates, understanding fintech-driven changes in consumer behaviour is essential for informed policymaking, customer-oriented financial product development, and inclusive economic expansion. Insights into digital finance-consumption structures support strategic decision-making by identifying both the benefits of financial innovation and existing distribution inequalities. Additionally, financial institutions and fintech firms must adopt comprehensive service strategies to maximise the economic advantages of digital finance across all social groups. Cross-country research further informs best practices for leveraging digital finance to foster sustainable economic growth.

REFERENCES

Abdallah, W., Tfaily, F., & Harraf, A. (2025). The impact of digital financial literacy on financial behavior: customers' perspective. *Competitiveness Review: An International Business Journal*, *35*(2), 347-370. https://doi.org/10.1108/CR-11-2023-0297

Agarwal, A., & Assenova, V. A. (2024). Mobile money as a stepping stone to financial inclusion: how digital multisided platforms fill institutional voids. *Organization Science*, *35*(3), 769-787. https://doi.org/10.1287/orsc.2022.16562

Ahmad, N. R. (2025). Financial Inclusion: How Digital Banking is bridging the Gap

for Emerging Markets. *Journal of Applied Linguistics and TESOL (JALT)*, *8*(1), 894-902. https://jalt.com.pk/index.php/jalt/article/view/400

Al Faisal, N., Nahar, J., Waliullah, M., & Borna, R. S. (2024). The Role Of Digital Banking Features In Bank Selection An Analysis Of Customer Preferences For Online And Mobile Banking. *Frontiers in Applied Engineering and Technology*, *1*(01), 41-58. https://doi.org/10.70937/faet.v1i01.10

Ali, M. A., Hussin, N., & Abed, I. A. (2019). Electronic payment systems: Architecture, elements, challenges and security concepts: An overview. *Journal of Computational and Theoretical Nanoscience*, *16*(11), 4826-4838. https://doi.org/10.1166/jctn.2019.8395

Anakpo, G., Xhate, Z., & Mishi, S. (2023). The policies, practices, and challenges of digital financial inclusion for sustainable development: The case of the developing economy. *FinTech*, *2*(2), 327-343. https://doi.org/10.3390/fintech2020019

Aziz, A., & Naima, U. (2021). Rethinking digital financial inclusion: Evidence from Bangladesh. *Technology in Society*, *64*, 101509. https://doi.org/10.1016/j.techsoc.2020.101509

Babarinde, G. F., Abdulmajeed, I. T., & Kazeem, A. B. (2020). Understanding digital finance: a conceptual analysis. *Lapai International journal of management and social sciences*, *12*(1), 92-102. https://ojs.ibbujournals.com.ng/index.php/lijomass/article/view/386

Bakry, W., Nghiem, X.-H., Bhatti, M. I., Al-Mohamad, S., & Cui, L. (2024). Digital finance and sustainable development: Evidence from developing nations. *Science Progress*, *107*(3), 00368504241278823. https://doi.org/10.1177/00368504241278823

Chatterjee, A. (2024). Digital finance: a developing country perspective with special focus on gender and regional disparity. *Digital Policy, Regulation and Governance*, *26*(4), 394-419. https://doi.org/10.1108/DPRG-10-2023-0149

Chen, Y., Kumara, E. K., & Sivakumar, V. (2021). Invesitigation of finance industry on risk awareness model and digital economic growth. *Annals of Operations Research*, 1-22. https://doi.org/10.1007/s10479-021-04287-7

Deaton, A., & Muellbauer, J. (1980). An almost ideal demand system. *The American economic review*, *70*(3), 312-326. https://www.aeaweb.org/aer/top20/70.3.312-326.pdf

Desyatnyuk, O., Naumenko, M., Lytovchenko, I., & Beketov, O. (2024). Impact of digitalization on international financial security in conditions of sustainable

development. *Problemy Ekorozwoju*, *19*(1), 104-114. https://doi.org/10.35784/preko.5325

Fernandes, C., Borges, M. R., & Caiado, J. (2021). The contribution of digital financial services to financial inclusion in Mozambique: an ARDL model approach. *Applied Economics*, *53*(3), 400-409. https://doi.org/10.1080/00036846.2020.1808177

Gai, A. M., Zakaria, M., Harsono, I., Nurdiani, T. W., & Munir, A. R. (2024). Analysis of the influence of digital payment process, quality of application, and online service on repurchase intention of online shopping platform customers. *Jurnal Informasi dan Teknologi*, 200-205. https://doi.org/10.60083/jidt.v6i1.499

Hu, D., Zhai, C., & Zhao, S. (2023). Does digital finance promote household consumption upgrading? An analysis based on data from the China family panel studies. *Economic Modelling*, *125*, 106377. https://doi.org/10.1016/j.econmod.2023.106377

Hu, L., Sheng, D., Ni, G., Wang, D., & Fang, X. (2024). Digital Financial Inclusion and Poverty-Alleviation Resilience of Chinese Rural Households. *Journal of Family and Economic Issues*, 1-14. https://doi.org/10.1007/s10834-024-09992-6

Hu, N., & Hou, G. (2024). Mobile payment, digital inclusive finance, and residents' consumption behavior research. *Plos one*, *19*(7), e0288679. https://doi.org/10.1371/journal.pone.0288679

Hu, W., Chang, C.-H., Sengupta, A., Bhunia, S., Kastner, R., & Li, H. (2020). An overview of hardware security and trust: Threats, countermeasures, and design tools. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, *40*(6), 1010-1038. https://doi.org/10.1109/TCAD.2020.3047976

Hussain, S., Gupta, S., & Bhardwaj, S. (2024). Determinants inhibiting digital payment system adoption: an Indian perspective. *Qualitative Research in Financial Markets*. https://doi.org/10.1108/QRFM-09-2023-0223

Jiang, W., Hu, Y., & Cao, H. (2024). Does digital financial inclusion increase the household consumption? Evidence from China. *Journal of the Knowledge Economy*, 1-32. https://doi.org/10.1007/s13132-024-01821-3

Lijuan, H. (2025). Enhancing SMEs Development Through Fintech: Insights from China's Economic Transformation. *International Journal of Education and Humanities*, *5*(2), 257-265. https://doi.org/10.58557/(ijeh).v5i2.308

Liu, J., Chen, Y., Chen, X., & Chen, B. (2024). Digital financial inclusion and household financial vulnerability: An empirical analysis of rural and urban disparities in China. *Heliyon*, *10*(15). https://doi.org/10.1016/j.heliyon.2024.e35540

Liu, J., & Yao, Y. (2024). Digital financial inclusion and upgrading of consumption structure: Evidence from rural China. *Heliyon*, *10*(7). https://doi.org/10.1016/j.heliyon.2024.e28659

Liu, Y., Dilanchiev, A., Xu, K., & Hajiyeva, A. M. (2022). Financing SMEs and business development as new post Covid-19 economic recovery determinants. *Economic Analysis and Policy*, *76*, 554-567. https://doi.org/10.1016/j.eap.2022.09.006

Lluch, C. (1973). The extended linear expenditure system. *European Economic Review*, *4*(1), 21-32. https://doi.org/10.1016/0014-2921(73)90028-7

Mahdzan, N. S., Sabri, M. F., Husniyah, A. R., Magli, A. S., & Chowdhury, N. T. (2022). Digital financial services usage and subjective financial well-being: Evidence from low-income households in Malaysia. *International Journal of Bank Marketing*, *41*(2), 395-427. https://doi.org/10.1108/IJBM-06-2022-0226

Mishra, D., Kandpal, V., Agarwal, N., & Srivastava, B. (2024). Financial inclusion and its ripple effects on socio-economic development: a comprehensive review. *Journal of Risk and Financial Management*, *17*(3), 105. https://doi.org/10.3390/jrfm17030105

Mpofu, F. Y. (2024). Industry 4.0 in finance, digital financial services and digital financial inclusion in developing countries: Opportunities, challenges, and possible policy responses. *International Journal of Economics and Financial Issues*, *14*(2), 120-135. https://doi.org/10.32479/ijefi.15081

Nasir, A., Shaukat, K., Iqbal Khan, K., A. Hameed, I., Alam, T. M., & Luo, S. (2021). Trends and directions of financial technology (Fintech) in society and environment: A bibliometric study. *Applied Sciences*, *11*(21), 10353. https://doi.org/10.3390/app112110353

Putrevu, J., & Mertzanis, C. (2024). The adoption of digital payments in emerging economies: challenges and policy responses. *Digital Policy, Regulation and Governance*, *26*(5), 476-500. https://doi.org/10.1108/DPRG-06-2023-0077

Rana, N. P., Luthra, S., & Rao, H. R. (2020). Key challenges to digital financial services in emerging economies: the Indian context. *Information Technology & People*, *33*(1), 198-229. https://doi.org/10.1108/ITP-05-2018-0243

Sadowski, A., Dobrowolska, B., Dziugan, P., Motyl, I., Liszkowska, W., Rydlewska-Liszkowska, I., & Berłowska, J. (2024). Bread consumption trends in Poland: A socio-economic perspective and factors affecting current intake. *Food Science & Nutrition*, *12*(10), 7776-7787. https://doi.org/10.1002/fsn3.4383

Sharma, H., & Díaz Andrade, A. (2023). Digital financial services and human development: current landscape and research prospects. *Information Technology*

for Development, *29*(4), 582-606. https://doi.org/10.1080/02681102.2023.2199189

Shofawati, A. (2019). The role of digital finance to strengthen financial inclusion and the growth of SME in Indonesia. *KnE Social Sciences*, 389–407-389–407. https://doi.org/10.18502/kss.v3i13.4218

Sikka, V., & Bhayana, P. (2024). Barriers to Comprehensive Financial Inclusion Across the Globe: From Sociocultural Norms to Systemic Challenges. In *E-Financial Strategies for Advancing Sustainable Development: Fostering Financial Inclusion and Alleviating Poverty* (pp. 89-126). Springer. https://doi.org/10.1007/978-3-031-67523-2_7

Su, L., Peng, Y., Kong, R., & Chen, Q. (2021). Impact of e-commerce adoption on farmers' participation in the digital financial market: Evidence from rural China. *Journal of theoretical and applied electronic commerce research*, *16*(5), 1434-1457. https://doi.org/10.3390/jtaer16050081

Sun, X., & Xie, X. (2024). How does digital finance promote entrepreneurship? The roles of traditional financial institutions and BigTech firms. *Pacific-Basin Finance Journal*, *85*, 102316. https://doi.org/10.1016/j.pacfin.2024.102316

Thakor, A. V. (2020). Fintech and banking: What do we know? *Journal of financial intermediation*, *41*, 100833. https://doi.org/10.1016/j.jfi.2019.100833

Van Dinh, D. (2024). Digital economy and the electronic payment behavior: An empirical analysis. *Transnational Corporations Review*, *16*(4), 200078. https://doi.org/10.1016/j.tncr.2024.200078

Wang, Y., & Li, L. (2024). Digital economy, industrial structure upgrading, and residents' consumption: Empirical evidence from prefecture-level cities in China. *International Review of Economics & Finance*, *92*, 1045-1058. https://doi.org/10.1016/j.iref.2024.02.069

Xu, Y., Ghose, A., & Xiao, B. (2024). Mobile payment adoption: An empirical investigation of Alipay. *Information Systems Research*, *35*(2), 807-828. https://doi.org/10.1287/isre.2021.0156

Yang, Y., Lin, Z., Xu, Z., & Liu, S. (2024). The impact of digital finance on regional economic resilience. *Pacific-Basin Finance Journal*, *85*, 102353. https://doi.org/10.1016/j.pacfin.2024.102353

Zhang, W., Wang, J., & Jin, H. (2024). Digital finance, innovation transformation, and resilient city growth. *Scientific Reports*, *14*(1), 7056. https://doi.org/10.1038/s41598-024-56998-z