Journal of Organizational and End User Computing
Volume 35 • Issue 2

Regional Culture and Digital Financial Inclusion in China

Yunchuan Sun, Beijing Normal University, China*
https://orcid.org/0000-0001-6064-3380

Ying Xu, Beijing Normal University, China
Xiaoping Zeng, Beijing Normal University, China
Li Xiao, Beijing Normal University, China
Qianqian Xia, Beijing Normal University, China
Yixue Zhao, Beijing Normal University, China
Xiaohong Wan, Beijing Normal University, China
https://orcid.org/0000-0002-6472-1435

ABSTRACT

Unbalanced development among regions is a prominent feature of the current situation of inclusive finance. Few works have been done on how regional culture affects the imbalance of inclusive financial development. The authors try to investigate this issue using yearly data of digital financial inclusion in China spanning from 2011 to 2020 and the Hofstede regional culture of China. The results reveal regional culture could be the potential driver which leads to regional imbalance of the development of digital financial inclusion in China. Specifically, under Chinese historical culture background, financial inclusion is positively related with indulgence regionally, while individualism or power distance could exert negative impact. The findings are verified by a two-stage least square approach. Due to the anonymity and platform dependence of digital financial, Hofstede culture could make sense by influencing public trust in the financial sector, the internet, and unfamiliar relationships.

KEYWORDS:

Digital Financial Inclusion, Hofstede Culture, Individualism, Indulgence, Power Distance, Trust

INTRODUCTION

The unbalanced development of financial inclusion in different regions of China is a critical issue and a big challenge for inclusive finance. The spatial gap might be resulted from economic development, education levels, local policies, endowments, and regional institutions (Guo et al., 2020). Many studies have examined the causes of the imbalance issue from the perspective of formal institutional

DOI: 10.4018/JOEUC.332245 *Corresponding Author

environments such as the digital divide, population density, traditional financial development level, government regulation, and human capital (Bai & Lin, 2022; Gholami et al., 2021; Hou et al., 2022; Mahmood et al., 2021; Shao et al., 2021; Xie et al., 2022; Zhang et al., 2023). However, few works explored the impact of informal institutions on the development of digital financial inclusion, especially the impact of regional culture.

In terms of its cultural connotation, digital financial inclusion represents a holistic reflection of several social and environmental factors, thereby imposing higher requirements for the sustainable development of financial systems at the institutional level (Wamba et al., 2021). Its growth and development cannot be separated from the cultural environment. As cultural norms evolve to incorporate greater trust, control, and other attributes, individuals' attitudes towards financial market transform, leading to increased engagement in innovative financial activities (Dutta & Mukherjee, 2011). Typically, it has been observed that the ethnic or religious diversity is positively associated with the progress of financial inclusion from the global perspective (Saqib et al., 2023). Through the analysis of statistical data from 81 countries along the Belt and Road, it has been determined that individualism and masculinity have a positive impact on the development of national digital inclusive finance, while uncertainty avoidance and power distance would hinder it (Liaqat et al., 2022). Consequently, from a cultural standpoint, the formulation of strategies for digital financial inclusion should shift its focus from standardization to personalization. China, as a nation with a complex population distribution and distinct cultural characteristics, provides a natural environment for carrying out experiments to explore the specific relationship between Hofstede's culture dimensions and digital financial inclusion. In particular, serving as a potent analytical framework, Hofstede culture could demonstrate cultural diversity among nations or within a country (Hofstede et al., 2010). By addressing the research gap, this paper aims to examine the influence of Hofstede's cultural dimensions on the development of regional digital financial inclusion in China. Furthermore, we attempt to understand the impact mechanism for each dimension (individualism, power distance and indulgence).

In this study, we explore the impact of Hofstede culture on digital financial inclusion in China, using yearly data of digital financial inclusion index spanning from 2011 to 2020 and Chinese regional culture scaled by Hofstede's cultural dimensions. We find that the unbalanced development in financial inclusion among provinces are positively related to the regional culture. The regions with higher levels of individualism or power distance are facing a less developed digital financial inclusion. Conversely, provinces with a cultural preference for self-indulgence exhibit a promotion effect. The concerns on endogeneity are addressed by adopting a two-stage least squares (2SLS) approach, and the result still holds. Besides, it is also witnessed that public trust preference is a crucial bridge, where trust in banks, strangers, and financial and internet sectors could explain the impacts of individualism, power distance and indulgence respectively. Finally, it is important to underline that these impacts could only be observed in provinces with a better formal institutional environment, indicating the presence of regional heterogeneity.

Our contributions are listed as follows. It presents a systematic examination on the role of regional culture on digital financial inclusion in China for the first time, which enriches the existing research by extending the classical finance issues (Bame-Aldred et al., 2013; Gupta et al., 2018; Wang et al., 2022). Notably, our results suggest that collectivism orientation is beneficial for the development of digital inclusive finance in China, which is different from previous research focusing on transnational culture (Kumar et al., 2022; Liaqat et al, 2022; Zhang & Srite, 2021). Our finding highlights the institutional advantages of Chinese collectivism, which is closely aligned with inclusive development. Besides, given the long-term influence of regional culture on development imbalance, our study provides robust evidence that can inform future research and policy formulation in China. The insights we uncover also hold reference significance for the balanced construction of digital financial inclusion in other developing countries across the globe.

LITERATURE REVIEW

Financial Inclusion (FI) is a proactive proposal designed to widen the accessibility to crucial and cost-effective financial services for both individuals and businesses. Subsequently, the dawn of the digital era has drastically reshaped the way individuals manage financial transactions – receiving, paying, borrowing, and saving. Digital Financial Inclusion (DFI), proposed in 2016, referring to all initiatives geared towards fostering financial inclusion via the utilization of digital financial services. Information technology application and product innovation can curb the deficiencies inherent in traditional financial outlets, thereby broadening the reach of inclusive financial services. This provides an inexpensive and all-encompassing avenue to augment financial inclusion (Xu, 2020). Even though the essence of digital financial inclusion remains steeped in financial inclusion, it can be perceived as an advanced evolution of the latter.

Accordingly, China's digital financial inclusion has achieved rapid expansion since domestic government initiated 'The Plan for Promoting the Development of Inclusive Finance' in 2015 (Lai et al., 2020). The adoption rate of financial technology in China has reached an impressive 87%, making it one of the foremost online alternative financial markets in the world. The remarkable progress has attracted numerous attentions from academics. In the context of the Chinese national situation, DFI is particularly targeted towards fulfilling the financial needs of the low-income organizations, especially for the small and micro-enterprises (SME). They are facing high financing cost, low-efficiency financial system, long financing cycle, and the loan information asymmetry, which could be relieved by the development of online finance (Wang & Han, 2021). Meanwhile, digital finance could be a possible market systematic risk hedging tool for SMEs (Sun et al., 2022).

Scholars have conducted comprehensive research from various perspectives on the factors influencing and economic consequences of inclusive finance. A majority of these studies have delved into the economic and political aspects. It has been found that factors such as improved accessibility to financial intermediaries, reduced account costs, politically stable environment, and strengthened legal rights could greatly facilitate the development of financial inclusion (Allen et al., 2016). The industrial economy and governmental intervention are significant determinants, while are with different degrees for urban and rural digital financial inclusion development (Liu et al., 2021). From the perspective of its economic consequences, it has been demonstrated in the work from Mahmood et al. (2021) that there is a positive correlation between digital financial inclusion and provincial economic growth in China. The development of digital financial inclusion can also promote more households borrowing through formal channels and individual stock investment diversification in China (Guan et al., 2022; Lu et al., 2023). While it provides much convenience, it is important to acknowledge that it can also enable illegal fundraising activities (Lai et al., 2022).

American financiers, Merton and Bodie (2005), introduced the concept of "New Institutional Finance", which sheds light on how non-economic factors such as national history, corporate culture, and trust environment influence corporate performance and finance development (Ali et al., 2021; Meso et al., 2021; Zhang et al., 2021; Zhu et al., 2021). Culture, especially, as an informal institution, has also been demonstrated to have an indisputable influence (Khan et al., 2022). Financial inclusion (FI), being an economic activity, mirrors the widely held value of common prosperity. This implies that culture can undoubtedly play an enduring and critical role in the advancement of FI by setting the informal norms for human behavior. The research mostly ventures into investigating the ramifications of international cultural differences at the national level. For example, researchers have embarked on an empirical examination of the correlation between racial and religious diversity and FI by using an assortment of data drawn from 187 countries worldwide. Intriguingly, their findings reveal a significant positive correlation (Saqib et al., 2023). In a recent study by Tony et al. (2022), an international sample encompassing 50 developing and 35 developed countries was exploited to showcase how culture plays a pivotal role in shaping the evolution of FI across various countries. The researchers propose that

countries should aim to craft more personalized policies and guidelines. In a related study, Liaqat et al. (2022) narrowed its focus on nations along the "Belt and Road", exploring the impact of national cultural characteristics as defined by Hofstede's cultural dimensions on digital financial inclusion. In conclusion, similar studies from an international perspective are prosperous, but there is a lack of extensive research on this topic specifically focused on China.

THEORETICAL ANALYSIS AND HYPOTHESIS DEVELOPMENT

The research has confirmed that culture could significantly affect the operation of financial markets by changing individuals' acceptance and participation in the market, with trust being a key element (Dutta & Mukherjee, 2011). In relationship marketing, commitment and trust are both required, and can be as key mediating factors for successful transactions (Morgan & Hunt, 1994; Sohaib, 2021; Sun & Li, 2022). In particular, digital finance has gradually become an important way to eliminate physical barriers. Compared to traditional offline activities, online financial activities are frequently implemented anonymously, and have stronger impersonality. Hence, the improvement of digital financial inclusion would put higher requirements on individuals' trust preference (Lu et al., 2021).

Generally, the core of trust lies in the spatial and temporal characteristics that individuals uphold towards the objects they depend on, especially when faced with growing social uncertainty and complexity in different contexts (Guo & Ma, 2022; Rouibah et al., 2022; Toshio et al., 1998). Nation culture has an essential impact on the development of trust (Doney et al., 1998). It is important to recognize that trust features may differ between Chinese culture and Western countries. Chinese culture, with its unique values, norms, and social structures, can shape distinct trust characteristics that deviate from those observed in Western societies. These cultural factors play a significant role in influencing how individuals establish and maintain trust in various social contexts.

Thus, our study will focus on the cultural framework of Hofstede within China, which has more concentrative and typical regional features. So, we highlight the Chinese native characteristics that underlie culture in the following discussion. Specifically, we apply the Hofstede's three cultural dimensions, including individualism, power distance, and indulgence respectively, and try to seek how public trust works.

Individualism vs. Collectivism (IVC)

Individualism is used to evaluate whether a social collective thinks highly of individual or collective interests (Hofstede, 1980). In a society favoring individualism, relationships between individuals are not too close, and individuals would pay more attention to themselves and their families. In a society that prefers collectivism, the interests of ethnic groups and extended families are more valued.

In China, collective values are mentioned and emphasized frequently. Collectivism has been constantly regarded as a typical manifestation of the Chinese cultural identity, and implies implicit contractual relationships and strict social order (Luo & Geng, 2022). On the one hand, in collectivist culture, the implicit market-oriented spirit and rule consciousness will drive the rapid development of China's modern economic society. And on the other, the virtue of social mutual assistance brought about by collectivist culture have improved survival support and risk resolution mechanisms. The both make individuals trust the financial sector more. Consequently, the contractual relation between enterprises and banks is highly encouraged to be established. Digital financial inclusion gains broader potential for development.

Thus, the individualism could hinder individuals' trust in banks. We propose the following hypothesis:

H1. Individualism has a negative impact on regional digital financial inclusion in China.

Power Distance (PDI)

The power distance index could measure the acceptance of unequal power distribution within a society or organization by individuals with low social status (Hofstede, 1980). The higher the power distance, the higher the individual's acceptance of the power inequality in the organization, and even more preference for it, but the social mobility would be worse.

Numerous studies have consistently demonstrated the positive correlation between higher financial literacy and increased participation in digital finance (Calcagno & Monticone, 2015; Su et al., 2021). Nevertheless, it has been observed that regional power distance negatively influences individual financial literacy, as people tend to rely more on financial intermediaries for their personal finance needs (Ahunov & Hove, 2020). Furthermore, in regions with high power distance, the financial decision-making authority is often delegated to authoritative household head, which could result in the lack of financial literacy for other household members (Hsu, 2016). In China, especially, the proportion of financial resources shared by the household sector has long been ranked behind financial institutions and non-financial enterprises, overall higher than that of government and overseas departments (Zhou, 2023). The degree to which financial resources' benefit the household sector is relatively high.

The impact of regional power distance on financial literacy is particularly notable in the Chinese context. Regions characterized by higher power distance tend to exhibit lower levels of digital finance engagement, individuals may prefer the familiarity and distrust associated with unfamiliar interactions. In China, where hierarchical structures and authority play a crucial role in societal relationships, the distrust on unfamiliar people could result in fewer contractual relationships and hinder the development of personal financial knowledge and skills.

Thus, the power distance could hinder individuals' participation in digital financial inclusion. We propose the following hypothesis:

H2. Power distance has a negative impact on regional digital financial inclusion in China.

Indulgence vs. Restraint (IVR)

The societal dimension, as conceptualized by Hofstede, aims to capture the extent to which a society permits the pursuit of individual basic needs and desires (Minkov & Hofstede, 2011). It is an indicator of national happiness, where higher values correspond to elevated levels of social well-being.

Hofstede's definition of the societal dimension sheds light on the role of individual fulfillment and satisfaction within a societal framework. It suggests that societies with a greater emphasis on personal aspirations and contentment tend to have higher levels of overall happiness. It is confirmed that social satisfaction is highly correlated with interpersonal trust in both Western countries and China (Helliwell & Putnam, 2004; Xu et al., 2023). When individuals trust each other and have confidence in societal institutions, it strengthens social bonds and facilitates cooperation and collaboration. This, in turn, contributes to higher levels of overall satisfaction and happiness within the society. Trust enables people to engage in mutually beneficial interactions, leading to increased productivity and trade within a society.

Thus, it is reasonable that indulgence is promotive to the development of the regional financial inclusion. We propose the following hypothesis:

H3. Indulgence has a positive impact on regional digital financial inclusion in China.

SAMPLE AND METHODS

Data Source and Sample

During the course of our research, we were able to gather data from 31 provinces in China spanning a period of ten years, from 2011 to 2020. This sample size was determined based on the practicality of data collection and the actual development. We have winsorized all control variables here between the 1st and 99th percentiles, and completed standardization of continuous variables.

Digital Inclusive Finance Index

The window period in our study is from 2011 to 2020, during which China's digital financial inclusion experienced rapid growth and achieved leapfrog development. We have obtained the Digital Financial Inclusion Index (DFI) compiled by Peking University as a measure of the development status of digital financial inclusion in province-level regions of China. This index system uses billions of micro data from a representative digital financial institution in China, covering 31 provinces in mainland.

Our study focused on the period from 2011 to 2020, a window during which China witnessed significant advancements and a leapfrog development in digital financial inclusion. To assess the development status of digital financial inclusion in provincial-level regions within China, we utilized the Digital Financial Inclusion Index compiled by Peking University (Guo et al., 2020). It is a comprehensive index system that takes into account the billions of microdata collected from a representative digital financial institution in China, covering 31 provinces. It could provide a robust measure of the progress and growth of digital financial inclusion across different regions.

By utilizing this index system, we aimed to capture and evaluate the varying degrees of digital financial inclusion development across the different provinces in China. It allows us to gain valuable insights into the overall trends and patterns in China's digital financial inclusion landscape during the specified period.

Hofstede Cultural Dimension Index

The cultural characteristic indicators are collected from the scale questionnaire, which refers to the Hofstede Cultural Values Questionnaire (International Questionnaire, VSM 2013) and were done in 2022. In the selection of subjects, the following conditions need to be met simultaneously: (1) College students from third tier and below cities (senior and below). (2) Attend school in the student's hometown or in other third tier or lower cities in the province where the student's hometown is located. (3) The ethnic group is Han Chinese. (4) Not from those universities in project "985" or "211"[1].

Finally, the provincial cultural indicators are calculated from a total of 13,211 valid samples by following the instructions provided in the scale questionnaire. We use them as the static variables, so they are not time-varying during year 2011 to 2020. We handle it this way not only because cultural characteristics are long-term stable, but also because Hofstede culture dimensions change relatively over time, so the relative differences between regions are stable (Beugelsdijk et al., 2015).

Additionally, to minimize the impacts of personal factors on the results, we performed regression analysis at the individual level, taking into account variables such as gender, age, family annual income, and subjective family social status. We aimed to control for any potential biases or confounding factors that may arise due to individual economic circumstances, providing a more accurate relationship assessment.

Measuring Social Trust

Following the previous literature, our measure for social trust is taken from the China General Social Survey (henceforth the CGSS) in 2017. Since its beginning, the survey has always sought to systematically monitor the evolving connection between social structure and quality of life in both urban and rural areas of China (Lan et al., 2023; Xu et al., 2023).

In 2017, the CGSS sent the questionnaires to residents from 29 provinces, and 10,040 useful responses were received. In this investigation, all the respondents were asked to answer the question about their trust for different people or sectors, such as "Do you trust relatives?", "Do you trust friends?", "Do you trust banks?" and so on. To construct our measures, we score the five choices 1, 2, 3, 4, and 5 from the lowest trust to the highest trust, respectively. Then we average the scores of the respondents' choices by provinces where they are located, and these scores are used as our measure of social trust on digital financial inclusion.

Specifically, based on the average scores of different questions, we measured the individuals' trust in the bank[2] and used it as $Trust\_bank$, and measured the individuals' trust on finance and internet sectors[3] by averaging the provincial scores of banks, insurances, and internet to take as $Trust\_fi$.

Model Design

Baseline Regression

To study the impact of Hofstede culture on the development of digital financial inclusion, we establish the following regression equation.

$$DFI_{i,t} = \beta_0 + \beta_1 Culture_i + \beta_2 ControlVariables_{i,t-1} + Year\_dummies + \varepsilon_{i,t}$$

As the explained variable, $DFI_{i,t}$ is the digital financial inclusion composite index. $Culture_i$ represents individualism $\left(IVC_i\right)$, power distance $\left(PDI_i\right)$, and self-indulgence $\left(IVR_i\right)$ respectively. $\varepsilon_{i,t}$ is the error term. We fixed the year effect in the regression.

Following the research findings of Idrees et al. (2022) and Liu et al. (2022), we controlled regional population employment structure $\left(Emp\right)$, population education structure $\left(Edu\right)$, proportion of population aged 15-64 $\left(Labour\right)$, urban-rural income gap $\left(Income\_gap\right)$, GDP per capita $\left(AGDP\right)$, elderly dependency ratio $\left(Ratio\right)$, government financial expenditure $\left(Gov\right)$, internet development level $\left(Net\right)$, traditional financial development level $\left(Finance\right)$, etc. To address the concerns of reverse causality, we employed a lagged variable approach for all control variables that are subject to changes over time. Overall independent control variable data are from CSMAR database.

Mechanism Regression: Testing for Mediating Variables

As the analysis before, social trust could be shaped by the cultural environment, and be a key influencing element in economic development (Dutta & Mukherjee, 2011). Herein, based on theoretical analysis, we have established a simple mediation model for each cultural dimension, where the level of public trust in banks, and in the financial and internet sector perform as mediating factors. We refer to Dell's (2010) two-step method to examine the mediating mechanism, which requires to conduct the following two equations:

$$DFI_{i,t} = \beta_0 + \beta_1 Culture_i + \beta_2 ControlVariables_{i,t-1} + Year\_dummies + \varepsilon_{i,t} \quad (1)$$

$$Trust_i = \gamma_0 + \gamma_1 Culture_i + +\gamma_2 ControlVariables_{i,t-1} + \mu_{i,t} \quad (2)$$

As mediator, $Trust_i$ represents $Trust\_bank$, or $Trust\_fi$ to verify. The definitions and measurements for overall variables used in the regression analysis are shown in Table 1.

Table 1. Variable definitions

Variable	Definition
Dependent variables	
DFI	Digital financial inclusion index in China (Guo et al., 2020).
$Trust\_bank$	Reflects the level of public trust on banks (Lan et al., 2023).
$Trust\_fi$	Reflects the level of public trust on banks, insurances, and internet (Lan et al., 2023).
Independent Cultural variables	
IVC	Individualism vs. collectivism index (Hofstede, 2001).
PDI	Power distance index (Hofstede, 2001).
IVR	Indulgence vs. restraint index (Minkov & Hofstede, 2011).
Independent Control variables	
Emp	Equals the ratio of GDP in the tertiary sector.
Edu	Equals the ratio of population with associate degree or above.
$Labour$	Equals the ratio of population aged 15-64.
$Income\_gap$	Equals the ratio of per capita disposable income between urban and rural residents.
$AGDP$	Equals GDP per capita.
$Ratio$	Equals the ratio of the population aged 65 and above.
Gov	Equals government financial expenditure in province.
Net	Equals the number of internet broadband access households.
$Finance$	Equals the ratio between financial institution loan balance and GDP.

EMPIRICAL RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistical results for raw data are shown in Table 2. From the statistics about the indicators of digital financial inclusion, it can be observed that there are significant differences in the extreme values of the index. It exactly confirms the imbalance in the development of digital financial inclusion between regions.

The results reveal that there is a considerable regional variation in China, as evidenced by the standard deviation of over 4.00 among provinces for each cultural dimension. Regardless of the trust preference, the minimum values in all provinces are greater than 2.5, indicating that the social trust environment is performing well.

Table 2. Descriptive statistics

	Variable	N	Min	Max	Mean	Median	Standard Deviation
Dep. VAR.	$DFI_{i,t}$	310	16.22	431.93	216.24	223.54	97.03
Indep. VAR.	IVC	31	-8.36	6.28	0.14	0.60	4.01
	PDI	31	-7.58	9.24	0.20	0.76	4.23
	IVR	31	-10.55	17.70	0.45	0.31	6.23
Med. VAR.	$Trust\_bank$	29	2.89	3.37	3.16	3.26	0.10
	$Trust\_fi$	29	2.53	2.92	2.71	2.70	0.10
Control VAR.	$Labour_{i,t-1}$	310	0.66	0.84	0.74	0.73	0.04
	$Gov_{i,t-1}$	310	409.05	195700	33396.84	23409.49	29714.81
	$AGDP_{i,t-1}$	310	12882	161776	49276.12	42326	25614.53
	$Income\_gap_{i,t-1}$	310	12.80	3801.60	844.44	604.80	748.80
	$Ratio_{i,t-1}$	310	0.33	0.84	0.49	0.49	0.09
	$Edu_{i,t-1}$	310	0.01	0.42	0.10	0.09	0.07
	$Emp_{i,t-1}$	310	1.85	3.67	2.60	2.55	0.38
	$Finance_{i,t-1}$	310	6.70	25.50	14.34	13.90	3.81
	$Net_{i,t-1}$	310	705.91	17430.79	4952.63	4461.66	2841.87

Results and Analysis: Baseline Regression

Table 3 reports the baseline regression results for Hofstede culture dimensions and digital financial inclusion development. As shown in column (1), the coefficient of IVC is negative and significant at the 5% level for DFI, suggesting **H1** is valid. That is, in high collectivist provinces, on average, they exhibit advanced digital financial inclusion. Interestingly, the impact direction is opposite from that in previous research. We will further explore the reasons for this in the subsequent mechanism examination.

While the coefficient of PDI is negative and significant at the 1% level for DFI. If the province is more inclined to high power distance, the development of digital financial inclusion would be poor, which is consistent with **H2**. From column (3), IVR is significantly positive related to the digital financial inclusion, indicating that when a province prefers higher (lower) happiness, it is more (less) appreciable in digital financial inclusion. The hypothesis **H3** is established. Moreover, the effects are all above 10%.

In sum, the coefficients of three dimensions to measure the provincial cultural characteristics are all significant at the level of 1% to 10%. Consequently, Hofstede culture exactly has a significant impact on the development of digital financial inclusion.

Table 3. Baseline regression results

	(1)	(2)	(3)
	$DFI_{i,t}$	$DFI_{i,t}$	$DFI_{i,t}$
IVC_i	-0.014**		
	(-2.34)		
PDI_i		-0.020***	
		(-3.44)	
IVR_i			0.012*
			(1.76)
$Labour_{i,t-1}$	0.000	-0.006	-0.003
	(0.03)	(-0.59)	(-0.28)
$Gov_{i,t-1}$	-0.020	-0.029	-0.026
	(-0.76)	(-1.10)	(-0.96)
$AGDP_{i,t-1}$	0.377***	0.370***	0.361***
	(19.47)	(19.96)	(19.17)
$Income\_gap_{i,t-1}$	-0.024***	-0.033***	-0.029***
	(-2.67)	(-3.84)	(-3.36)
$Ratio_{i,t-1}$	0.023*	0.009	0.015
	(1.91)	(0.84)	(1.38)
$Edu_{i,t-1}$	-0.128**	-0.048	-0.081*
	(-2.41)	(-0.99)	(-1.67)
$Emp_{i,t-1}$	-0.002	-0.001	-0.002
	(-1.17)	(-0.79)	(-1.18)
$Finance_{i,t-1}$	0.028**	0.010	0.016
	(2.40)	(0.91)	(1.54)
$Net_{i,t-1}$	0.067***	0.069***	0.072***
	(3.15)	(3.31)	(3.41)

continued on following page

Table 3. Continued

	(1)	(2)	(3)
	$DFI_{i,t}$	$DFI_{i,t}$	$DFI_{i,t}$
$Constant$	0.396***	0.408***	0.392***
	(46.17)	(45.49)	(42.48)
Year-FE	*Yes*	*Yes*	*Yes*
N	310	310	310
R-squared	0.991	0.992	0.991

Note: T-statistics are in parenthesis. *, **, *** indicate the level of significance at 10%, 5% and 1%, respectively.

Results and Analysis: Mediating Mechanism Test

Furthermore, we try to examine whether Hofstede culture has an impact the development of digital financial inclusion by regulating individual trust levels towards relevant sectors. The results are presented in Table 4.

In panel A, columns (1), (2), and (3) display the examination for IVC. The column (1) indicates that collectivist cultural environment can promote the development of digital financial inclusion at a significance level of 5%. The results in column (2) and (3) show that the estimated coefficients of individualism are both negative at the significance level of 1%. The reason is that Chinese society has always promoted a culture of collectivism, which can provide loyal protection for individuals and cultivate strong cooperative relationships. In such a society, everyone has a significant responsibility to their peers and the entire collective, and banks also bear corresponding moral responsibilities within it. Thereby, individuals in collectivistic regions are willing to entrust their wealth to banks and have a higher level of trust in the internet and financial institutions. Overall, this indicates that, $Trust\_bank$ and $Trust\_fi$ are both effective mediators.

Similarly, panel B displays the two-step examination for PDI. According to the performance of estimated coefficients, we can infer that there is a mediating effect. In particular, the power distance is significantly negatively associated with individuals' trust in banks and the internet and financial sectors, while the trust could promote digital inclusive finance. Also, as shown in column (2) and column (3) of panel C, for people live in provinces more inclined to indulgence, they would prefer believing in banks ((γ_1=0.275, p-value<0.01)) and financial and internet sectors (γ_1=0.115, p-value<0.01). It proves that public trust could play a mediating role between IVR and digital financial inclusion.

Heterogeneity Analysis Across Provinces

According to Institutional Economics, during the evolution of digital financial inclusion, both formal and informal institutions alternately exert influence (Williamson, 2000). So, when we discuss about how Hofstede culture plays the role of informal institutions, it is essential to take formal institutions into consideration. To explore the interrelationship, we have divided all provinces into 'better' and 'poor' groups, which is based on the median of annual regional market legislative environmental index[4]. Next, we proceeded regression of the benchmark model in two separate groups with different levels of formal institutional development. The group regression results are presented in Table 5.

Obviously, our findings indicate that the impact of culture on digital financial inclusion is significant only within the 'better' group of provinces, as indicated by the estimated coefficients in columns (2), (4), and (6). Conversely, there is no cultural dimension showing a significant impact

Table 4. Regression results for intermediary mechanism analysis

$Coef.$	$DependentVAR.$		
	(1)	**(2)**	**(3)**
	$DFI_{i,t}$	$Trust\_bank_i$	$Trust\_fi_i$
Panel A: Individualism *versus* Collectivism			
IVC_i	-0.014** (-2.39)	-0.144*** (-8.02)	-0.071*** (-3.15)
$Constant$	0.396*** (44.15)	3.135*** (101.91)	2.797*** (81.06)
Control	*Yes*	*Yes*	*Yes*
Year-FE	*Yes*	*No*	*No*
N	290	290	290
R-squared	0.9908	0.3033	0.1775
Panel B: Power Distance			
PDI_i	-0.020*** (-3.43)	-0.045** (-2.11)	-0.157*** (-7.89)
$Constant$	0.408*** (44.34)	3.134*** (95.90)	2.852*** (79.78)
Control	*Yes*	*Yes*	*Yes*
Year-FE	*Yes*	*No*	*No*
N	290	290	290
R-squared	0.9915	0.1985	0.2637
Panel C: Indulgence *versus* Restraint			
IVR_i	0.012* (1.76)	0.275*** (13.15)	0.115*** (3.99)
$Constant$	0.392*** (42.48)	3.004*** (99.82)	2.741*** (75.75)
Control	*Yes*	*Yes*	*Yes*
Year-FE	*Yes*	*No*	*No*
N	290	290	290
R-squared	0.9913	0.5002	0.2016

Note: T-statistics are in parenthesis. *, **, *** indicate the level of significance at 10%, 5% and 1%, respectively.

within the 'poor' group, as shown in columns (1), (3), and (5). Specifically, in provinces with a more favorable market legislative environment, both individualism and power distance exhibit significant negative relationships at the 10% and 5% significance levels, respectively. In terms of self-indulgence, it could significantly promote digital financial inclusion only when the formal institutional environment is relatively good, with a significance level of 10%.

Table 5. Regression results for heterogeneity analysis

	IVC		PDI		IVR	
Group panel	(1)	(2)	(3)	(4)	(5)	(6)
	poor	*better*	*poor*	*better*	*poor*	*better*
IVC_i	0.002	-0.018*				
	(0.20)	(-1.73)				
PDI_i			-0.008	-0.020**		
			(-0.92)	(-2.39)		
IVR_i					0.003	0.020*
					(0.32)	(1.77)
$Labour_{i,t-1}$	0.003	-0.002	0.002	-0.012	0.004	-0.014
	(0.23)	(-0.11)	(0.15)	(-0.80)	(0.23)	(-0.86)
$Gov_{i,t-1}$	0.040	-0.052	0.038	-0.077**	0.035	-0.070**
	(0.60)	(-1.35)	(0.62)	(-2.35)	(0.59)	(-2.15)
$AGDP_{i,t-1}$	0.310***	0.402***	0.313***	0.387***	0.310***	0.372***
	(6.43)	(13.01)	(6.78)	(15.88)	(6.55)	(15.10)
$Income\_gap_{i,t-1}$	-0.045***	-0.003	-0.045***	-0.014	-0.043***	-0.015
	(-3.43)	(-0.20)	(-4.17)	(-1.25)	(-3.44)	(-1.17)
$Ratio_{i,t-1}$	0.019	0.008	0.021	-0.012	0.025	-0.008
	(0.74)	(0.38)	(1.13)	(-0.89)	(1.13)	(-0.52)
$Edu_{i,t-1}$	-0.122	-0.158	-0.103	-0.043	-0.122	-0.062
	(-1.56)	(-1.65)	(-1.29)	(-0.70)	(-1.28)	(-0.97)
$Emp_{i,t-1}$	-0.000	-0.002	-0.000	-0.002	-0.000	-0.002
	(-0.34)	(-0.86)	(-0.25)	(-0.65)	(-0.27)	(-1.02)
$Finance_{i,t-1}$	0.018	0.025	0.016	0.003	0.020	0.003
	(1.12)	(1.09)	(1.00)	(0.19)	(1.13)	(0.19)
$Net_{i,t-1}$	0.001	0.088**	0.002	0.101***	0.004	0.105***

continued on following page

Table 5. Continued

	IVC		PDI		IVR	
Group panel	(1)	(2)	(3)	(4)	(5)	(6)
	poor	*better*	*poor*	*better*	*poor*	*better*
	(0.02)	(2.53)	(0.05)	(3.13)	(0.09)	(3.99)
Constant	0.308***	0.449***	0.311***	0.464***	0.305***	0.451***
	(23.74)	(28.11)	(24.54)	(33.73)	(19.48)	(34.03)
Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
N	141	138	141	138	141	138
R-squared	0.9901	0.9889	0.9901	0.9891	0.9901	0.9888

Note: T-statistics are in parenthesis. *, **, *** indicate the level of significance at 10%, 5% and 1%, respectively.

These emphasize the presence of heterogeneity in the influence of cultural characteristics on digital financial inclusion, which is contingent upon the development of the regional market legislative environment. This highlights the importance of considering the interplay between formal institutions and culture in shaping the landscape of digital financial inclusion. Based on these insights, policymakers can tailor their strategies by taking into account the specific characteristics and needs of each region, rather than implementing uniform policies across the country.

ENDOGENEITY CONCERNS

To address the endogeneity concern that there might be reverse causality or missing variables jointly determining the levels of digital financial inclusion and Hofstede culture, we employed 2SLS approach and find three different instrumental variables.

Our instruments are based on language, location, and weather, which are objective and develops slowly through time. Specifically, the types of dialects in each province can reflect the complexity of the area and the number of groups divided by language. It is highly associated with individualism level, but not to economic factors (Licht et al., 2007). Herein, we took the number of dialect types in provinces $\left(N\_dialect\right)$ as an instrumental variable of IVC. Also, the power structure of China has developed from ancient times and has a strong history. So, we calculated the distance between provinces and ancient Chinese capitals, and weighted it by the territorial area of different dynasties' capitals $\left(D\_capital\right)$ as an instrumental variable of PDI. Considering that indulgence is a lateral measure of national happiness, and weather could influence people's mood (Cunningham, 1979), we calculated the cloudy days in a year by province $\left(Weather\right)$ and took is as the instrumental variable of IVR. The results are reported in Table 6.

Consistent with our baseline results, IVC and PDI perform a significant negative correlation with digital financial inclusion, while IVR does oppositely. These are favoring our previous findings.

CONCLUSIONS AND DISCUSSION

The study focuses on three dimensions of Hofstede culture to examine the general relationship between regional cultural characteristics and digital financial inclusion in China by using annual samples from 2011 to 2020. Empirical findings demonstrate that strong individualism orientation and

Table 6. Culture and DFI-2SLS results

	(1)	(2)	(3)
	IVC	**PDI**	**IVR**
(IV)	$(N\_dialect)$	$(D\_capital)$	$(Weather)$
IVC_i	-0.113***		
	(-2.75)		
PDI_i		-0.130***	
		(-6.15)	
IVR_i			0.105**
			(2.32)
$Labour_{i,t-1}$	0.014	-0.021	0.001
	(0.82)	(-1.57)	(0.06)
$Gov_{i,t-1}$	0.062	-0.040	-0.016
	(1.34)	(-1.14)	(-0.41)
$AGDP_{i,t-1}$	0.488***	0.397***	0.324***
	(9.95)	(16.26)	(12.78)
$Income\_gap_{i,t-1}$	0.007	-0.054***	-0.029***
	(0.37)	(-4.13)	(-2.77)
$Ratio_{i,t-1}$	0.102**	0.006	0.069**
	(2.54)	(0.39)	(2.50)
$Edu_{i,t-1}$	-0.623***	0.107	-0.117
	(-3.11)	(1.60)	(-1.46)
$Emp_{i,t-1}$	-0.002	0.001	-0.002
	(-1.48)	(0.87)	(-1.46)
$Finance_{i,t-1}$	0.150***	-0.025	0.024
	(2.90)	(-1.52)	(1.20)
$Net_{i,t-1}$	0.001	0.053**	0.076***

continued on following page

Table 6. Continued

	(1)	(2)	(3)
	IVC	**PDI**	**IVR**
(IV)	$\left(N\_dialect\right)$	$\left(D\_capital\right)$	$\left(Weather\right)$
	(0.02)	(2.06)	(2.58)
$Constant$	0.010	0.099***	-0.048
	(0.55)	(4.50)	(-1.49)
Year-FE	*Yes*	*Yes*	*Yes*
N	310	310	279
R-squared	0.985	0.981	0.984

Note: T-statistics are in parenthesis. *, **, *** indicate the level of significance at 10%, 5% and 1%, respectively. Regional dialect data is from CSMAR database. The distance data from the ancient capitals is calculated by ourselves. The weather statistics of each province come from CnOpenData, which is available from year 2011 to 2019.

high-level power distance are not positive signals for the enhancement of digital financial inclusion. They could count against people's trust in banks or strangers, thereby affecting the establishment of contractual relationships between individuals and financial institutions. Instead, indulgence is conductive to the people's trust in the internet and financial sectors such as banking and insurance. It is definitely beneficial to achieve developed digital financial inclusion. Under different market legal environments, there is regional heterogeneity in the above impacts, inferring that there is interaction between formal and informal institutions.

The issue of imbalanced regional development in digital inclusive finance has existed for a long time. In previous research, there has been limited investigation into the national regional culture, but rather on a cross-national level. However, it is equally important to capture finer cultural differences between different regions of a country (Liaqat et al, 2022). When we carry out our experiments in China, interestingly, there are indeed different findings from before, including the advantages of collectivist culture and the drawbacks of high-level power distance in the process of digital inclusive finance development. This is unexpectedly but reasonable.

It is undeniable that our research does have a few shortcomings. We hope that scholars and policymakers can seize this untapped opportunity and pay more attention to the relationship between culture, digital finance, and inclusive development. So that we can gain a deeper understanding of how cultural differences and preferences affect the adoption and use of digital financial services, and then realize regional coordinated development of digital inclusive finance.

FUNDINGS

This research was supported by National Natural Science Foundation of China (72371032).

REFERENCES

Ahunov, M., & Hove, L. V. (2020). National culture and financial literacy: International evidence. *Applied Economics*, *52*(21), 2261–2279. doi:10.1080/00036846.2019.1688241

Ali, M., Tarhini, A., Brooks, L., & Kamal, M. M. (2021). Investigating the situated culture of multi-channel customer management: A case study in Egypt. *Journal of Global Information Management*, *29*(3), 46–74. doi:10.4018/JGIM.2021050103

Allen, F., Demirguc-Kunt, A., Klapper, L., Martinez, P., & Maria, S. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation*, *27*, 1–30. doi:10.1016/j.jfi.2015.12.003

Bai, R., & Lin, B. (2022). Access to credit and green innovation: Do green finance and digitalization levels matter? *Journal of Global Information Management*, *30*(1), 1–21. doi:10.4018/JGIM.315022

Bame-Aldred, C. W., Cullen, J. B., Martin, K. D., & Parboteeah, K. P. (2013). National culture and firm-level tax evasion. *Journal of Business Research*, *66*(3), 390–396. doi:10.1016/j.jbusres.2011.08.020

Beugelsdijk, S., Maseland, R., & van Hoorn, A. (2015). Are scores on Hofstede's dimensions of national culture stable over time? A cohort analysis. *Global Strategy Journal*, *5*(3), 223–240. doi:10.1002/gsj.1098

Calcagno, R., & Monticone, C. (2015). Financial literacy and the demand for financial advice. *Journal of Banking & Finance*, *50*(50), 363–380. doi:10.1016/j.jbankfin.2014.03.013

Cunningham, M. R. (1979). Weather, mood, and helping behavior: Quasi experiments with the sunshine Samaritan. *Journal of Personality and Social Psychology*, *37*(11), 1947–1956. doi:10.1037/0022-3514.37.11.1947

Doney, P. M., Cannon, J. P., & Mullen, M. R. (1998). Understanding the influence of national culture on the development of trust. *Academy of Management Review*, *23*(3), 601–620. doi:10.2307/259297

Dutta, N., & Mukherjee, D. (2011). Is culture a determinant of financial development? *Applied Economics Letters*, *19*(6), 585–590. doi:10.1080/13504851.2011.589800

Gholami, R., Singh, N., Agrawal, P., Espinosa, K., & Bamufleh, D. (2021). Information technology/systems adoption in the public sector: Evidence from the Illinois department of transportation. *Journal of Global Information Management*, *29*(4), 172–194. doi:10.4018/JGIM.20210701.oa8

Guan, H. L., & Xue, L., & Xu, Han. (. (2022). Digital financial inclusion and household debt in China. *Applied Economics Letters*. Advance online publication. doi:10.1080/13504851.2022.2110560

Guo, F., Wang, J. Y., Wang, F., Kong, T., Zhang, X., & Cheng, Z. Y. (2020). Measuring the development of digital inclusive finance in China: Index compilation and spatial characteristics. *Economic Research Journal*, *19*(4), 1401–1418.

Guo, L., & Ma, D. (2022). Can government direct bailout intervention relieve the crisis sentiment in the context of the COVID-19 pandemic. *Journal of Global Information Management*, *30*(4), 1–15. doi:10.4018/JGIM.297907

Gupta, D. R., Veliyath, R., & George, R. (2018). Influence of national culture on IPO activity. *Journal of Business Research*, *90*, 226–246. doi:10.1016/j.jbusres.2018.04.023

Helliwell, J. F., & Putnam, R. D. (2004). The social context of well-being. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *359*(1449), 1435–1446. doi:10.1098/rstb.2004.1522 PMID:15347534

Hofstede, G. (1980). Culture's consequences international differences in work-related values. *Sage*.

Hofstede, G., de Hilal, A., Malvezzi, S., Tanure, B., & Vinken, H. (2010). Comparing regional cultures within a country: Lessons from Brazil. *Journal of Cross-Cultural Psychology*, *41*(3), 336–352. doi:10.1177/0022022109359696

Hou, H., Tang, K., Liu, X., & Zhou, Y. (2022). Application of artificial intelligence technology optimized by deep learning to rural financial development and rural governance. *Journal of Global Information Management*, *30*(7), 1–23. doi:10.4018/JGIM.289220

Hsu, J. W. (2016). Aging and strategic learning: The impact of spousal incentives on financial literacy. *The Journal of Human Resources*, *51*(4), 1036–1067. doi:10.3368/jhr.51.4.1014-6712R PMID:28148971

Khan, M. A., Gu, L., Khan, M. A., & Meyer, N. (2022). The effects of national culture on financial sector development: Evidence from emerging and developing economies. *Borsa Istanbul Review*, *22*(1), 103–112. doi:10.1016/j.bir.2021.02.003

Kumar, S., Baishya, K., Sreen, N., Sadarangani, P. H., & Samalia, H. V. (2021). Impact of national culture on e-government development: A longitudinal study. *Journal of Global Information Management*, *29*(2), 1–22. doi:10.4018/JGIM.2021030101

Lai, J. T., Xie, J., Cao, S., & Zhang, H. (2022). Digital financial inclusion and illegal fundraising in China. *Applied Economics*, *54*(48), 5575–5590. doi:10.1080/00036846.2022.2047601

Lai, J. T., Yan, I. K. M., Yi, X., & Zhang, H. (2020). Digital financial inclusion and consumption smoothing in China. *China & World Economy*, *28*(1), 64–93. doi:10.1111/cwe.12312

Lan, J., Pan, Y., & Yu, Y. (2023). The role of digital financial inclusion in increasing fertility intentions: Evidence from China. *Applied Economics*, 1–19. Advance online publication. doi:10.1080/00036846.2023.2244249

Li, X., Zhang, J., Long, H., Chen, Y., & Zhang, A. (2023). Optimization of digital information management of financial services based on artificial intelligence in the digital financial environment. *Journal of Organizational and End User Computing*, *35*(3), 1–17. doi:10.4018/JOEUC.318478

Liaqat, I., Gao, Y., Rehman, F. U., Lakner, Z., & Oláh, J. (2022). National culture and financial inclusion: Evidence from belt and road economies. *Sustainability (Basel)*, *14*(6), 3405. doi:10.3390/su14063405

Licht, A. N., Goldschmidt, C., & Schwartz, S. H. (2007). Culture rules: The foundations of the rule of law and other norms of governance. *Journal of Comparative Economics*, *35*(4), 659–688. doi:10.1016/j.jce.2007.09.001

Liu, G., Huang, Y., & Huang, Z. (2021). Determinants and mechanisms of digital financial inclusion development: Based on urban-rural differences. *Agronomy (Basel)*, *11*(9), 1833. doi:10.3390/agronomy11091833

Lu, W., Niu, G., & Zhou, Y. (2021). Individualism and financial inclusion. *Journal of Economic Behavior & Organization*, *183*, 268–288. doi:10.1016/j.jebo.2021.01.008

Lu, X., Lai, Y., & Zhang, Y. (2023). Digital financial inclusion and investment diversification: Evidence from China. *Accounting and Finance*, *63*(S2), 2781–2799. doi:10.1111/acfi.13043

Luo, B., & Geng, P. (2022). The theory of rice: Collectivism and its economic explanation [Translated title]. *Journal of South China Agricultural University*, *21*(4), 1–12.

Mahmood, A., Abdul, A., Muhammad, A. K., Muhammad, S., & Khurram, S. (2021). Digital financial inclusion and economic growth: Provincial data analysis of China. *China Economic Journal*, *14*(3), 291–310. doi:10.1080/17538963.2021.1882064

Meso, P., Negash, S., & Musa, P. F. (2021). Interactions between culture, regulatory structure, and information privacy across countries. *Journal of Global Information Management*, *29*(6), 1–14. doi:10.4018/JGIM.20211101.oa49

Minkov, M., & Hofstede, G. (2011). The evolution of Hofstede's doctrine. *Cross Cultural Management*, *18*(1), 10–20. doi:10.1108/13527601111104269

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, *58*(3), 20–38. doi:10.1177/002224299405800302

Rouibah, K., Qurban, H., & Al-Qirim, N. (2022). Impact of risk perceptions and user trust on intention to re-use e-government: A mixed method research. *Journal of Global Information Management*, *30*(1), 1–29. doi:10.4018/JGIM.307117

Saqib, A., Iftikhar, Y., & Anna, R. (2023). Diversity-inclusion nexus: Assessing the role of ethnic and religious diversity in financial inclusion; a global perspective. *Ekonomska Istrazivanja*, *36*(1), 1205–1225. doi:10.1080/1331677X.2022.2083648

Shao, X., Yang, Y., & Wang, L. (2021). Digital divide or digital welfare: The role of the internet in shaping the sustainable employability of Chinese adults. *Journal of Global Information Management*, *29*(5), 20–36. doi:10.4018/JGIM.20210901.oa2

Sohaib, O. (2021). Social networking services and social trust in social commerce: A PLS-SEM Approach. *Journal of Global Information Management*, *29*(2), 23–44. doi:10.4018/JGIM.2021030102

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. doi:10.3390/jtaer16050081

Sun, Y., & Li, Y. (2022). The impact of risk-aware consumer trust on CB E-Commerce platforms and purchase intention. *Journal of Global Information Management*, *30*(3), 1–13. doi:10.4018/JGIM.20220701.oa10

Sun, Y. C., Zeng, X. P., Zhao, H., Simkins, B., & Cui, X. (2022). The impact of COVID-19 on SMEs in China: Textual analysis and empirical evidence. *Finance Research Letters*, 45, 102211. 10.1016/j.frl.2021.102211

Toshio, Y., Karen, S. C., & Mau, W. (1998). Uncertainty, trust, and commitment formation in the United States and Japan. *American Journal of Sociology*, *104*(1), 165–195. doi:10.1086/210005

Wamba, S. F., Queiroz, M. M., Blome, C., & Sivarajah, U. (2021). Fostering financial inclusion in a developing country: Predicting user acceptance of mobile wallets in Cameroon. *Journal of Global Information Management*, *29*(4), 195–220. doi:10.4018/JGIM.20210701.oa9

Wang, H., Zheng, L. J., Xu, X., & Hung, T. H. (2022). Impact of financial digitalization on organizational performance: A look at the dark side. *Journal of Global Information Management*, *30*(1), 1–35. doi:10.4018/JGIM.315307

Wang, P., & Han, W. (2021). Construction of a new financial e-commerce model for small and medium-sized enterprise financing based on multiple linear logistic regression. *Journal of Organizational and End User Computing*, *33*(6), 1–18. doi:10.4018/JOEUC.286808

Williamson, Q. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, *38*(3), 19. doi:10.1257/jel.38.3.595

Xie, B., Lin, B., & Li, M. (2022). Research on financial support mechanism of creative enterprises. *Journal of Global Information Management*, *30*(3), 1–19. doi:10.4018/JGIM.302915

Xu, H., Zhang, C., & Huang, Y. (2023). Social trust, social capital, and subjective well-being of rural residents: Micro-empirical evidence based on the Chinese General Social Survey (CGSS). *Humanities & Social Sciences Communications*, *10*(1), 49. doi:10.1057/s41599-023-01532-1

Xu, X. (2020). Trust and financial inclusion: A cross-country study. *Finance Research Letters*, *35*, 101310. doi:10.1016/j.frl.2019.101310

Zhang, A., Chen, Y., Xu, X., Gao, Y., & Zhang, L. (2021). Impacts of resource alertness and change leadership style on financial performance: An empirical study. *Journal of Global Information Management*, *29*(2), 45–60. doi:10.4018/JGIM.2021030103

Zhang, C., & Srite, M. (2021). The role of national culture values and trust in online sharing hospitality platform acceptance. *Journal of Global Information Management*, *29*(3), 103–130. doi:10.4018/JGIM.2021050105

Zhang, G., Chen, Y., Wang, G., & Zhou, C. (2023). Spatial-temporal evolution and influencing factors of digital financial inclusion: County-level evidence from China. *Chinese Geographical Science*, *33*(2), 221–232. doi:10.1007/s11769-023-1333-5 PMID:36686200

Zhou, H. (2023). The logic and pathway of household financial development. *Chinese Social Sciences Review*, *2023*(1), 112–125.

Zhu, W., Mou, J., & Cohen, J. F. (2021). A cross-continent analysis of the invariance of product information in cross-border electronic commerce. *Journal of Global Information Management*, *29*(6), 1–23. doi:10.4018/JGIM.289654

ENDNOTES

[1] It refers to the important decision made by the CPC and the State Council of the State Council of the People's Republic of China at the turn of the century to build a first-class university with Vanguard International Semiconductor Corporation level.

[2] According to the question F1a2_9, "What is your level of trust in the bank?".

[3] According to the question F1a2_8, F1a2_9, and F1a2_10, including "What is your level of trust in the internet?", "What is your level of trust in the bank?", and "What is your level of trust in insurance companies?"

[4] The access address: https://cmi.ssap.com.cn/. The index provided spans from 2011-2019, covering 31 provinces, cities and autonomous region.

Yunchuan Sun is a professor and the director of the Institute of Big data in Finance, Business School, Beijing Normal University. He is an IEEE senior member and acts as the associate Editor of Personal and Ubiquitous Computing, founder of IIKI series events (from 2012). He received his Ph.D. degree from the Institute of Computing Technology, CAS in 2009. His research interests include FinTech, Big Data in Financne, IoT, Semantic Technologies, and Data Security.

Ying Xu received her B.Acc degree from Beijing Normal University, China, in 2021. She is currently a master's student in the Department of Finance, Business School, Beijing Normal University. Her research interests include Fintech, Culture Finance, and alternative data.

Xiaoping Zeng received the B.Acc. and M.Acc degree from Beijing Normal University, Beijing, China, in 2018 and 2021, respectively. She is currently a Ph.D. student in the Department of Finance, Business School, Beijing Normal University. Her research interests include Fintech and Behavioral Finance. She has published papers in some SCI and SSCI indexed journals, like Personal and Ubiquitous Computing, Finance Research Letters. She has been anonymous reviewer of Finance Research Letters and Financial Innovation since 2021.

Xiao Li received the M.Acc degree in Business Administration from Beijing Normal University, Beijing, China, in 2011. Currently, she holds the position of General Manager at Beijing Beishang Xidian Technology Co., Ltd. In addition, she is a member of the Beijing Haidian District Federation of Industry and Commerce and an off-campus mentor at Huazhong University of Science and Technology.

Qianqian Xia received the B.S. degree in the Department of Finance, Business School, Beijing Normal University, China, in 2023. She is currently working toward the M.Acc degree in Applied Economics in the Department of Finance, Beijing Normal University. Her research interests include Fintech and Culture Finance.

Yixue Zhao received the B.S. degree in Psychology from Beijing Normal University, Beijing, China, in 2020. She is currently working toward the Ph.D. degree in Neuroscience at the Department of Psychology, Beijing Normal University. Her research interests include culture and its influence on people's behavior and brain.

Xiao Hong Wan is a Professor at the State Key Laboratory of Cognitive Neuroscience and Learning and IDG/ McGovern Brain Institute, Beijing Normal University (2014-present). He had served as a Research Scientist at the RIKEN Brain Science Institute in Japan (2006-2014). He holds a Ph.D. in Engineering from Tohoku University, Japan (2003-2006), along with a Master's degree in Engineering from the same institution (2000-2002) and Bachelor's degrees in Chemical Physics and Electrical and Communication Engineering from the University of Science and Technology of China (1994-1999). His research is centered on understanding neural mechanisms and models of decision-making and metacognition, aiming to improve human decision-making. Dr. Wan also explores computational algorithms for the development of self-monitoring and self-learning artificial intelligence systems.