

JOURNAL
OF GLOBAL

TRENDS

IN SOCIAL

SCIENCE

Volume 2, Number 3

March 2025

ISSN 2759-7830

 **press**

Journal Statement

1. The opinions expressed in articles published in the *Journal of Global Trends in Social Science* (JGTSS) are solely those of the authors and do not necessarily reflect the views of the editorial board or the editorial office.
2. The journal reserves the right to edit and revise submitted manuscripts as necessary. Authors with specific requirements should state them upon submission.
3. JGTSS supports an Open Access policy, making all articles freely accessible to the public. Users are permitted to read and use the content provided the original authors and source are properly credited, and the content is not used for commercial purposes.
4. The journal holds the exclusive right to publish all accepted articles online. Authors are required to ensure that their submissions are original and not under consideration elsewhere. Any objections to online publication must be stated at the time of submission.
5. JGTSS is indexed in CrossRef and Google Scholar. All published articles are assigned a unique DOI to facilitate citation and academic dissemination. Authors who do not wish their articles to be indexed should notify the editorial office upon submission.
6. All articles published in the journal require prior authorization from the authors. Reproduction, translation, or compilation of any published content must obtain written permission from both the editorial office and the authors.
7. The journal accepts submissions exclusively through its official website: <https://press.jandoo.ac/journal/jgtss>. Due to resource constraints, submitted manuscripts will not be returned. If no decision is communicated within three months, authors are free to submit their work elsewhere.
8. JGTSS promotes academic integrity. Authors are responsible for ensuring the originality and accuracy of their work. Any detected plagiarism or academic misconduct will result in retraction and potential legal consequences.

Chief Advisor

Di LU

School of Journalism & Communication, Peking University, Beijing, China

Advisor Board

Kaihe CHEN

School of Journalism & Communication, Peking University, Beijing, China

Weijia WANG

School of Journalism & Communication, Peking University, Beijing, China

Co-Editor-in-Chief

Mo CHEN

Peking University, Beijing, China

Letian ZHANG

Harvard University, Cambridge, USA

Associate Editors

Zhenlin XIE

Hefei University of Technology, Hefei, China

Zhaolin LU

Beijing Institute of Technology, Beijing, China

International Editorial Board

Yanmin QUAN

School of Law, Xi'an Jiaotong University, Xi'an, China

Wenjing LI

Peking University, Beijing, China

Jing YANG

Peking University, Beijing, China

Yue CHEN

Beijing University of Civil Engineering and Architecture, Beijing, China

Colin Marx

University College London, London, UK

Ke XIE

Hefei University of Technology, Hefei, China

Colin Harwood

University of Manchester, Manchester, UK

Diala Haddad

Waseda University, Tokyo, Japan

Zihan ZHAO

Kyushu University, Fukuoka, Japan

Xiaoxiao LIAO

Keio University, Tokyo, Japan

From Restriction to Rebalancing/ The Evolution and Prospects of Trump 2.0 Immigration Policy	1
Jiali Huang	
GRU-Enhanced Attention Mechanism for LSTM in Hybrid CNN-LSTM Models for Stock Prediction	10
Jiahui Zhang, Laipeng Yan	
Bargaining Power and Market Turning of Export-Oriented Firms in the Context of Anti-Globalization	18
Zhanlingyan Guo, Yuzhong Zhou	
A Study on the Dilemma and Countermeasures of Digital Technology-enabled Villages in the Context of Domestic Ageing	27
Jiaqi Chen	
Madama Butterfly: Western Art, Cultural Mobility, and the Construction of Asian Identity from an Orientalist Perspective	37
Hongling Wu, Jianfeng Zhang	
A Swot Analysis of the Construction of a National Junior Paddleboard Instructor Training Course	44
Jiahui Li, Yabin He	
Call for Papers	49

<https://doi.org/10.70731/wjse4483>

From Restriction to Rebalancing: The Evolution and Prospects of Trump 2.0 Immigration Policy

Jiali Huang ^{a,*}^a Shanghai Institute for International Studies, Shanghai 200233, China

KEYWORDS

*Trump 2.0 Immigration Policy;
America First;
Border Security*

ABSTRACT

The U.S. immigration policy during the Trump 2.0 era has intensified in terms of border security, management of illegal immigration, and restrictions on legal immigration, significantly impacting the economy, society, and international relations. The immigration policies during Trump's first term, which emphasized the "America First" agenda, included the construction of a border wall, travel bans, and the "zero tolerance" policy, all of which generated considerable controversy and legal challenges. Following adjustments made by the Biden administration, key policies such as the restoration of DACA, the revocation of the travel ban, and improvements in border management were implemented. However, the reintroduction of Trump 2.0 policies has reinforced border security and immigration restrictions, with proposals such as the abolition of birthright citizenship, the expansion of deportation efforts, and the tightening of legal immigration pathways. While these policies may reduce illegal immigration in the short term, they could have long-term adverse effects on the U.S. labor market, economic competitiveness, and social stability. Moreover, the Trump 2.0 policies may strain U.S.-Mexico relations, undermine U.S. leadership in global humanitarian issues, and reduce its attractiveness in the international talent competition. The success or failure of Trump 2.0 immigration policies will hinge on their ability to balance border security, economic development, and social stability.

1. Introduction

U.S. immigration policy has undergone significant transformations since the 20th century, reflecting the dynamic changes in the nation's economic, social, and political landscapes. Notably, during Trump's first term, immigration policy took a decisive shift. Guided by the "America First" philosophy, the Trump administration implemented a series of highly controversial immigration restriction measures, including the construction of the U.S.-Mexico border wall, the imposition of travel bans targeting several Muslim-ma-

jority countries (commonly referred to as the "Muslim Ban"), the enforcement of the "zero tolerance" policy that led to the separation of families of illegal immigrants, and efforts to terminate the Deferred Action for Childhood Arrivals (DACA) program. These policies not only reshaped the U.S. immigration system but also had profound effects on the volume and structure of immigration inflows, sparking widespread domestic and international controversy as well as legal challenges (Vaughan, 2024).

With the Biden administration's assumption of office, many of the Trump-era immigration policies were reversed

* Corresponding author. E-mail address: lilyyyhuang@outlook.com

or significantly modified. The Biden administration swiftly revoked the travel ban, reinstated the DACA program, and proposed comprehensive immigration reform legislation aimed at providing a pathway to legalization for undocumented immigrants, while modernizing border management and strengthening humanitarian measures (Harvey, 2021). However, the potential return of Trump 2.0 policies has reignited concerns regarding the future direction of U.S. immigration policy. These policies may further reinforce the stance taken during Trump's first term, particularly in areas such as border security, immigration restrictions, and DACA, potentially creating new disruptions to the U.S. immigration system.

2. Immigration Policies During Trump's First Term: Strengthening Border Security and Immigration Restrictions

The Trump administration's immigration policy, guided by the "America First" philosophy, swiftly implemented a series of measures aimed at strengthening border security and restricting immigration inflows following its assumption of office in 2017. The core of these policies focused on controlling illegal immigration through stringent law enforcement and executive orders, including the construction of the border wall, travel bans, and the "zero tolerance" policy. These policies underwent a series of developments, from policy announcements and legislative enactments to legal challenges. They not only involved executive orders and legislative proposals but also faced intense judicial scrutiny, particularly concerning the travel ban and DACA, which became two of the most contentious issues in Trump's immigration agenda (Just Security, 2025).

2.1. Policy Content

2.1.1. Travel Ban (Muslim Ban)

In January 2017, the Trump administration signed Executive Order 13769, implementing a travel ban targeting citizens from seven Muslim-majority countries (The White House, 2017). Initially, the ban affected Iran, Iraq, Libya, Somalia, Sudan, Syria, and Yemen, prohibiting their citizens from entering the U.S. After several revisions, the final version expanded to include North Korea, Venezuela, and Chad. The order suspended the entry of immigrants and visitors from these countries and halted all refugee admissions. Trump defended the policy as necessary to protect the U.S. from terrorist threats, while critics argued that the ban was discriminatory on religious grounds, violating the First Amendment's guarantee of religious freedom and the equal protection principles embedded in U.S. immigration law. These concerns prompted widespread legal challenges in multiple courts. In 2018, the Supreme Court ultimately upheld the travel ban, affirming the president's authority but leaving its legality and ethical implications highly contested, permitting the partial enforcement of the ban (Howe, 2018).

2.1.2. Border Wall Construction

A central component of Trump's immigration policy was the construction of the U.S.-Mexico border wall, designed to bolster border security and prevent illegal immigration and drug trafficking. In 2017, Trump issued several executive orders to increase border enforcement personnel and expedite the wall's construction (The White House, 2017). By 2020, the Trump administration announced the completion of approximately 500 miles of border wall along the U.S.-Mexico border. Despite widespread criticism regarding resource allocation and environmental impacts, the border wall remained one of the most iconic and contentious immigration measures of Trump's first term (EconoTimes, 2025).

2.1.3. "Zero Tolerance" Policy

In June 2018, the Trump administration formally implemented the "zero tolerance" policy, which mandated the criminal prosecution of all individuals crossing the border illegally (The White House, 2018). This policy led to the separation of thousands of children from their parents, with the children being placed in detention centers or foster care. Human rights organizations and immigrant advocacy groups condemned the policy for its severe impact on families and for violating international human rights standards. Although the Trump administration eventually relaxed the policy under public pressure, the implementation of "zero tolerance" remains one of the most controversial immigration measures of the Trump era (KQED, 2025).

2.1.4. Termination of DACA (Deferred Action for Childhood Arrivals)

During his first term, Trump launched a concerted effort to terminate the DACA program. DACA, which was established by the Obama administration in 2012, provided temporary protection from deportation for young immigrants who had entered the U.S. illegally as children (Immigration History Research Center, 2024). In 2017, Trump announced plans to end DACA, giving Congress six months to find a legislative solution (The White House, 2017). This announcement sparked widespread legal challenges. While multiple court rulings temporarily blocked the Trump administration's efforts to terminate DACA, allowing the program to continue, the future of DACA remains one of the most contentious issues in U.S. immigration policy. Beyond its legal complexities, the termination of DACA directly impacted the lives and futures of hundreds of thousands of "Dreamers," making it a central issue in ongoing U.S. immigration debates (The Editors of ProCon, 2025).

2.2. Changes in Immigration Numbers and Impacts

The Trump administration's immigration policies had a profound impact on both the volume and demographic composition of immigration to the U.S. Strict border controls, travel bans, and the "zero tolerance" policy contributed to a significant reduction in illegal immigration, particularly due to the construction of the border wall and enhanced enforcement measures. However, these policies also forced some immigrants to resort to more perilous and

complicated routes to enter the U.S. Additionally, restrictions on immigration from certain countries, reductions in refugee admission quotas, and proposals for a skills-based immigration reform led to a notable decline in immigration from regions such as Latin America, the Middle East, and North Africa. The "zero tolerance" policy had a particularly severe impact on Central American immigrants, with family separations becoming a focal point of public outrage and legal challenges ([AS/COA, 2025](#)).

These policies not only altered the volume and origins of immigration but also significantly impacted the U.S. labor market. Despite the overall reduction in immigration, labor shortages emerged in low-skilled industries such as agriculture and construction. Studies suggest that freezing H-2A visa renewals could reduce the agricultural labor force by up to 10%, resulting in higher costs and decreased productivity. Furthermore, the economic impact of these policies is evident in research indicating that from 2016 to 2022, U.S. GDP was \$335 billion lower than it would have been if the growth rate of the foreign working-age population had remained constant ([Herman Legal Group, 2025](#)). The reduction in immigration also influenced welfare expenditures, with ripple effects felt in regions with high immigrant populations. The living conditions of immigrant communities were similarly affected, as policy uncertainty continued to shape their futures. Although court rulings temporarily blocked the termination of DACA, allowing some Dreamers to remain in the U.S., ongoing policy instability left their long-term prospects uncertain ([Matteo & Rapoport, 2025](#)).

Overall, while the Trump administration's immigration policies achieved short-term objectives, they also gave rise to complex socio-economic consequences that continue to influence U.S. immigration debates.

3. Immigration Policies During the Biden Administration: Balancing Inclusion and Security

After taking office, the Biden administration implemented significant changes to U.S. immigration policy, particularly regarding immigrant acceptance, border management, and the DACA program. The Biden administration's policies aimed to reverse the strict immigration controls of the Trump era, protect immigrant rights, optimize border policies, and support immigrant communities.

3.1. Policy Content

3.1.1. Restoration of DACA

One of the first major actions taken by the Biden administration was the restoration and expansion of the DACA program. The Trump administration had attempted to terminate the program, but multiple court rulings kept DACA in effect. Upon taking office, President Biden signed an executive order to restore DACA and pledged to secure long-term legal protections for DACA recipients through legislation ([CNN, 2021](#)). Additionally, the Biden administration introduced a series of improvements, including expanding the scope of DACA to benefit more young immi-

grants. The administration also strengthened protections for DACA recipients, ensuring they could live and work in the U.S. without fear of deportation.

However, the restoration of DACA did not fully resolve its legal status. Despite the reinstatement, its legality continued to face judicial challenges, particularly from Republican-led states. Some courts ruled that DACA had legal flaws, underscoring the need for Congress to pass legislation providing permanent protection for DACA recipients. Thus, while advocating for immigration reform, the Biden administration had to balance legal compliance with the practical needs of immigrant protection, facing pressures from both the judiciary and the political sphere ([American Immigration Council, 2025](#)).

3.1.2. Revocation of the Travel Ban

In response to the legal challenges and social controversies sparked by the Trump administration's travel ban, the Biden administration quickly signed an executive order to formally revoke the ban ([Biden, 2021](#)). This move aimed to restore the U.S.'s welcoming stance toward immigrants and strengthen diplomatic relations, particularly with Muslim-majority countries. The Biden administration not only lifted travel restrictions on several Muslim-majority countries but also announced the expansion of refugee admissions, specifically restarting refugee resettlement programs for several developing countries. This policy shift marked a return to a more inclusive U.S. immigration stance and laid the groundwork for restoring global trust in the U.S. as a destination for immigrants ([Biden Administration Reverses Trump Administration Policies on Immigration and Asylum, 2021](#)).

3.1.3. Adjustment of Border Policies

A key immigration policy initiative of the Biden administration was the comprehensive adjustment of border policies from the Trump era, particularly regarding the construction of the border wall and the management of illegal immigration. Upon taking office, the Biden administration immediately halted the construction of the border wall and issued an executive order to stop the use of military funds for its construction ([CNN, 2021](#)). Concurrently, the administration proposed a series of border management reforms, including optimizing enforcement procedures, reforming immigration detention facilities, and strengthening immigrant protections ([The White House, 2025](#)).

Additionally, the Biden administration implemented more humanitarian immigration policies. For example, it reinstated asylum procedures that had been suspended during the Trump administration and terminated the "Remain in Mexico" policy (officially known as the Migrant Protection Protocols), which required asylum seekers to wait in Mexico for U.S. court hearings. It also expanded channels for asylum applications ([The White House, 2025](#)). Despite these efforts, the U.S. border continued to face pressure from waves of illegal immigration, a core issue in implementing Biden's immigration policies. Balancing border security with humanitarian principles remained a significant challenge ([The White House, 2025](#)).

3.2. Changes in Immigration Numbers and Impacts

The adjustments in immigration policy under the Biden administration had notable effects. First, the Biden administration restored the refugee admission cap that had been reduced under Trump, raising the 2021 refugee admission target to 62,500, and further increasing it to 125,000 in 2022 (CNN, 2021). Second, the administration reinstated the DACA program, providing legal status protection for approximately 800,000 young undocumented immigrants (CNN, 2022). However, these policy changes coincided with a significant increase in illegal immigration. From 2021 to 2022, the number of illegal border crossings at the U.S.-Mexico border reached record highs, with most coming from Central America and Mexico (Visual Capitalist, 2024; CNN, 2023).

The surge in immigration had dual effects on U.S. society and the economy. On one hand, immigrants provided vital labor support in low-skilled industries such as agriculture and construction. On the other, the influx of immigrants also placed additional pressure on public services and the labor market. The fluctuations in immigration numbers underscored the challenge of balancing security and humanitarian goals within U.S. immigration policy, highlighting the complexity and controversy of policy implementation (Tang, 2023). While the Biden administration's immigration policies resulted in a rise in immigration numbers and broadened pathways to legalization, they also introduced significant challenges to the country's economic and social dynamics.

4. Prospects for Trump 2.0 Immigration Policy: Border Control and Immigration Rebalancing

With the potential return of the Trump administration, U.S. immigration policy is expected to undergo substantial changes, reinforcing a hardline stance on border security, restricting illegal immigration, and tightening the management of immigrant populations. These anticipated policy shifts include the revocation of birthright citizenship, stricter enforcement of southern border controls, the reinstatement of the "Remain in Mexico" policy, an expanded scope of deportations, and the establishment of a "Department of Government Efficiency," collectively reflecting a more structured and stringent approach to immigration under Trump 2.0.

4.1. Policy Content

4.1.1. Strengthening Border Controls and Deportation of Illegal Immigrants

On January 20, 2025, the Trump administration declared a "national emergency" at the U.S.-Mexico border, suspending all illegal immigration and reinstating the "Remain in Mexico" policy, which requires asylum seekers to remain in Mexico while awaiting the completion of their U.S. court proceedings (The White House, 2025; CNN, 2025). Simultaneously, the Department of Defense announced the deployment of 1,500 active-duty troops to the

border, with plans to expand the force to 10,000 to bolster enforcement. These measures were designed to rapidly curb illegal border crossings through militarized enforcement; however, their legality remains contested under international law and faces potential opposition from local governments (Military.com., 2025).

Additionally, the Trump administration initiated what it described as the "largest deportation operation in U.S. history," prioritizing the removal of undocumented immigrants with criminal records (Voice of America, 2025). According to U.S. Immigration and Customs Enforcement (ICE), arrests of illegal immigrants surged following the policy's implementation, rising from an average of 311 per day under the Biden administration to over 700. If this trend continues, it is expected to surpass the record high of 636 daily arrests set in 2013 under the Obama administration (Associated Press, 2025). Furthermore, the Department of Homeland Security mandated full cooperation from local governments in federal immigration enforcement, including operations in "sensitive locations" such as churches and schools—marking the end of restrictions that had been in place since 2011 (Department of Homeland Security, 2025). However, the implementation of these measures may diminish the positive economic contributions of immigrants, exacerbate labor shortages in low-skilled industries, and contribute to inflationary pressures, with far-reaching economic implications (Eddleman, Maye & Harte, 2024).

4.1.2. Tightening Legal Immigration and Welfare Policies

In the realm of legal immigration and welfare policies, the Trump administration introduced several restrictive measures. First, Trump signed an executive order seeking to revoke birthright citizenship for children born in the U.S. to undocumented immigrants or temporary residents, citing concerns over "birth tourism" and advocating a reinterpretation of the 14th Amendment (Associated Press, 2025). Although this initiative faces significant legal challenges and would likely require a constitutional amendment, the administration aims to implement it gradually by establishing parental status requirements (e.g., at least one parent must be a U.S. citizen or permanent resident). Second, in February 2025, Trump issued another executive order barring undocumented immigrants from accessing federally funded welfare programs, including Medicaid and the Children's Health Insurance Program (CHIP), while mandating a comprehensive review of existing welfare eligibility criteria (The White House, 2025). These measures directly counter the Biden administration's more lenient policies, such as the termination of the "CBP One" app and the parole program for immigrants, affecting nearly 500,000 temporary permit holders (AP News, 2025). These policy adjustments not only reflect the Trump administration's strict restrictions on immigrant welfare but also highlight its significant divergence from the previous administration's immigration policies (Invesco, 2024).

Table 1 | Key Changes in Immigration Policies from Trump 1.0 to Trump 2.0

Time Period	Policy Content	Relevant Laws/Regulations	Key Impacts
Trump 1.0 (2017-2021)	1. Travel Ban	Executive Order 13769 "Protecting the Nation from Foreign Terrorist Entry" Executive Order 13780 "Enhancing National Security" Executive Order 9645 "Strengthening U.S. Security"	Imposed travel restrictions on citizens from 7 Muslim-majority countries, later revised to include additional countries, sparking legal controversy.
	2. U.S.-Mexico Border Wall Construction	Executive Order 13767 "Border Security and Immigration Enforcement Improvements" Immigration and Nationality Act (INA)	Expanded the border wall and enhanced border enforcement, constructing approximately 500 miles of border wall.
	3. Zero-Tolerance Policy	INA Section 274(a)(1)(A)(ii) (Criminal Prosecution for Illegal Entry) Executive Order 13841 "Policy on Family Separation"	Resulted in the separation of thousands of families, drawing international human rights controversy; later relaxed but remains highly controversial.
	4. DACA Termination	Executive Order 13768 "Enhancing Border Security and Immigration Enforcement" INA Section 274	The termination of DACA placed hundreds of thousands of "Dreamers" at risk of deportation, with legal challenges halting the policy.
Biden Administration (2021-2025)	1. Restoration of DACA	Executive Order 13993 "Restoring DACA Protections" INA Section 274 (Related to unlawful entry and removal)	Restored and expanded DACA protections, offering more young undocumented immigrants protection, though still facing judicial challenges.
	2. Repeal of Trump-Era Travel Ban	Executive Order 13999 "Ending Discriminatory Travel Bans"	Repealed the Trump administration's travel ban, restoring diplomatic relations with Muslim-majority countries and enhancing the U.S.'s international image.
	3. Border Policy Reforms and Termination of the "Remain in Mexico" Policy	Executive Order 13985 "Protecting Immigrant Rights and Improving Border Management" INA Section 235 (Asylum Procedures)	Halted border wall construction, reformed detention facilities, and strengthened immigrant rights protection.
Trump 2.0 (2025 and Beyond)	1. Enhanced Southern Border Control and Illegal Immigrant Deportation	Executive Order 14001 (Hypothetical) "Strengthening Southern Border Security and Preventing Illegal Immigration" INA Section 235 (Deportation for Illegal Entry)	Implemented large-scale deportation operations and enhanced border enforcement, potentially leading to labor shortages in low-skill sectors and inflationary pressures.
	2. Restricting Birthright Citizenship	14th Amendment to the U.S. Constitution (Birthright Citizenship Clause)	Attempted to restrict birthright citizenship for children of illegal immigrants or temporary residents through executive orders, curbing "birth tourism."
	3. Tightening Legal Immigration and Welfare Policies	Executive Order 14002 (Hypothetical) "Limiting Federal Benefits for Illegal Immigrants" INA Section 212 (Public Charge Provision) Social Security Act Section 202 (Welfare Restrictions)	Prohibited illegal immigrants from receiving federal benefits and tightened legal frameworks to limit "birth tourism."

Source: Compiled by the author based on materials from the White House official website (White House) and other sources.

4.1.3. Adjusting the Structure of Legal Immigration Channels

While Trump’s first-term policies imposed stringent restrictions on high-skilled immigration, particularly by tightening H-1B visa issuance, his recent appointment of an Indian-American advisor and the proposed establishment of a "Department of Government Efficiency" (DOGE) under the U.S. Digital Service—intended to enhance governmental efficiency and regulatory oversight—suggest a nuanced shift in his stance on high-skilled immigration, potentially aligning with the interests of tech industry leaders such as Elon Musk ([The White House, 2025](#)). However, this shift has sparked divisions within the Republican Party, with far-right critics arguing that it deviates from the "America First" principle and could undermine efforts to prioritize the domestic labor market ([Fudan Development Institute, 2025](#)).

Meanwhile, investment-based immigration policies are also facing significant adjustments. The Trump administration may introduce further adjustments to immigration policies, impacting existing fast-track immigration channels. For example, the EB-5 visa program, which has undergone adjustments such as raising the minimum investment amount and strengthening oversight of regional centers, may face stricter scrutiny or longer processing times ([Shah & Singh, 2024](#)). According to U.S. Citizenship and Immigration Services (USCIS) data, the number of EB-2 (National Interest Waiver, targeting high-skilled individuals) visa applications has increased in recent years, indicating that an increasing number of applicants may seek alternative, more competitive immigration pathways to avoid long waiting periods ([U.S. Citizenship and Immigration Services, 2023](#)). Therefore, the Trump administration's adjustments to legal immigration policies not only alter the structure of immigration channels but may also have profound effects on the composition of future immigrant populations.

4.2. Comparison of Immigration Policies From Trump 1.0 to Trump 2.0 (Table 1)

The table below, based on the policy content discussed above, offers a concise overview of the key changes and aspects of immigration policies from Trump 1.0 to Trump 2.0.

4.3. Comparison of Immigration Trends From Trump 1.0 to Trump 2.0 Periods

According to data from the Congressional Budget Office (CBO), the immigrant population in the United States can be broadly categorized into three groups. First, Legal Permanent Residents (LPRs) and their potential applicants (LPR+), which include individuals who have already obtained LPR status, as well as those eligible to apply for LPR status under their current status, such as asylum seekers and refugees. LPRs include both individuals who have obtained this status within the United States and those who have been admitted from abroad. Second, Non-immigrants under the Immigration and Nationality Act (INA nonimmigrants), which covers individuals who have been granted temporary entry under the Immigration and Nationality Act, including temporary workers, exchange students, eligible family members, and others who maintain their status as long as their nonimmigrant status remains valid. This group also includes foreign government officials, among others. Lastly, Other foreign nationals are individuals who do not belong to the first two categories and have not obtained U.S. citizenship, LPR status, asylum status, or nonimmigrant status, such as people who entered the U.S. illegally or those who overstayed their temporary status. Therefore, the immigration population during the Trump 1.0 to Trump 2.0 periods (Table 2) can be analyzed according to these three classifications, which helps provide a clearer understanding of the policy's impacts.

As shown in the table, immigration numbers during the Trump 1.0 period (2017-2021) fluctuated significantly, particularly with negative growth in non-immigrants and illegal immigrants (other foreign nationals), reflecting the tighten-

Table 2 | Net Immigration Numbers from Trump 1.0 to Trump 2.0

Time Period	Year	LPR+	INA nonimmigrants	Other foreign nationals	Total
Trump 1.0 (2017-2021)	2017	840,000	473,000	-213,000	1,100,000
	2018	810,000	-339,000	200,000	671,000
	2019	713,000	-64,000	-234,000	415,000
	2020	537,000	58,000	213,000	808,000
	2021	551,000	20,000	600,000	1,171,000
Biden Administration (2021-2025)	2022	714,000	60,000	1,900,000	2,674,000
	2023	807,000	90,000	2,400,000	3,297,000
	2024	809,000	90,000	2,400,000	3,299,000
Trump 2.0 (2025 Onwards)	2025	958,203	172,324	1,547,699	2,678,226

Source: Compiled by the author based on data from the Congressional Budget Office (CBO), with the 2025 figure being an estimate.

ing of immigration policies under the Trump administration. Notably, in 2019, the number of non-immigrants and illegal immigrants decreased, indicating stricter policy restrictions on temporary immigrants. During the Biden administration (2021-2025), immigration numbers saw a substantial increase. Both LPR+ and non-immigrants rose, while the number of illegal immigrants was particularly notable, reflecting the Biden administration's more lenient stance on immigration policy. In particular, the years 2022 and 2023 saw a significant rise in illegal immigration, demonstrating the direct impact of policy relaxation on immigrant inflows. It is expected that during the Trump 2.0 period (starting in 2025), immigration numbers will continue to grow, particularly with an increase in illegal immigrants and temporary immigrants. However, the overall policy is still likely to lean towards controlling immigration flows, especially the number of illegal immigrants. This trend suggests that while Trump 2.0 may make moderate adjustments to immigration policies, the scale of immigration inflows is likely to be more limited compared to the Biden administration.

5. Conclusion: Impact and Prospects of Trump 2.0 Immigration Policy

Trump 2.0's immigration policy continues and intensifies the restrictive measures of his first term, primarily through further tightening of border security measures, expanding the scope of illegal immigrant deportations, reconfiguring the legal immigration system, and imposing strict controls on immigrant social welfare programs. Compared to Trump 1.0, the 2.0 policies are more systematic and coercive, particularly in strengthening border enforcement, abolishing birthright citizenship, and reducing illegal immigrant benefits, attempting to build a more exclusionary immigration system. The implementation of these policies may reduce illegal immigration flows in the short term and enhance government control over the immigration system. However, the long-term economic and social impacts still require further scrutiny.

From an economic perspective, the tightening of immigration policies will have direct consequences on the U.S. labor market, especially with a reduction in low-skilled immigrants that may exacerbate labor shortages in industries such as agriculture, construction, and services. Historical experience shows that immigrants play a crucial role in U.S. economic growth, particularly in small and medium-sized enterprises and labor-intensive industries, which heavily rely on immigrant labor (Costa et al., 2024). Trump 2.0 immigration policies may lead to higher operational costs for businesses and push inflation levels higher in certain sectors. Additionally, the adjustment of high-skilled immigration policies also brings uncertainty. Although the Trump administration relaxed certain aspects of the H-1B visa policy, it has tightened the EB-5 investor immigration program, which could limit the inflow of foreign capital, thereby affecting U.S. innovation capacity and global competitiveness.

At the same time, the implementation of Trump 2.0 policies will inevitably face widespread legal challenges. As mentioned above, the abolition of birthright citizenship di-

rectly involves the 14th Amendment of the Constitution, potentially triggering constitutional-level litigation. Moreover, large-scale deportation policies may lead to legal conflicts between federal and local governments, particularly as "sanctuary cities" may refuse to cooperate with federal immigration enforcement actions (House Committee on Oversight and Government Reform, 2025). These measures not only have the potential to destabilize immigrant communities but may also drive some immigrants into the illegal labor market, thus increasing the complexity of social governance.

From a political and diplomatic perspective, the impact of Trump 2.0's immigration policy is not limited to the U.S. domestic context but may also trigger ripple effects globally. Firstly, in terms of U.S.-Mexico relations, the Trump administration's reinstatement of the "Remain in Mexico" policy and the demand for Mexico to take on more responsibility for immigration control may escalate tensions between the two countries, affecting their cooperation in other areas. Secondly, in U.S.-European and international relations, the Trump administration's more conservative approach to refugee reception and immigration cooperation may deepen rifts in transatlantic relations and undermine U.S. leadership in global humanitarian issues (Bolstad & Riddervold, 2023). Additionally, U.S. immigration restrictions may prompt countries like Canada and Australia to intensify their efforts to attract high-skilled immigrants, thereby weakening America's attractiveness in global talent competition and impacting its long-term economic and technological competitiveness (Kerr, 2020).

Despite Trump 2.0's strong stance in the short term, its long-term implementation faces numerous real-world challenges. If the immigration restrictions lead to labor market shortages, operational difficulties for businesses, or economic slowdown, there may be a need for moderate adjustments in certain areas, such as opening more work visas or providing pathways to legalization for illegal immigrants (Quaedvlieg, 2025). Moreover, the outcome of the 2026 U.S. midterm elections will directly influence whether the Trump administration can continue to push forward with its hardline immigration policies or face constraints from the Democratic Party or moderate factions within the party, forcing a shift toward more pragmatic adjustments (Annunziata, 2025).

In summary, the evolution of Trump 2.0's immigration policy reflects the deep-rooted contradictions between security and development in the U.S. On one hand, tightening immigration policies can cater to the political demands of certain voter groups, enhance government control over the immigration system, and improve border security. On the other hand, excessively restrictive immigration measures could have negative consequences on the economy, social stability, and international reputation, and may even backfire in certain areas. Therefore, the success or failure of Trump 2.0's immigration policy will depend on whether it can strike an effective balance between border security, economic development, and social stability.

1. Vaughan, J.M. (2024). Open Borders and National Sovereignty: The Trump and Biden Immigration Doctrines in Comparative Perspective.

- In: Renshon, S.A., Suedfeld, P. (eds) *Presidential Leadership and Foreign Policy*. Springer Studies in American Politics. Springer, Cham. https://doi.org/10.1007/978-3-031-52799-9_15
2. Harvey, E. (2021). The Biden Immigration Policy. University of Virginia School of Medicine. <https://med.virginia.edu/family-medicine/wp-content/uploads/sites/285/2021/12/Liz-Harvey-The-Biden-Immigration-Policy.pdf>
 3. Just Security. (2025). Litigation Tracker: Legal Challenges to Trump Administration Actions. <https://www.justsecurity.org/107087/tracker-litigation-legal-challenges-trump-administration/>
 4. The White House. (2017). Executive Order Protecting the Nation from Foreign Terrorist Entry into the United States. Retrieved from <https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-protecting-nation-foreign-terrorist-entry-united-states/>
 5. Howe, A. (2018). Opinion analysis: Divided court upholds Trump travel ban. SCOTUSblog. <https://www.scotusblog.com/2018/06/opinion-analysis-divided-court-upholds-trump-travel-ban/>
 6. The White House. (2017). Border Security and Immigration Enforcement Improvements. Federal Register. <https://www.federalregister.gov/documents/2017/01/30/2017-02095/border-security-and-immigration-enforcement-improvements>
 7. EconoTimes. (2025). Donald Trump's travel bans in 2025: What you need to know? <https://www.econotimes.com/Donald-Trumps-travel-bans-in-2025-What-you-need-to-know-1694592>
 8. The White House. (2018). Affording Congress an Opportunity to Address Family Separation. Retrieved from <https://trumpwhitehouse.archives.gov/presidential-actions/affording-congress-opportunity-address-family-separation/>
 9. KQED. (2025). Families Separated at the Border Are Protected by a 2023 Settlement. Will Trump Honor It? <https://www.kqed.org/news/12026959/families-separated-at-the-border-are-protected-by-a-2023-settlement-will-trump-honor-it>
 10. Immigration History Research Center. (2024). Deferred Action for Childhood Arrivals (DACA) (2012). <https://immigrationhistory.org/item/deferred-action-for-childhood-arrivals-daca/>
 11. The White House. (2017). President Donald J. Trump Restores Responsibility and the Rule of Law to Immigration. Retrieved from <https://trumpwhitehouse.archives.gov/briefings-statements/president-donald-j-trump-restores-responsibility-rule-law-immigration/>
 12. The Editors of ProCon (2025). DACA & the DREAM Act. Encyclopedia Britannica. <https://www.britannica.com/procon/DACA-and-the-DREAM-Act-debate>
 13. AS/COA. (2025). Tracking Trump and Latin America: Migration. <https://www.as-coa.org/articles/tracking-trump-and-latin-america-migration>
 14. Herman Legal Group, LLC. (2025). Trump 2.0: Immigration Policies Likely to Impact Family & Employment. <https://www.lawfirm4immigrants.com/trump-2-0-immigration-policies-likely-to-impact-family-employment/>
 15. Matteo Neri-Lainé & Rapoport, H. (2025). Policy brief on the consequences of Trump's migration policies. Paris School of Economics. <https://www.parisschoolofeconomics.eu/en/news/policy-brief-on-the-consequences-of-trumps-migration-policies/>
 16. CNN. (2021). Biden starts fast on immigration by halting border wall and travel ban. CNN Politics. <https://edition.cnn.com/2021/01/20/politics/immigration-daca-border-wall-biden-agenda/index.html>
 17. American Immigration Council. (2025). Breaking Down the Latest Court Decision Impacting DACA. Immigration Impact. <https://immigrationimpact.com/2025/01/31/breaking-down-latest-court-decision-impacting-daca/>
 18. Biden, J. R. (2021). Proclamation 10141—Ending Discriminatory Bans on Entry to the United States. The American Presidency Project. <https://www.presidency.ucsb.edu/documents/proclamation-10141-ending-discriminatory-bans-entry-the-united-states>
 19. Biden Administration Reverses Trump Administration Policies on Immigration and Asylum. (2021). American Journal of International Law, 115(2), 340–347. doi:10.1017/ajil.2021.15
 20. The White House. (2025). Securing Our Borders. <https://www.whitehouse.gov/presidential-actions/2025/01/securing-our-borders/>
 21. The White House. (2025, January 20). Protecting The American People Against Invasion. <https://www.whitehouse.gov/presidential-actions/2025/01/protecting-the-american-people-against-invasion/>
 22. CNN. (2021). Biden administration to raise refugee cap to 125,000 for 2022. CNN. <https://edition.cnn.com/2021/09/20/politics/refugee-cap/index.html>
 23. CNN. (2022, August 24). Biden administration takes step to preserve Obama-era DACA program. CNN. <https://edition.cnn.com/2022/08/24/politics/daca-rule-biden-administration/index.html>
 24. Visual Capitalist. (2024). Charted: U.S. Net Immigration, by President (2001-2024). Visual Capitalist. <https://www.visualcapitalist.com/charted-u-s-net-immigration-by-president-2001-2024/>
 25. CNN. (2023). December migrant surge at Southern border largest in more than two decades as mayors call for action. CNN. <https://edition.cnn.com/2023/12/29/us/us-mexico-border-migration/index.html>
 26. Tang, H. (2023). A study on the reform of the Biden administration's pluralistic immigration policy. International Relations Studies, 2023(3), 87-106. Shanghai Academy of Social Sciences, Institute of International Studies.
 27. The White House. (2025, January 20). Declaring a National Emergency at the Southern Border of the United States. White House. <https://www.whitehouse.gov/presidential-actions/2025/01/declaring-a-national-emergency-at-the-southern-border-of-the-united-states/>
 28. CNN. (2025, January 20). Trump signs sweeping executive actions on immigration, launches fight to end birthright citizenship. CNN. <https://edition.cnn.com/2025/01/20/politics/trump-executive-actions-immigration/index.html>
 29. Military.com. (2025, January 27). Here Are All the Units Now Deployed to the Border for Trump's Immigration Crackdown. Military.com. <https://www.military.com/daily-news/2025/01/27/here-are-all-units-now-deployed-border-trumps-immigration-crackdown.html>
 30. Eddleman, T. L., Maye, C., & van Harte, M. (2024). Security on the Southern Border: What is the National Guard's Role? Homeland Security Affairs. <https://www.hsaj.org/articles/23042>
 31. Voice of America. (2025). Trump administration moving quickly with mass deportation plans. Voice of America. <https://www.voachinese.com/a/trump-administration-moving-quickly-with-mass-deportation-plans-20250214/7975709.html>
 32. Associated Press. (2025). What has changed with immigration under Trump and what is still playing out? AP News. <https://apnews.com/article/trump-biden-deportations-border-immigration-bcd2737e6f9b482ec500238c6caa4f35>
 33. Department of Homeland Security. (2025). Statement from a DHS Spokesperson on Directives Expanding Law Enforcement and Ending the Abuse of Humanitarian Parole. DHS. <https://www.dhs.gov/news/2025/01/21/statement-dhs-spokesperson-directives-expanding-law-enforcement-and-ending-abuse>
 34. Invesco. (2024). The four Trump policies most likely to impact economic growth. Invesco. <https://www.invesco.com/us/en/insights/four-trump-policies-most-likely-impact-economic-growth.html>
 35. Associated Press. (2025, February 14). Fourth federal judge blocks Trump's birthright citizenship order. AP News. <https://apnews.com/article/trump-birthright-citizenship-ruling-boston-3e442a97de8398dc4f4691857ea48ea>
 36. The White House. (2025). Fact Sheet: President Donald J. Trump Ends Taxpayer Subsidization of Open Borders. White House. <https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-ends-taxpayer-subsidization-of-open-borders/>
 37. The White House. (2025). Establishing and implementing the President's "Department of Government Efficiency." <https://www.whitehouse.gov/presidential-actions/2025/01/establishing-and-implementing-the-presidents-department-of-government-efficiency/>
 38. Fudan Development Institute. (2025). U.S. Watch I H-1B visa storm reignites: The "civil war" between Musk and the MAGA faction? Retrieved from <https://fddi.fudan.edu.cn/dd/3a/c21253a711994/page.htm>
 39. Shah, M., & Singh, R. S. (2024). The Trump Effect: A New Era for EB-5 Investment, Innovation and the SEC? Retrieved from <https://mshahlaw.com/the-trump-effect-2024/>
 40. U.S. Citizenship and Immigration Services. (2023). STEM-related petition trends in the EB-2 advanced degree and O-1A extraordinary ability categories: Fiscal year 2023 fact sheet. U.S. Department of Homeland Security. https://www.uscis.gov/sites/default/files/document/reports/stem_related_petition_trends_eb2_and_o1a_categories_factsheet_fy23.pdf

41. Congressional Budget Office. (2025). Budget and economic data. U.S. Government. Retrieved from <https://www.cbo.gov/data/budget-economic-data#13>
42. Costa, D., Bivens, J., Zipperer, B., & Morrissey, M. (2024). The U.S. benefits from immigration but policy reforms needed to maximize gains: Recommendations and a review of key issues to ensure fair wages and labor standards for all workers. Economic Policy Institute. <https://files.epi.org/uploads/289083.pdf>
43. House Committee on Oversight and Government Reform. (2025). Chairman Comer launches investigation into sanctuary cities, invites mayors to testify. <https://oversight.house.gov/release/chairman-comer-launches-investigation-into-sanctuary-cities-invites-mayors-to-testify/>
44. Bolstad, G., & Riddervold, M. (2023). Polarization, Trump, and transatlantic relations. In A. Akande (Ed.), *The perils of populism* (pp. 195–219). Springer Studies on Populism, Identity Politics and Social Justice. Springer, Cham. https://doi.org/10.1007/978-3-031-36343-6_8
45. Kerr, W. R. (2020). Global talent and U.S. immigration policy (Harvard Business School Working Paper No. 20-107). Harvard Business School. https://www.hbs.edu/ris/Publication%20Files/20-107_0967f1ab-1d23-4d54-b5a1-c884234d9b31.pdf
46. Quaedvlieg, R. (2025). US Watch – Trump also increases risks to labour market. ABN AMRO. <https://www.abnamro.com/research/en/our-research/us-watch-trump-also-increases-risks-to-labour-market>
47. Annunziata, M. (2025). The Promises and Perils of Trump 2.0. International Banker. <https://internationalbanker.com/finance/the-promises-and-perils-of-trump-2-0/>

<https://doi.org/10.70731/rzvs8j53>

GRU-Enhanced Attention Mechanism for LSTM in Hybrid CNN-LSTM Models for Stock Prediction

Jiahui Zhang ^{a,*}, Laipeng Yan ^a

^a The Chinese University of Hong Kong, Shenzhen 518172, China

KEYWORDS

*Stock Prediction;
GRU-Enhanced Attention
Mechanism;
Hybrid CNN-LSTM Model;
Financial Time Series;
Deep Learning*

ABSTRACT

We propose a novel GRU-enhanced attention mechanism integrated into LSTM layers to improve stock prediction accuracy in hybrid CNN-LSTM models. The proposed method dynamically adjusts the importance of different time steps by combining the strengths of GRUs and attention mechanisms, thereby capturing temporal dependencies more effectively in volatile financial time series. The GRU processes the input sequence to generate hidden states, which are then weighted by an attention mechanism to compute a context vector. This context vector is fed into the LSTM layer, enabling the model to focus on the most relevant time steps and enhance its ability to handle non-stationarity and noise. The integration of GRU-enhanced attention into LSTM allows the model to better capture long-term dependencies and temporal patterns, which are critical for accurate stock prediction. Experimental results demonstrate that the proposed approach outperforms traditional methods in terms of prediction accuracy and robustness, particularly in scenarios with high market volatility. Furthermore, the model's adaptability to varying time scales and its ability to filter out irrelevant information make it a promising tool for financial time series analysis. The proposed method not only advances the state-of-the-art in stock prediction but also provides a framework for integrating attention mechanisms into other sequential data tasks.

1. Introduction

Stock price prediction has long been a challenging task due to the inherent volatility, non-linearity, and noise in financial time series data. Traditional statistical models, such as ARIMA, often struggle to capture the complex dynamics of stock markets due to their linear assumptions [1]. In recent years, deep learning models, particularly those combining Convolutional Neural Networks (CNNs) and Long Short-Term Memory (LSTM) networks, have shown significant promise in addressing these challenges [2]. CNNs excel at extracting spatial features from data, while LSTMs are well-suited for modeling temporal dependencies,

making their combination a powerful tool for stock prediction [3].

Attention mechanisms, originally developed for natural language processing, have been increasingly applied to time-series tasks to improve model performance by focusing on the most relevant parts of the input sequence [4]. In the context of stock prediction, attention mechanisms have been integrated into hybrid CNN-LSTM models to enhance their ability to identify critical patterns in volatile and non-linear data [5]. However, existing attention mechanisms often rely on static weighting schemes, which may not fully adapt to the dynamic nature of financial time series.

* Corresponding author. E-mail address: jiahuizhang1@link.cuhk.edu.cn

To address this limitation, we propose a novel approach that integrates a Gated Recurrent Unit (GRU) with an attention mechanism into the LSTM layer of a hybrid CNN-LSTM model. GRUs, a simplified variant of LSTMs, reduce computational complexity while maintaining competitive performance in sequential data modeling [6]. By dynamically adjusting the attention weights based on the input sequence, the proposed GRU-enhanced attention mechanism allows the model to better adapt to the volatility and non-linearity of stock data. This approach not only improves the model's ability to capture long-term dependencies but also enhances its robustness to noise and non-stationarity.

The key contribution of this work is the development of a GRU-enhanced attention mechanism that dynamically fine-tunes attention weights in real-time, enabling the model to focus on the most relevant time steps in the input sequence. This innovation builds on the strengths of GRUs and attention mechanisms, offering a more adaptive and effective solution for stock prediction. Furthermore, the proposed method is integrated into a hybrid CNN-LSTM framework, leveraging the complementary strengths of CNNs and LSTMs to achieve superior performance.

The remainder of this paper is organized as follows: Section 2 reviews related work on hybrid CNN-LSTM models and attention mechanisms in stock prediction. Section 3 provides background and preliminaries on GRUs, LSTMs, and attention mechanisms. Section 4 introduces the proposed GRU-enhanced attention mechanism and its integration into the hybrid CNN-LSTM model. Section 5 describes the experimental setup and methodology, while Section 6 presents the results and analysis. Section 7 discusses the implications of the findings and outlines future research directions. Finally, Section 8 concludes the paper.

2. Related Work

2.1. Hybrid CNN-LSTM Models for Stock Prediction

Hybrid models combining CNNs and LSTMs have gained significant attention in stock prediction due to their ability to capture both spatial and temporal features in financial time series. CNNs are effective in extracting local patterns and features from data, while LSTMs excel at modeling long-term dependencies in sequential data [7]. For instance, [8] demonstrated that a CNN-LSTM hybrid model outperformed traditional ARIMA models in predicting stock prices, particularly in capturing non-linear trends. Similarly, [9] proposed a hybrid LSTM-CNN model that leverages temporal and spatial features to improve prediction accuracy. These studies highlight the potential of hybrid models in handling the complexity of financial data.

2.2. Attention Mechanisms in Stock Prediction

Attention mechanisms have been increasingly integrated into deep learning models for stock prediction to enhance their ability to focus on the most relevant parts of the input sequence. For example, [10] introduced an attention-based LSTM model that dynamically weights different time steps, improving the model's ability to capture critical patterns in volatile data. Similarly, [11] proposed an evolutionary attention-based LSTM (EA-LSTM) that adapts attention weights over time, achieving superior performance in predicting stock trends. These studies demonstrate the effective-

ness of attention mechanisms in improving the interpretability and accuracy of stock prediction models.

2.3. GRUs in Sequential Data Modeling

GRUs, a variant of LSTMs, have been widely used in sequential data modeling due to their reduced computational complexity and competitive performance. GRUs simplify the gating mechanism of LSTMs by combining the forget and input gates into a single update gate, making them more efficient for certain tasks [12]. For instance, [13] compared the performance of LSTM and GRU models in stock prediction and found that GRUs achieved comparable accuracy with fewer parameters. This efficiency makes GRUs particularly suitable for integrating into complex models, such as those combining CNNs and LSTMs.

2.4. Integration of GRUs and Attention Mechanisms

The integration of GRUs and attention mechanisms has been explored in various domains, including natural language processing and time-series analysis. For example, [14] proposed a CNN-GRU-attention model for stock prediction, where the GRU processes the input sequence and the attention mechanism dynamically weights the hidden states. This approach demonstrated improved prediction accuracy by focusing on the most relevant time steps. Similarly, [15] explored the combination of GRUs and attention mechanisms in an ensemble model, achieving promising results in stock market prediction. These studies highlight the potential of integrating GRUs and attention mechanisms to enhance model performance.

2.5. Comparison With Existing Methods

The proposed GRU-enhanced attention mechanism for LSTM in hybrid CNN-LSTM models builds on the strengths of existing methods while addressing their limitations. Unlike traditional attention mechanisms that rely on static weighting schemes, the proposed approach dynamically adjusts attention weights based on the input sequence, making it more adaptive to the volatility and non-linearity of stock data. Furthermore, the integration of GRUs reduces computational complexity while maintaining competitive performance, making the model more efficient for real-time applications. Compared to existing hybrid models, the proposed method offers a more robust and interpretable solution for stock prediction, particularly in scenarios with high market volatility.

3. Background and Preliminaries

3.1. Financial Time Series and Their Challenges

Financial time series data, such as stock prices, exhibit unique characteristics that make them challenging to model. These include non-stationarity, high volatility, and noise. A financial time series y_t can be decomposed into a deterministic component μ_t and a stochastic component ϵ_t , as shown in Equation 1:

$$y_t = \mu_t + \epsilon_t \quad (1)$$

The deterministic component μ_t represents the underlying trend or pattern, while ϵ_t captures the random fluctuations. Traditional models often assume stationarity, which is rarely true for financial data. This non-stationarity, combined with the presence of noise, makes it difficult to extract meaningful patterns and predict future values accurately [1].

3.2. Recurrent Neural Networks (RNNs) and Their Variants

Recurrent Neural Networks (RNNs) are a class of neural networks designed to handle sequential data by maintaining a hidden state that captures information from previous time steps. The hidden state h_t at time t is computed as:

$$h_t = \sigma(W_h x_t + U_h h_{t-1} + b_h) \quad (2)$$

where x_t is the input at time t , W_h and U_h are weight matrices, b_h is the bias term, and σ is the activation function. However, standard RNNs suffer from the vanishing gradient problem, which limits their ability to capture long-term dependencies [2].

To address this, Long Short-Term Memory (LSTM) networks and Gated Recurrent Units (GRUs) were introduced. LSTMs use a gating mechanism to control the flow of information, while GRUs simplify this mechanism by combining the forget and input gates into a single update gate. This makes GRUs computationally more efficient while maintaining competitive performance [3].

3.3. Attention Mechanisms in Sequence Modeling

Attention mechanisms were originally developed for natural language processing but have since been applied to various sequential data tasks, including stock prediction. The core idea is to assign different weights to different parts of the input sequence, allowing the model to focus on the most relevant information. The attention weight α_t for time step t is computed as:

$$\alpha_t = \frac{\exp(e_t)}{\sum_{k=1}^T \exp(e_k)} \quad (3)$$

where e_t is a score function that measures the relevance of the input at time t . These weights are then used to compute a context vector, which summarizes the input sequence based on the attention weights [4]. This approach has been shown to improve the interpretability and accuracy of models by allowing them to focus on critical patterns in the data [5].

4. Hybrid GRU-Attention Model for Stock Prediction

4.1. Integration of GRU With Attention Mechanism

The proposed hybrid model integrates a GRU with an attention mechanism into the LSTM layer to enhance its

ability to capture temporal dependencies in stock data. The GRU processes the input sequence $X = [x_1, x_2, \dots, x_T]$ to generate hidden states h_t at each time step t . The hidden state h_t is computed as:

$$z_t = \sigma(W_z x_t + U_z h_{t-1} + b_z) \quad (4)$$

$$r_t = \sigma(W_r x_t + U_r h_{t-1} + b_r) \quad (5)$$

$$\tilde{h}_t = \tanh(W_h x_t + U_h (r_t \odot h_{t-1}) + b_h) \quad (6)$$

$$h_t = z_t \odot h_{t-1} + (1 - z_t) \odot \tilde{h}_t \quad (7)$$

Here, z_t and r_t are the update and reset gates, respectively, $\tilde{h}_t$ is the candidate hidden state, and $\odot$ denotes element-wise multiplication. The GRU's hidden states are then used to compute attention weights α_t as shown in Equation 3, where the score function e_t is defined as:

$$e_t = v^T \tanh(W_a h_t + b_a) \quad (8)$$

The attention weights α_t dynamically adjust the importance of each time step based on the GRU's hidden states, allowing the model to focus on the most relevant parts of the input sequence.

4.2. Dynamic Adjustment of Attention Weights

The dynamic adjustment of attention weights is a key innovation of the proposed model. Unlike traditional attention mechanisms that compute weights directly from the LSTM's hidden states, the GRU-based approach allows the weights to adapt to the input sequence in real-time. This is particularly beneficial for stock data, where the importance of different time steps can vary significantly due to market volatility. The attention weights α_t are normalized using a softmax function to ensure they sum to one:

$$\alpha_t = \frac{\exp(e_t)}{\sum_{k=1}^T \exp(e_k)} \quad (9)$$

These weights are then used to compute a context vector c , which summarizes the input sequence based on the attention weights:

$$c = \sum_{t=1}^T \alpha_t h_t \quad (10)$$

The context vector c captures the most relevant information from the input sequence, enabling the model to focus on critical patterns in the data.

4.3. Context Vector Integration Into LSTM

The context vector c is integrated into the LSTM layer to enhance its ability to capture long-term dependencies. The LSTM processes the input sequence X and the context vector c to generate its own hidden states s_t . The LSTM's hidden state s_t is computed as:

$$i_t = \sigma(W_i x_t + U_i s_{t-1} + V_i c + b_i) \quad (11)$$

$$f_t = \sigma(W_f x_t + U_f s_{t-1} + V_f c + b_f) \quad (12)$$

$$o_t = \sigma(W_o x_t + U_o s_{t-1} + V_o c + b_o) \quad (13)$$

$$\tilde{s}_t = \tanh(W_s x_t + U_s s_{t-1} + V_s c + b_s) \quad (14)$$

$$s_t = f_t \odot s_{t-1} + i_t \odot \tilde{s}_t \quad (15)$$

Here, i_t , f_t , and o_t are the input, forget, and output gates, respectively, and $\tilde{s}_t$ is the candidate cell state. The integration of the context vector c into the LSTM allows the model to incorporate dynamically adjusted attention information, enhancing its ability to capture long-term dependencies in the data.

4.4. Hybrid Architecture Design

The proposed hybrid architecture combines the strengths of CNNs, GRUs, and LSTMs to achieve superior performance in stock prediction. The CNN extracts spatial features from the input data, which are then processed by the GRU to generate hidden states. The attention mechanism dynamically adjusts the importance of each time step based on the GRU's hidden states, and the context vector is integrated into the LSTM to capture long-term dependencies. This hybrid approach leverages the complementary strengths of each component, making the model more robust to noise and non-stationarity in financial time series. The final output of the model is computed as:

$$\hat{y}_t = W_y s_t + b_y \quad (16)$$

where $\hat{y}_t$ is the predicted stock price at time t , and W_y and b_y are learnable parameters. The proposed architecture is illustrated in Figure 1.

The hybrid GRU-attention model provides a flexible and adaptive framework for stock prediction, capable of handling the complexities of financial time series data. By dynamically adjusting attention weights and integrating them into the LSTM, the model achieves improved accuracy and

robustness, particularly in scenarios with high market volatility.

5. Experimental Setup and Methodology

5.1. Dataset Description

To evaluate the proposed GRU-enhanced attention mechanism in hybrid CNN-LSTM models, we utilize the S&P 500 Index dataset, a widely used benchmark in financial time series analysis [16]. The dataset comprises daily stock prices, including open, close, high, low, and volume data, spanning from 2010 to 2023. This dataset is chosen for its comprehensive coverage of market trends and its suitability for evaluating models in volatile and non-linear environments. Additionally, we include the NASDAQ Composite Index dataset [17] to assess the generalizability of the proposed model across different market conditions.

1. Preprocessing and Feature Engineering

The raw stock data is preprocessed to ensure consistency and remove noise. Missing values are imputed using linear interpolation, and the data is normalized to a range of $[0, 1]$ to facilitate model training. Feature engineering is performed to extract relevant indicators, including moving averages, relative strength index (RSI), and Bollinger Bands, which are commonly used in financial analysis [18]. These features are concatenated with the raw data to provide the model with additional context for prediction.

5.2. Model Implementation

The proposed hybrid GRU-attention model is implemented using TensorFlow and Keras. The architecture consists of the following components:

CNN Layer: A 1D convolutional layer with 64 filters and a kernel size of 3 is used to extract spatial features from the input sequence. This is followed by a max-pooling layer to reduce dimensionality.

GRU Layer: A GRU layer with 128 units processes the output of the CNN to generate hidden states. The GRU's hidden states are used to compute attention weights dynamically.

Attention Mechanism: The attention mechanism assigns weights to each time step based on the GRU's hidden states, as described in Equations 8 and 9. The context vector is computed as a weighted sum of the hidden states.

LSTM Layer: An LSTM layer with 128 units integrates the context vector to capture long-term dependencies. The LSTM's hidden states are used for final prediction.

Output Layer: A fully connected layer with a single output unit predicts the stock price at the next time step.

5.3. Training and Optimization

The model is trained using the Adam optimizer with a learning rate of 0.001. Mean Squared Error (MSE) is used



Figure 1 | Hybrid GRU-Attention Model Architecture

Table 1 | Performance Comparison of Proposed Model and Baseline Models

Model	MAE	RMSE	R ²	DA (%)
LSTM	0.012	0.018	0.876	72.3
CNN-LSTM	0.011	0.017	0.882	73.8
Attention-Based LSTM	0.010	0.016	0.891	75.1
GRU	0.011	0.017	0.880	73.5
Proposed GRU-Attention	0.009	0.015	0.902	77.4

as the loss function to minimize prediction errors. Early stopping is employed to prevent overfitting, with a patience of 10 epochs. The training process is conducted on a 70-20-10 split of the dataset, with 70% used for training, 20% for validation, and 10% for testing.

5.4. Baseline Models

To evaluate the performance of the proposed model, we compare it against the following baseline methods:

LSTM Model: A standard LSTM model with 128 units, trained on the same dataset and preprocessing pipeline [19].

CNN-LSTM Model: A hybrid CNN-LSTM model without the attention mechanism, using the same architecture as the proposed model but excluding the GRU and attention components [20].

Attention-Based LSTM Model: An LSTM model with a traditional attention mechanism, where attention weights are computed directly from the LSTM's hidden states [21].

GRU Model: A standard GRU model with 128 units, trained on the same dataset and preprocessing pipeline [22].

5.5. Evaluation Metrics

The performance of the models is evaluated using the following metrics:

Mean Absolute Error (MAE): Measures the average absolute difference between predicted and actual stock prices.

Root Mean Squared Error (RMSE): Provides a measure of the magnitude of prediction errors, with higher weights given to larger errors.

R² Score: Indicates the proportion of variance in the stock prices that is explained by the model.

Directional Accuracy (DA): Measures the percentage of correct predictions in terms of the direction of price movement (up or down).

5.6. Experimental Design

The experiments are designed to evaluate the proposed model's performance under different market conditions, including periods of high volatility and stability. The models are trained and tested on both the S&P 500 and NASDAQ datasets to assess their generalizability. Additionally, ablation studies are conducted to analyze the contribution of each component (CNN, GRU, attention mechanism, and LSTM) to the overall performance.

5.7. Computational Resources

All experiments are conducted on a high-performance computing cluster with NVIDIA Tesla V100 GPUs. The

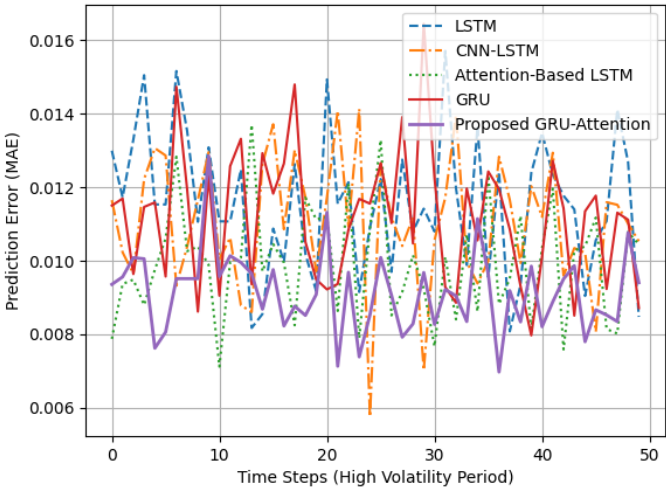


Figure 2 | Prediction errors of the proposed model and baseline models during high market volatility

training process is parallelized across multiple GPUs to reduce computation time. The code and dataset are made publicly available to ensure reproducibility and facilitate further research.

6. Experimental Results and Analysis

6.1. Performance Comparison With Baseline Models

To evaluate the effectiveness of the proposed GRU-enhanced attention mechanism, we compare its performance against the baseline models on both the S&P 500 and NASDAQ datasets. Table 1 summarizes the results in terms of MAE, RMSE, R², and DA.

The proposed GRU-attention model achieves the lowest MAE (0.009) and RMSE (0.015), indicating superior prediction accuracy. It also attains the highest R² score (0.902) and directional accuracy (77.4%), demonstrating its ability to capture the underlying patterns in stock data more effectively than the baseline models. The attention-based LSTM model performs well but falls short of the proposed model, highlighting the benefits of integrating GRUs for dynamic attention weight adjustment.

6.2. Analysis of Model Robustness

To assess the robustness of the proposed model, we evaluate its performance during periods of high market volatility. Figure 2 illustrates the prediction errors of the

Table 2 | Ablation Study Results

Model Configuration	MAE	RMSE	R ²	DA (%)
Without CNN	0.011	0.017	0.880	73.6
Without GRU	0.010	0.016	0.890	75.0
Without Attention	0.011	0.017	0.881	73.7
Without LSTM	0.012	0.018	0.875	72.2
Full Proposed Model	0.009	0.015	0.902	77.4

Table 3 | Performance Comparison on NASDAQ Dataset

Model	MAE	RMSE	R ²	DA (%)
LSTM	0.013	0.019	0.865	71.5
CNN-LSTM	0.012	0.018	0.870	72.8
Attention-Based LSTM	0.011	0.017	0.880	74.2
GRU	0.012	0.018	0.868	72.6
Proposed GRU-Attention	0.010	0.016	0.890	76.1

Table 4 | Computational Efficiency Comparison

Model	Training Time (s/epoch)	Memory Usage (GB)
LSTM	12.3	1.8
CNN-LSTM	14.5	2.1
Attention-Based LSTM	15.2	2.3
GRU	11.8	1.7
Proposed GRU-Attention	13.6	2.0

proposed model and the baseline models during volatile market conditions.

The proposed model exhibits consistently lower prediction errors compared to the baseline models, even during periods of extreme volatility. This robustness is attributed to the GRU-enhanced attention mechanism, which dynamically adjusts the importance of different time steps based on the input sequence. In contrast, the baseline models struggle to adapt to sudden market changes, resulting in higher errors.

6.3. Ablation Study

To analyze the contribution of each component in the proposed model, we conduct an ablation study by removing one component at a time and evaluating the performance. Table 2 presents the results of the ablation study.

The results show that removing any component leads to a degradation in performance, highlighting the importance of each element in the proposed architecture. The CNN contributes to feature extraction, the GRU enables dynamic attention weight adjustment, the attention mechanism focuses on relevant time steps, and the LSTM captures long-term dependencies. The full proposed model achieves the best performance, demonstrating the synergistic effect of integrating these components.

6.4. Generalizability Across Datasets

To evaluate the generalizability of the proposed model, we test its performance on the NASDAQ dataset. Table 3 compares the results of the proposed model and the baseline models on this dataset.

The proposed model maintains its superior performance on the NASDAQ dataset, achieving the lowest MAE (0.010) and RMSE (0.016) and the highest R² score (0.890) and directional accuracy (76.1%). This demonstrates the model's ability to generalize across different market conditions and datasets.

6.5. Computational Efficiency

We also evaluate the computational efficiency of the proposed model by comparing its training time and memory usage with the baseline models. Table 4 presents the results.

The proposed model achieves a balance between computational efficiency and performance. While it requires slightly more training time and memory than the GRU model, it outperforms all baseline models in terms of prediction accuracy. The integration of GRUs reduces the computational complexity compared to traditional attention mechanisms, making the proposed model suitable for real-time applications.

7. Further Discussions and Future Work

The experimental results demonstrate the effectiveness of the proposed GRU-enhanced attention mechanism in improving stock prediction accuracy and robustness. However, several aspects warrant further discussion and exploration.

Interpretability of Attention Weights: While the attention mechanism enhances the model's ability to focus on relevant time steps, interpreting these weights in the context of financial data remains challenging. Future work could explore methods to visualize and explain the attention weights, providing insights into the model's decision-making process. For instance, integrating domain-specific knowledge or using post-hoc interpretability techniques could help bridge the gap between model predictions and financial reasoning.

Scalability to High-Frequency Data: The current model is evaluated on daily stock data, but financial markets often operate at much higher frequencies, such as minute-level or tick-level data. Extending the proposed model to handle high-frequency data requires addressing

additional challenges, including increased computational complexity and the need for more granular feature engineering. Future research could investigate efficient architectures and preprocessing techniques tailored to high-frequency trading scenarios.

Incorporation of External Factors: Stock prices are influenced by a wide range of external factors, such as macroeconomic indicators, news sentiment, and geopolitical events. While the proposed model focuses on historical price data, integrating these external factors could further enhance its predictive power. Future work could explore multimodal approaches that combine numerical data with textual or categorical information, leveraging techniques such as natural language processing or graph neural networks.

Adaptation to Non-Stationary Environments: Financial markets are inherently non-stationary, with patterns and trends evolving over time. Although the GRU-enhanced attention mechanism provides some adaptability, more robust methods for handling non-stationarity could be explored. For example, incorporating online learning techniques or adaptive regularization strategies could enable the model to continuously update its parameters in response to changing market conditions.

Generalization to Other Financial Tasks: While the proposed model is designed for stock price prediction, its underlying principles could be applied to other financial tasks, such as portfolio optimization, risk management, or fraud detection. Future research could investigate the transferability of the GRU-attention mechanism to these domains, potentially leading to more versatile and widely applicable financial models.

Ethical Considerations and Fairness: As machine learning models become increasingly influential in financial decision-making, ethical considerations and fairness must be addressed. The proposed model, like any predictive tool, could inadvertently perpetuate biases or contribute to market manipulation if not carefully monitored. Future work should explore methods to ensure transparency, fairness, and accountability in the deployment of such models, particularly in high-stakes financial applications.

Integration with Reinforcement Learning: Combining the proposed model with reinforcement learning techniques could enable the development of autonomous trading systems. By framing stock prediction as a sequential decision-making problem, reinforcement learning could optimize trading strategies based on the model's predictions. Future research could investigate hybrid approaches that integrate the strengths of supervised learning and reinforcement learning for financial applications.

Exploration of Alternative Architectures: While the proposed model leverages GRUs and LSTMs, other architectures, such as Transformers or Temporal Convolutional Networks (TCNs), could offer complementary advantages. Future work could explore the integration of these architectures with attention mechanisms, potentially leading to even more powerful models for financial time series analysis.

8. Conclusion

The proposed GRU-enhanced attention mechanism integrated into LSTM layers within a hybrid CNN-LSTM model represents a significant advancement in stock price prediction. By dynamically adjusting attention weights

through the GRU, the model effectively captures temporal dependencies and adapts to the inherent volatility and non-linearity of financial time series. The experimental results demonstrate that the proposed model outperforms traditional methods, achieving superior prediction accuracy, robustness, and generalizability across different market conditions and datasets. The integration of GRUs reduces computational complexity while maintaining competitive performance, making the model suitable for real-time applications. Furthermore, the ablation study highlights the importance of each component in the proposed architecture, emphasizing the synergistic effect of combining CNNs, GRUs, attention mechanisms, and LSTMs. The model's ability to focus on relevant time steps and filter out noise enhances its interpretability and reliability, providing valuable insights for financial decision-making. Future research directions, such as improving interpretability, handling high-frequency data, and incorporating external factors, offer promising avenues for further enhancing the model's capabilities. Overall, the proposed GRU-enhanced attention mechanism provides a robust and adaptive framework for stock prediction, advancing the state-of-the-art in financial time series analysis.

1. Rushil Yavasani & Haoxiang Wang (2023) Comparative Analysis of LSTM, GRU, and ARIMA Models for Stock Market Price Prediction. *Journal of Student Research*.
2. Qinghe Zhao, Yue Hao & Xuechen Li (2024) Stock price prediction based on hybrid CNN-LSTM model. *Applied and Computational Engineering*.
3. Luocheng Liang (2024) ARIMA with Attention-based CNN-LSTM and XGBoost hybrid model for stock prediction in the US stock market. *SHS Web of Conferences*.
4. Chunna Zhao, Junjie Ye, Zelong Zhu & Yaqun Huang (2024) FLRNN-FGA: Fractional-Order Lipschitz Recurrent Neural Network with Frequency-Domain Gated Attention Mechanism for Time Series Forecasting. *Fractal and Fractional*.
5. Xinhao Sun (2024) Application of Attention-Based LSTM Hybrid Models for Stock Price Prediction. *Advances in Economics, Management and Political Sciences*.
6. Li Zhang, Jian Zhang, Wenlian Gao, Fengfeng Bai, Nan Li & N. Ghadimi (2024) A deep learning outline aimed at prompt skin cancer detection utilizing gated recurrent unit networks and improved orca predation algorithm. *Biomed. Signal Process. Control.*, 90:105858.
7. Luocheng Liang (2024) ARIMA with Attention-based CNN-LSTM and XGBoost hybrid model for stock prediction in the US stock market. *SHS Web of Conferences*.
8. Jingjuan Zhang, Wingho Chan & Yiwei Lin (2024) Stock Price Prediction Research Based on CNN-LSTM. *Highlights in Business, Economics and Management*.
9. Aditi Arora, Yashaswi Upadhyay, Satvik Shukla & Saket (2024) Forecasting Stock Price by LSTM-CNN Hybrid Model and Compares Deep Learning Models.
10. Xinhao Sun (2024) Application of Attention-Based LSTM Hybrid Models for Stock Price Prediction. *Advances in Economics, Management and Political Sciences*.
11. Xinyi Chen (2023) Stock Prediction Using Evolutionary Attention-based LSTM.
12. Li Zhang, Jian Zhang, Wenlian Gao, Fengfeng Bai, Nan Li & N. Ghadimi (2024) A deep learning outline aimed at prompt skin cancer detection utilizing gated recurrent unit networks and improved orca predation algorithm. *Biomed. Signal Process. Control.*, 90:105858.
13. Sihan Fu, Zining Tang & Jialin Li (2023) IBM Stock Forecast Using LSTM, GRU, Attention and Transformer Models.
14. Cai Chen (2023) Stock Price Prediction Based on the Fusion of CNN-GRU Combined Neural Network and Attention Mechanism.
15. Fang Liu, Shaobo Guo, Qianwen Xing, Xinye Sha, Ying Chen, Yuhui Jin, Qi Zheng & Chang Yu (2024) Application of an ANN and LSTM-Based Ensemble Model for Stock Market Prediction. *2024 IEEE 7th*

- International Conference on Information Systems and Computer Aided Education (ICISCAE).
16. Mehmet Sarıkoç & Mete Celik (2024) PCA-ICA-LSTM: A Hybrid Deep Learning Model Based on Dimension Reduction Methods to Predict S&P 500 Index Price. *Computational Economics*.
 17. Eray Gemici, M. Polat, Remzi Gök, Muhammad Asif Khan, Mohammed Arshad Khan & Yunus Kılıç (2023) Do Bubbles in the Bitcoin Market Impact Stock Markets? Evidence From 10 Major Stock Markets. *SAGE Open*, 13.
 18. Suchita Borkar, Anil Jadhav, Anishkumar Dhablia, Rani NandkishorAher, Nandkishor Daulat Aher & Amit Ashok Aware (2023) Selection of Technical Indicators for Stock Market Prediction: Correlation Based Approach.
 19. Xinhao Sun (2024) Application of Attention-Based LSTM Hybrid Models for Stock Price Prediction. *Advances in Economics, Management and Political Sciences*.
 20. Luo Cheng Liang (2024) ARIMA with Attention-based CNN-LSTM and XGBoost hybrid model for stock prediction in the US stock market. *SHS Web of Conferences*.
 21. Xinhao Sun (2024) Application of Attention-Based LSTM Hybrid Models for Stock Price Prediction. *Advances in Economics, Management and Political Sciences*.
 22. Rushil Yavasani & Haoxiang Wang (2023) Comparative Analysis of LSTM, GRU, and ARIMA Models for Stock Market Price Prediction. *Journal of Student Research*.

<https://doi.org/10.70731/909p4d46>

Bargaining Power and Market Turning of Export-Oriented Firms in the Context of Anti-Globalization

Zhanlingyan Guo ^{a,*}, Yuzhong Zhou ^a

^a Shandong Youth Politics College School of Politics and Public Administration, Jinan 250103, China

KEYWORDS

*Firms' Bargaining Power;
Export-Oriented Firms;
Market Shifts;
Reverse Globalization*

ABSTRACT

Against the background of reverse globalization and the new development pattern, to address the market strategy choice problem of Chinese export-oriented enterprises, this paper takes the supply chain bargaining power as the entry point to construct a theoretical framework of corporate bargaining power and market steering. It argues that bargaining power leads to the differentiated market steering behavior of Chinese export-oriented enterprises. Based on the above logic, the analysis of empirical data from Chinese export-oriented firms from 2009 to 2020 reveals that: corporate bargaining power has a positive relationship with the market steering of export-oriented firms; the impact of bargaining power on the market steering of export-oriented firms is enhanced in both cases of a larger institutional distance ratio and non-state-owned firms. The findings of this paper enrich the research results on reverse internationalization of firms and are also instructive for the dual-cycle strategy currently being implemented by the Chinese government.

1. Introduction

Under the new development pattern of dual circulation, China's vast domestic market demand and scale have become a strategic opportunity for the high-end development of export-oriented enterprises (Ouyang et al., 2023). Since the reform and opening up, driven by globalization, Chinese export-oriented enterprises have rapidly integrated into the global economic system by relying on the "international cycle." However, they have also been locked into the low-end segments of the global value chain, placing them in a passive position within the global division of labor system. In recent years, with the exhaustion of globalization dividends and the rise of nationalism and anti-globalization trends, coupled with the severe disruption of global industrial and supply chains caused by the COVID-19 pandemic, countries have begun to focus on domestic market development and reduce their depen-

dence on international markets (Li, 2022). At the same time, China has proposed a strategic plan to accelerate the construction of a new development pattern centered on dual circulation. It has formed a super-large domestic market, which is also the world's largest and most promising consumer market, with a complete industrial chain. China is the only country in the world with all industrial categories listed in the United Nations Industrial Classification, encompassing 41 major industrial categories, 207 medium industrial categories, and 666 minor industrial categories (Liu & Huang, 2022). The complete industrial system has become an important foundation for Chinese export-oriented enterprises to expand their home market. Leveraging the advantages of the domestic market is also an objective requirement for constructing a new development pattern where the domestic macro-cycle serves as the main body, and the domestic and international dual cycles mutually

* Corresponding author. E-mail address: 18186256915@139.com

reinforce each other (Ouyang et al., 2023). Against the backdrop of reverse globalization and the dual circulation development pattern, which export-oriented enterprises will shift their focus to the home market? And what factors influence Chinese export-oriented enterprises in developing their home markets?

The persistent technological blockade and evolving trade frictions imposed by Western countries have led to a serious imbalance in the supply and demand matching of certain segments of China's industrial supply chains, exacerbating the risks of "supply chain disruptions" and "chain breaks." This has placed tremendous pressure on the upstream factor markets of the supply chain. Since the reform and opening up, the efficiency-oriented configuration of supply chains has fully utilized the advantages of specialization and division of labor. However, the outsourcing of multiple links (such as R&D, production, procurement, and IT) has not only resulted in a high concentration of upstream suppliers but also led to a lack of supply chain resilience. For example, Huawei's high dependence on chip suppliers has placed it in a passive position under the U.S. technology blockade. Currently, most Chinese export-oriented enterprises' competitive advantages are skewed toward low value-added segments such as processing and assembly. They heavily rely on international suppliers for core technologies and key components, revealing shortcomings in R&D and technical capabilities. Trade frictions and technological blockades have made it more difficult for enterprises to access high-end resources and knowledge. If an enterprise also lacks bargaining power in the downstream market of the supply chain, its profit margins will inevitably be compressed. Therefore, it is necessary to exercise greater caution to avoid the risk contagion caused by supplier crises (Bao et al., 2023). This paper argues that export-oriented enterprises lacking bargaining power should seize the opportunity presented by the home market to achieve strategic transformation. By leveraging the super-large domestic market to reconstruct the downstream supply chain, even if the upstream supply chain faces embargoes, the pressure from the upstream factor market can be mitigated by adjusting product prices (Xu & Wang, 2013).

Existing studies have emphasized the significant influence of the home market on the development of internationalized enterprises in emerging market countries (Luo & Witt, 2021). However, for export-oriented enterprises that have long been embedded in international markets, it is difficult for them to disembed due to "inertia" and "path dependence." Based on data from 414 Chinese export-oriented enterprises from 2009 to 2020, it was found that 49.19% of enterprises chose to disembed from international markets and engage in the home market, indicating that nearly half of the enterprises opted to shift their focus to the domestic market (Wu et al., 2023). The dual-loop springboard theory highlights the significant value of multinational enterprises from emerging economies adopting home market strategies through home market relocation in the context of anti-globalization. However, further empirical research is still needed. So, which Chinese export-oriented enterprises will carry out market shifts in the

face of global trade frictions? And what are the boundary conditions? This paper takes firms' bargaining power as an entry point, constructs a theoretical framework of how bargaining power influences the market steering behavior of export-oriented enterprises, and conducts an empirical study using panel data from 336 Chinese listed export-oriented enterprises from 2009 to 2020 to promote in-depth research on home market strategies.

2. Theoretical Analysis and Research Hypothesis

2.1. Bargaining Power and Market Steering in Export-Oriented Firms

In a supply chain, firms' bargaining power refers to their ability to negotiate with customers, and firms that can grasp more bargaining power have stronger negotiation capabilities. Limited by data availability, this paper focuses on the bargaining power of Chinese export-oriented firms and their downstream customers in the supply chain. Reverse globalization, represented by trade frictions and technological blockades, has locked Chinese export-oriented firms at the low end of the global value chain and reduced their voice and bargaining power in the international market. Market steering refers to the behavior of shifting from dominating the international market to dominating the domestic market, taking advantage of the home market to gain higher income. It focuses on three types of action strategies: home country value chain extension (Liu, 2019), home country market expansion (Lee et al., 2018), and inward internationalization (Luo & Witt, 2021). Then, combining the unique characteristics of Chinese export-oriented enterprises and the important scenario of reverse globalization and the dual-cycle development pattern, is there a relationship between the bargaining power of Chinese export-oriented enterprises and market steering? This paper argues that when the bargaining power of Chinese export-oriented enterprises decreases, they will be more inclined to implement market steering to engage in the home market and achieve their strategic objectives.

According to resource dependence theory, enterprises need to obtain various resources from the external environment when making strategic decisions and conducting production and operational activities. The downstream customers of the supply chain are the most important resource providers for the enterprise, significantly impacting its production, operations, and financial decision-making (Zhai & Liu, 2023). Porter's Five Forces model points out that customers with higher bargaining power will lower the prices of products and services they purchase while demanding higher quality, which worsens the enterprise's performance and squeezes its profit margins, leading to a deterioration of its financial situation. As a result, firms with high customer concentration face greater business risks, resulting in insufficient cash flow earnings and exposure to a poorer external environment (Chen & Zheng, 2020). Specifically, when customers are too concentrated, the main customers hold a stronger trading position, leading to lower bargaining power for the enterprise itself. This forces the enter-

prise to reduce its profit margins and exposes it to potential business risks (Tang, 2009). Therefore, export-oriented enterprises focused on international business may change their strategies, especially under intensifying trade frictions and technological blockades. As the upstream factor markets become increasingly uncontrollable, enterprises may reduce their involvement in the international market and turn to explore the home market.

In addition, from the perspective of the precautionary motive of export-oriented firms, they may also opt for market steering. Due to the high customer concentration of export-oriented enterprises in the international market, their bargaining power is very low, placing them at a disadvantage in transaction negotiations. At this time, customers may demand more commercial credit from the enterprises, increasing their cash flow risks and capital turnover pressure, making them prone to financial difficulties. However, under the new development pattern of dual circulation, the home market has become a strategic choice for Chinese export-oriented enterprises to prevent and mitigate risks. The super-large home market not only provides resource and legitimacy advantages for export-oriented enterprises but also offers a complete industrial system and multi-level market structure, laying the foundation for them to reconstruct their supply chains. It is easier for them to find alternative customers in the home market. Therefore, this paper argues that Chinese export-oriented enterprises will tend to implement market steering and expand their home market when their bargaining power in the international market decreases. Accordingly, Hypothesis 1 is proposed:

H1: The lower the bargaining power of Chinese export-oriented firms, the higher the degree of market steering.

2.2. The Moderating Role of Institutional Distance

Traditional research has argued that the greater the institutional distance between organizations, the higher the cost of knowledge transfer and the lower the efficiency of knowledge utilization, thus weakening the market steering behavior of export-oriented firms. However, according to new institutionalism theory, the pressure of differentiated institutional fields provides opportunities for organizational strategic transformation (Wu & Zhang, 2019).

On the one hand, the dualistic and complex institutional environment of the host and home countries provides opportunities for the strategic transformation of Chinese export-oriented firms (Royston, 2010). Generally speaking, the stronger the bargaining power of an enterprise over its downstream customers in the supply chain, the lower the pressure on the enterprise's transformation, as the enterprise can transfer the pressure from the upstream of the supply chain by adjusting the price of its products (Xu & Wang, 2013). However, under the background of trade friction and technological blockade amid the wave of anti-globalization, Chinese export-oriented enterprises face more severe legitimacy disadvantages and resource access restrictions in the international market (Tan & Yang, 2021). Even the upstream of the supply chain faces the risk of disruption. In contrast, under the new development pattern of dual circulation, the home market not only creates a legitimacy advantage based on the "home field" but

also offers abundant resource endowments. This helps export-oriented enterprises achieve internal legitimacy construction and external legitimacy upgrading through institutional entrepreneurship, enabling them to acquire multiple resources in the home market. This is conducive to easing factor market pressure, reorganizing supply chain structures, and realizing transformation and upgrading. Therefore, when bargaining power is reduced, the greater the institutional distance, the easier it is for export-oriented firms to realize institutional entrepreneurship in the home market and leverage the home market advantage. On the other hand, a differentiated institutional environment can provide fertile ground for export-oriented enterprises to grow. In the home market with greater institutional distance, enterprises not only carry the relative institutional advantages of mature markets but also can leverage the comparative advantages and market potential of emerging markets (Yan & Yang, 2021). This enables enterprises to refine the knowledge and technology acquired in the international market, achieve product innovation, and enhance competitiveness, thereby increasing their bargaining power in the downstream supply chain. Therefore, the lower the bargaining power of export-oriented enterprises and the greater the institutional distance, the more enterprises tend to enter the home market to find opportunities and increase the degree of market steering. In summary, this paper proposes Hypothesis 2:

H2: Institutional distance strengthens the relationship between bargaining power and market steering for export-oriented firms.

2.3. The Moderating Role of the Nature of Property Rights

Considering China's unique institutional background, Chinese state-owned enterprises (SOEs) have advantages in terms of size, capital structure, and political support, leading to significant differences between SOEs and non-SOEs in their business objectives, management models, and resource allocation (Huang & Song, 2019). Therefore, there may be differences in the relationship between firms' bargaining power and market steering based on the nature of property rights.

On the one hand, compared with non-state-owned enterprises, state-owned enterprises can receive political and financial support from the government, giving them higher bargaining power and greater resistance to the erosion of large customers. Even if SOEs face financial risks and cash flow crises in the international market due to reduced bargaining power, the government will provide financial subsidies to maintain their operations, and they are more likely to obtain credit support from financial institutions (Allen et al., 2005). This effectively mitigates the financial risks brought about by reduced bargaining power. However, the "drought and flood" support may lead SOEs to make excessive concessions in negotiations with their customers (Xu & Wang, 2013), making them more likely to maintain their international market business strategies. On the other hand, SOEs often face issues such as rigid operational models, low efficiency, and insufficient innovation (Wang et al., 2020). They are less flexible in adapting to

complex and changing external environments. Therefore, even if their bargaining power in the international market is reduced when negotiating with downstream customers in the supply chain, SOEs are likely to stick to their current business strategies due to their reliance on government support. In summary, this paper concludes that, all else being equal, the impact of bargaining power on the market strategy of state-owned enterprises is smaller than that of non-state-owned enterprises. Accordingly, Hypothesis 3 is formulated:

H3: The impact of bargaining power on market shifts in export-oriented firms is stronger in non-state-owned firms compared to state-owned firms.

3. Study Design

3.1. Sample Selection

Existing studies generally define export-oriented enterprises as those with foreign business revenue accounting for more than 50% of total business revenue (Zeng, 1994; You, 2019; Xiao et al., 2021). Therefore, this paper takes A-share listed companies in the manufacturing industry with foreign business revenue accounting for more than 50% of total business revenue from 2009 to 2020 as the research object. After excluding ST and *ST category companies, enterprises listed after 2017, and enterprises with serious missing key data, a total of 2,316 observations from 336 export-oriented listed companies are obtained. All continuous variables are then subjected to 1% and 99% quartile shrinkage. The data used in this paper are ob-

tained from the Cathay Pacific (CSMAR) database and the National Bureau of Statistics.

3.2. Description of Variables

① Explained variable: Market Shift. In this paper, export-oriented manufacturing firms refer to manufacturing firms that focus on overseas markets, where overseas sales account for more than 50% of their total sales. In the process of market steering, when a firm's share of overseas sales is less than its share of domestic sales, such firms are transformed from international market-oriented firms to domestic market-oriented firms. Domestic market-oriented firms are those firms whose domestic sales share exceeds 50% of their total sales (Fu & Yang, 2018). Based on this logic, this paper measures the degree of market shift of export-oriented manufacturing firms in terms of the ratio of domestic sales share to total sales share.

② Explanatory variable: Enterprise Bargaining Power. Based on the customer perspective, customer concentration reflects the degree of dependence of enterprises on their major customers. Since the major customers of export-oriented enterprises are concentrated in overseas markets, bargaining power based on the customer perspective can effectively capture the bargaining power of export-oriented enterprises in the international market. When customer concentration is low, firms rely less on their major customers and have stronger bargaining power in negotiations. Based on data availability, this paper adopts the proportion of the top five customers' sales to the total annual sales to measure the bargaining power of enterprises. This indicator is a negative indicator; the smaller

Table 1 | Variable definitions and descriptions

Variable type	variable name	notation	Variable definitions and descriptions
explanatory variable	market transformation	HMI	Domestic operating income/total operating income
	Bargaining power - customers	BGP	Ratio of sales from top five customers to total annual sales
moderator variable	Institutional distance	DIS	Using the of the Worldwide Governance Indicators (published by the World Banksix indices WGI) Calculated according to the relevant formula
	Nature of property rights	DMT	1 for state-owned enterprises, 0 for non-state-owned enterprises
control variable	profitability	PFT	Corporate profit before tax/total assets
	Home country government support	SUP	Natural logarithm of government grants
	Age of business	EYR	Year of observation - year of establishment of the enterprise
	market force	MAR	Natural logarithm of per capita income levels at the provincial level
	Enterprise size	SIZ	Total asset size takes the natural logarithm
	Board size	BOD	Natural logarithm of the total number of board members
	growth	GRO	Measured by growth rate of main business income
	two jobs in one	DUA	If the chairman of the enterprise is also the CEO of the enterprise, it will be recorded as 1, otherwise, it will be recorded as 0.

the value, the stronger the bargaining power of the enterprise (Zhai & Liu, 2023).

③ Moderator variable: Institutional Distance. Institutional distance usually reflects the difference between two countries or regions in terms of institutional environment, and in this paper, institutional distance specifically refers to the institutional difference between and host countries with overseas subsidiaries. Drawing on existing studies export-oriented enterprises (Mike & Vikas, 2009), this paper first measures the institutional distance between each host country and China; and uses the ratio of the number of subsidiaries in each host country to the number of all subsidiaries as the weight to calculate the weighted institutional distance. The institutional distance of each country is measured by the World Governance Indicators (WGI) published by the World Bank, which consists of six core indicators, including voice and accountability, government stability and violence, government effectiveness, regulatory quality, rule of law, and corruption control (Jung et al., 2011); and the is used Euclidean distance the institutional distance to compute between The institutional distance between two countries/regions. The formula is as follows:two countries/regions.

$$ID_{ij} = \sqrt{\sum_{k=1}^N (I_{ki} - I_{kj})^2}$$

In the above equation, ID_{ij} represents the institutional distance between , where countries and i j k_i is the score of , country on institutional dimension i k_j is the score of , and country (i.e., China) on institutional dimension j N is the number of dimensions of the institutional environment.

Nature of property rights. Referring to Hu et al.the study of the nature of property rights is a dummy variable, where state-owned enterprises are 1 and non-state-owned enterprises are 0 (Hu et al., 2017).

④Control variables: with reference to existing studies (Dong & Wu, 2021; Xu et al., 2019),profitability, home country government support, market gravity, growth, board size, firm age, firm size, and two jobs are selected as control variables.

3.3. Modeling

First, in order to test the relationship between firms' bargaining power and market steering, this paper constructs shown in equation the panel data model:

$$HMI_{it} = \alpha_0 + \alpha_1 BGP_{it} + \sum \alpha_k controls_{it} + \lambda_i + v(t) + \mu_{it}$$

where i represents the industry, t represents the year, α denotes the output elasticity, $controls_{it}$ denotes all control variables, λ_i represents the industry-level fixed effects, v_t represents the year-level time fixed effects, and μ_{it} denotes the residual term.

4. Empirical Analysis

4.1. Descriptive Statistics and Correlation Analysis

In order to understand the numerical characteristics of specific variables, this paper carries out descriptive statistics and correlation analysis on the samples, as shown in

Table 2 | Descriptive statistics and correlation analysis

variant	HMI	BGP	PFT	SUP	MAR	GRO	BOD	EYR	SIZ	DIS	DMT	DUA
HMI	1											
BGP	0.0664*	1										
PFT	-0.0114	0.0113	1									
SUP	0.0415	0.1776*	0.0490*	1								
MAR	0.0451*	-0.1746*	0.0095	-0.2752*	1							
GRO	0.0867*	0.027	0.0623*	0.0359	0.1561*	1						
BOD	0.0513*	0.0165	0.0084	0.2235*	-0.0826*	0.0244	1					
EYR	.1139*	-0.0684*	0.0555*	-0.1494*	0.3189*	0.1293*	'-0.0169	1				
SIZ	0.1764*	0.0089	0.0216	0.3598*	0.1786*	0.1940*	0.3030*	0.1523*	1			
DIS	-0.0684*	0.1594*	-0.0374	0.1220*	-0.2287*	-0.0841*	-0.0444*	-0.1676*	-0.1781*	1		
DMT	0.025	0.2534*	-0.0196	0.0735*	-0.0852*	0.0546*	0.0411*	-0.0980*	-0.0144	0.0924*	1	
DUA	-0.0680*	0.0205	-0.0783*	'-0.0848*	0.0461*	-0.0073	-0.1951*	-0.0458*	-0.1312*	-0.0472*	-0.031	1
average value	0.45	0.131	0.658	15.353	10.357	'-0.401	2.118	2.788	22.011	1.48	0.517	0.373
(statistics) standard deviation	0.236	0.164	0.317	2.269	0.383	2.237	0.189	0.38	1.155	0.438	0.5	0.484

Table 2. it can be found that the bargaining power of enterprises is significantly and positively correlated level of 10% with the market steering at the and there is a significant correlation between the important explanatory variables of the model, which suggests that the explanation with these variables is feasible. In this paper, the variables were also tested for multicollinearity, with a mean value of 1.20 and a maximum value of 1.46 (consistent with a mean value of less than 5 and a maximum value of less than 10), which excludes the interference of multicollinearity.

4.2. Regression Analysis

Table 3 reports the regression results for the research hypotheses. Model 1 analyzes the regression results after adding only the core explanatory variables, Model 2 analyzes the effect of firms' bargaining power on market steering with the inclusion of only control variables; Model 3 further analyzes the regression results when time fixed effects are added; and Model 4 further controls for industry fixed effects; Models 1-Model 4 the results of all show that export-oriented firms bargaining power 'has a significant positive impact, that is, there is a significant relationship between the bargaining power of export-oriented enterprises and market steering, the lower the bargaining power, the higher the market steering. The lower the bargaining power, the higher the market steering. This verifies the research hypothesis 1.

4.3. Robustness and Endogeneity Tests

First, on the basis of fixing the time effect and industry effect, further fixing the region effect, the regression results are shown in Model 5; second, replacing the core explanatory variables. Drawing on the research of Zhang Zeyu, based on the perspective of financing constraints to measure the bargaining power of enterprises (Zhang, 2023), the SA index after taking the absolute value is used as a measure of the bargaining power of enterprises, and the greater the degree of enterprise financing constraints, the lower the bargaining power; the results are shown in Model

6; based on the perspective of the enterprise itself, the bargaining power of the enterprise represents the competitiveness of the enterprise's products. When the enterprise product competitiveness (PGP) is greater, the enterprise bargaining power is stronger, and it is more likely to obtain favorable conditions in the international market. Referring to Xu Zhijian's research, corporate bargaining power is measured by corporate gross operating margin. The larger the indicator, the stronger the bargaining power of the enterprise (Xu, 2017), and the results are shown in Model 7; third, the is used PCSE model test . This method can effectively deal with complex panel error structure, such as synchronous correlation, heteroskedasticity and serial correlation, especially effective when the sample size is not large enough, allowing different cross-sections to exist in the phenomenon of heteroskedasticity, and the weights are selected to cross-section weighted, so this paper continues to use the PCSE method of estimation, and the regression results are in shown model 8.

To address the possible problem of reverse causation, this paper uses the instrumental variable method (IV method) to re-regress the variables. Specifically, referring to Sun Puyang et al.'s treatment of instrumental variables (Sun et al., 2014), the first-order lagged term of firms' bargaining power is used as an instrumental variable, and the regression is re-run using the two-stage least squares (2SLS) method, and the estimation results are shown in Model 9. The results show that corporate bargaining power still has a significant effect on market steering. In addition, the value of the F-statistic of the first-stage regression is greater than the empirical value of 10, which means that there is no weak instrumental variable problem, and the P-value in the non-identification test is less than 0.01, which indicates that the original hypothesis of under-identification of instrumental variables is significantly rejected at the 1% level, suggesting that there is no non-identification problem. Therefore, the findings of this paper remain credible after using instrumental variables to deal with the endogeneity problem.

Table 3 | Benchmark regression results

Mould	1	2	3	4
	HMI	HMI	HMI	HMI
BGP	0.0958** (0.0362)	0.0924* (0.0468)	0.134** (0.0497)	0.128* (0.0526)
control variable	NO	YES	YES	YES
time effect	NO	NO	YES	YES
industry effect	NO	NO	NO	YES
Constant	0.4422*** (0.0101)	-0.812*** (0.111)	0.0168 (0.196)	0.128 (0.124)
Observations	2316	1,513	1,513	1,512
R-squared	0.004	0.094	0.117	0.137

Note:*** stands for at the passing the test significance level, 1% ** stands for passing the test at the significance level, 5% * stands for passing the test at the significance level, and are in parentheses 10% clustering robust standard errors , same below.

Table 4 | Robustness and endogeneity tests

Variables/models	5	6	7	8	9
	<i>HMI</i>	<i>HMI</i>	<i>HMI</i>	<i>HMI</i>	<i>HMI</i>
BGP	0.138** (0.0516)			0.134*** (0.0359)	0.1345* (0.0537)
PGP			0.2258*** (0.0531)		
SA index		0.0179** (0.0064)			
Phase I F-value					564.97
non-identifiability test					213.5***
control variable	YES	YES	YES	YES	YES
time effect	YES	YES	YES	YES	YES
industry effect	YES	YES	YES	YES	YES
regional effect	YES				
Prob > chi2				0.0000	
Constant	2.538* (1.147)	-0.0081 (0.0469)	0.2145 (0.1272)	0.0381 (0.290)	0.0771 (0.2987)
Observations	1,511	1,512	1,512	1,513	1294
R-squared	0.210	0.131	0.1247	0.198	0.1863

4.4. Moderating Effects Test

Table 5 tests the moderating effect of institutional distance and property rights nature. Among them, Model 10 reports the moderating effect of institutional distance on firms' bargaining power and market steering, and from the empirical results, the coefficient of the interaction term between institutional distance and bargaining power is 0.175, which is significantly positive at 1% confidence level, indicating that institutional distance positively moderates the relationship between bargaining power and market steering; Hypothesis 2 is verified. The moderating effect of the nature of property rights was tested using group regression (Zhou & Lei, 2023), which divides the sample into state-owned enterprises (SOEs) and non-state-owned enterprises (NSOEs) groups. Model 11 reports the test results for the SOE group, which fails the significance test; Model 12 reports the test results for the non-SOE group, which has a significantly positive bargaining power and passes the significance test at the 10% level, suggesting that non-SOEs are more inclined to be involved in the home market when their bargaining power is reduced, and Hypothesis 3 is verified.

5. Conclusion and Outlook

Against the background of reverse globalization, facing the pressure of the upstream factor markets in the supply chain, the bargaining power of Chinese export-oriented enterprises in the international market is getting weaker and weaker, and the enterprises urgently need to strategically transform to cope with this change. The home market has become a new window of opportunity for Chinese export-oriented enterprises under the . So, will the weakening of bargaining power drive export-oriented enterprises to shift from international market strategy to home market strategy, and then reach the home country advantage? To this end, this paper focuses on the relationship between the customer-based bargaining power of export-oriented firms and market shifting, and new development pattern of double-cycle empirically examines the mechanism of the impact of firms' bargaining power on market shifting by utilizing the panel data of listed firms, and draws the following research in several aspects conclusions. First, there is a significant positive relationship between bargaining power and market steering in export-oriented enterprises, i.e., the lower the bargaining power, the higher the degree of market steering; second, the relationship between bargaining power and market steering is moderated by institutional distance and the nature of property rights, in which the institutional distance strengthens the positive relationship

Table 5 | Moderating effects test

Variables/models	10 full sample HMI	11 state enterprise HMI	12 non-state enterprise HMI
BGP	0.156** (0.0463)	0.0839 (0.0552)	0.147* (0.0740)
BGP*DIS	0.175*** (0.0318)		
DIS	0.0078 (0.0346)		
control variable	YES	YES	YES
time effect	YES	YES	YES
industry effect	YES	YES	YES
Constant	-0.366** (0.108)	0.161 (0.520)	0.166 (0.430)
Observations	1,357	581	930
R-squared	0.148	0.190	0.133

between bargaining power and market steering, and the compared with state-owned enterprises. impact of bargaining power on market steering is stronger in non-state-owned enterprises. The impact of bargaining power on market steering is stronger in non-state-owned firms compared to state-owned firms.

The theoretical value of this paper is twofold. First, unlike the existing research on market steering of export-oriented enterprises based on the perspectives of efficiency and legitimacy (Ding, 2022), this paper focuses on the perspective of bargaining power of supply chain firms, and based on the special background of anti-globalization and China's new development pattern of double-cycle, it proposes and examines the relationship between the bargaining power of export-oriented firms and market steering, and finds that, based on the customer perspective of the reduction of bargaining power can significantly. It is found that the reduction of bargaining power based on the customer perspective can significantly affect the degree of market steering of enterprises. The research idea and related findings of this paper are more in line with the current situation of China's export-oriented enterprises and have more theoretical explanatory power, which is a useful attempt to further expand the theoretical framework of reverse internationalization of multinational enterprises in emerging markets. Second, this paper echoes the academic in predicting corporate call to and expands corporate emphasize the importance of organizational contextual factors strategic transitions (Xie et al., 2016) the research on mechanisms. By examining country-level institutional differences the boundary of bargaining power the relationship between, this paper constitutes a useful complement to the previous research on reverse internationalization of firms, and to a certain extent, promotes the in-depth re-

search on home country market strategies. and firm-level property rights differences on bargaining power and firms' market shifts

The results of this paper for have important practical implications both and governments. export-oriented enterprises For the Chinese government, continuing to deepen the new development pattern of the double cycle and creating a dominant resource base and legitimizing atmosphere in are the attract export-oriented enterprises the domestic market core strategies to back to China. Further promoting the construction of a unified national market, breaking down multiple factor barriers to unleash the potential of the domestic market, and at the same time creating a globally oriented and fully open market environment are also key paths to enhance the attractiveness of the Chinese market. For export-oriented enterprises, it is important to pay full attention to the huge opportunities brought by the development of the home market under the new development pattern of double-cycle. When the strategy is blocked internationalization, they should take advantage of the of the new development pattern of the strategic dividend and make use of the domestic market to achieve high-end double cycle development.

There are also research deficiencies in this paper, which also points out the direction of future research. First, this paper simply measures the degree of market steering of export-oriented enterprises from the perspective of trade by the percentage of sales in the domestic market, and future research can try to use text analysis to construct market steering indexes of export-oriented enterprises from different dimensions, so as to better portray the degree of market steering of export-oriented enterprises in the context of anti-globalization; second, due to the limitation of data availability, this paper does not consider the

impact of bargaining power on market steering of China's export-oriented enterprises against international suppliers. Second, due to the limitation of data availability, this paper does not consider the impact of the bargaining power of Chinese export-oriented firms on market steering against international suppliers. In the context of decoupling and chain breakage, the impact of bargaining power on market steering brought about by changes in the upstream of the supply chain is likely to be more significant; third, the behavior of Chinese export-oriented firms after becoming involved in their home markets is examined. The process of upgrading competitiveness through market steering and utilizing the home market is a process of organizational change, which requires firms to make adjustments in organizational culture and organizational capabilities. In the future, the case study method can be further adopted to reveal the micro-mechanisms of Chinese export-oriented enterprises utilizing the home market to achieve high-end development.

- Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics*, 77(1), 57–116. <https://doi.org/10.1016/j.jfineco.2004.02.010>
- Bao, Q., Dan, J., & Wang, Y. (2023). Domestic trade networks, geographical distance and supplier localization. *Economic Research*, 6, 102–118.
- Chao, M. C.-H., & Kumar, V. (2009). The impact of institutional distance on the international diversity-performance relationship. *Journal of World Business*, 44(1), 93–103. <https://doi.org/10.1016/j.jwb.2008.05.002>
- Chen, J., & Zheng, H.-Q. (2020). Financing constraints, customer bargaining power and corporate social responsibility. *Accounting Research*, 8, 50–63.
- Ding, Y. (2022). Research on home country market migration driving mechanism of export-oriented manufacturing enterprises (Master's thesis, Zhejiang Gongshang University). CNKI. <https://doi.org/10.27462/d.cnki.ghzhc.2022.001216>
- Dong, W.-Y., & Wu, C.-Q. (2021). Economic policy uncertainty and foreign capital withdrawal: An empirical analysis based on listed companies in China. *Wuhan Finance*, 2, 35–43.
- Fu, T., & Yang, C. (2018). Analysis of market turning and industrial upgrading paths: An example of export-oriented furniture industry in the Pearl River Delta. *Geography Research*, 7, 1460–1474.
- Greenwood, R., Díaz, A. M., Li, S. X., & Lorente, J. C. (2010). The multiplicity of institutional logics and the heterogeneity of organizational responses. *Organization Science*, 21(2), 521–539. <https://doi.org/10.1287/orsc.1090.0452>
- Hu, H., Hong, H., Xiao, L., & Liu, W. (2017). Tax incentives and R&D investment: The mediating role of property rights nature regulation and cost stickiness. *Research Management*, 6, 135–143. <https://doi.org/10.19571/j.cnki.1000-2995.2017.06.016>
- Huang, C.-M., & Song, Y.-F. (2019). An empirical study on the impact of supply chain concentration on firms' R&D investment intensity: The moderating role of property rights nature. *Research and Development Management*, 3, 13–26. <https://doi.org/10.13581/j.cnki.rdm.2019.03.002>
- Hur, J., Parinduri, R. A., & Riyanto, Y. E. (2011). Cross-border M&A inflows and quality of country governance: Developing versus developed countries. *Pacific Economic Review*, 16(5), 638–655. <https://doi.org/10.1111/j.1468-0106.2011.00560.x>
- Lee, K., Szapiro, M., & Mao, Z. (2018). Correction to: From global value chains (GVC) to innovation systems for local value chains and knowledge creation. *The European Journal of Development Research*, 30(3), 575. <https://doi.org/10.1057/s41287-018-0156-1>
- Li, F. (2022). Large country qualities and general laws of double cycle linkages: A trade perspective. *World Economic Studies*, 5, 102–116. <https://doi.org/10.13516/j.cnki.wes.2022.05.005>
- Liu, C. P. (2019). Research on the problem of utilizing and cultivating domestic markets. *Academic Research*, 10, 76–84.
- Liu, L.-H., & Huang, J.-S. (2022). Strong domestic market supports the construction of new development pattern: Mechanism and path? *New Horizons*, 4, 114–120.
- Luo, Y., & Witt, M. A. (2021). Springboard MNEs under de-globalization. *Journal of International Business Studies*, 52(8), 1396–1408. <https://doi.org/10.1057/s41267-021-00426-1>
- Ouyang, Y. L., & Tang, L. X. (2023). Market scale advantage research: Theoretical logic and prospect. *Finance and Trade Economics*, 9, 91–107. <https://doi.org/10.19795/j.cnki.cn11-1166/f.20230905.004>
- Sun, P., Li, F., & Gu, L. (2014). Can commercial credit be an effective financing channel for enterprises: An analysis based on investment perspective. *Economics (Quarterly)*, 4, 1637–1652. <https://doi.org/10.13821/j.cnki.ceq.2014.04.017>
- Tan, H., & Yang, M. (2021). The new liability of origin in global decoupling. *Management and Organization Review*, 17(3), 624–629. <https://doi.org/10.1017/mor.2021.37>
- Tang, Y. (2009). Supplier and distributor bargaining power and firm performance: Empirical evidence from listed companies in China's manufacturing industry from 2005 to 2007. *China Industrial Economics*, 10, 67–76. <https://doi.org/10.19581/j.cnki.ciejournal.2009.10.006>
- Tsang, H.-Y. (1994). Development of export-oriented enterprises and gradual founding of China's multinational corporations. *Machinery Management Development*, 3, 1–3. <https://doi.org/10.16525/j.cnki.cn14-1134/th.1994.03.001>
- Wang, Y.-C., Zuo, N.-Z., & Xie, X. (2020). How can mixed ownership reform improve the competitiveness of state-owned enterprises? *Economic and Management Research*, 4, 49–61. <https://doi.org/10.13502/j.cnki.issn1000-7636.2020.04.005>
- Wu, X., & Zhang, Y. (2019). Do overseas mergers and acquisitions enhance industrial technological innovation performance: The dual moderating role of institutional distance. *Nankai Management Review*, 1, 4–16.
- Xiao, J., Liu, M., & Hong, R. L. (2021). A study of property insurance demand of export-dependent firms: Empirical evidence from Chinese manufacturing firms. *Management Review*, 6, 65–75. <https://doi.org/10.14120/j.cnki.cn11-5057/f.2021.06.006>
- Xu, C. J. (2011). Bargaining power and capital structure of real estate firms: An empirical study based on panel data of listed companies. *Nanjing Social Science*, 6, 64–71. <https://doi.org/10.15937/j.cnki.issn1001-8263.2011.06.017>
- Xu, L., & Wang, R. (2013). Factor intensity, bargaining power and firm transformation pressure: A study based on questionnaire data in China's coastal areas. *Industrial Economics Review*, 2, 69–80. <https://doi.org/10.14007/j.cnki.cjpl.2013.02.009>
- Xu, L., Wang, Y., Liu, N., & Zhang, S. (2019). Local government environmental regulation and firm relocation behavior: A cost perspective based on a database sample of Chinese industrial firms. *Finance and Economics Theory and Practice*, 4, 81–87. <https://doi.org/10.16339/j.cnki.hdxbcjb.2019.04.035>
- You, W. (2019). Research on property insurance needs of export-oriented enterprises (Master's thesis, Jinan University). CNKI. <https://doi.org/10.27167/d.cnki.gjnu.2019.001392>
- Zhai, H., & Lewis. (2023). Can digital transformation improve firms' bargaining power? An information seeking and customer switching cost perspective. *Journal of Zhongnan University of Economics and Law*, 6, 29–41. <https://doi.org/10.19639/j.cnki.issn1003-5230.2023.0052>
- Zhang, Z. (2023). Bargaining power, business credit and corporate performance: An analysis based on the perspective of financing constraints. *Journal of Shanxi University of Finance and Economics*, 3, 98–111. <https://doi.org/10.13781/j.cnki.1007-9556.2023.03.008>
- Zhou, Z., & Lei, L. (2024). Does the adjustment of economic growth target promote capital mobility: Based on the perspective of cross-regional investment of enterprises. *Nankai Management Review*, 1, 168–180.
- Xie, E., Huang, Y., Peng, M. W., & Zhuang, G. (2016). Resources, aspirations, and emerging multinationals. *Journal of Leadership & Organizational Studies*, 23(2), 144–161. <https://doi.org/10.1177/1548051815623720>

<https://doi.org/10.70731/zga3dd24>

A Study on the Dilemma and Countermeasures of Digital Technology-enabled Villages in the Context of Domestic Ageing

Jiaqi Chen ^{a,*}^a College of Economics and Management, Hebei Agricultural University, Baoding 071001, China

KEYWORDS

*Ageing;
Digital Countryside;
Questionnaire;
Digital Literacy*

ABSTRACT

The digital economy is developing rapidly, but the problem of digital divide is becoming more and more prominent due to the weak foundation of informatisation of the elderly. Comprehensively promoting the common prosperity of farmers and rural areas is not only to achieve material prosperity, but also to achieve spiritual prosperity. This investigation adopts a variety of research methods, including literature research, questionnaire survey and data analysis, to take the functioning of villagers' service centres as a further breakthrough point, to explore the important role of villagers' service centres in building a digital inclusive society in the countryside, to help the elderly not only to overcome the digital difficulties in their lives, but also to enjoy the dividends of digital technology, to achieve healthy aging empowered by digital technology, and to enhance the sense of access, happiness, and sense of security.

1. Introduction

The report of the Twentieth National Congress of the CPC stresses the implementation of a national strategy to actively address the ageing of the population, the development of the elderly care business and the elderly care industry, the optimisation of services for widows and orphans, and the promotion of the realisation of basic elderly care for all older persons. The strategy of active ageing is a profound embodiment of the Chinese culture of respect for the elderly in the new era, and a practical manifestation of the people-centred development philosophy in the field of social security. China's rural elderly population accounted for a relatively high proportion, to help the elderly to solve the problem of old age has been urgent. Digital village development strategy for rural development to give new momentum, the digital village construction to carry out rural elderly digital education, is to enhance the elderly

digital literacy, sense of value to obtain the sense of value, and help them integrate into the modern circle of life needs. With the help of the digital village development strategy and the policy opportunity of active ageing, exploring the countermeasures and promotion paths of digital education empowering the strategy of active ageing is a natural way to solve the problem of helping the elderly in the countryside. Against the backdrop of the deepening trend of population aging, this paper will explore the real-life dilemma of digital integration of rural aging groups from the aspects of digital access, digital resources, digital literacy, and digital participation, and put forward corresponding countermeasures, so as to provide theoretical references for China to promote the development of digital technology and realise the common wealth on the road of high-quality development.

* Corresponding author. E-mail address: 13251377634@163.com

2. Conceptual Definition And Rationale

2.1. Definition of Concepts

2.1.1. Digital Technology

Digital technology refers to the application of computers, communications, networks and other technical means to achieve the process of digitalisation, networking and intelligence of information, as an empowering new production factor and new productivity, with strong externalities and spillover effects, the application of which in the rural areas can help achieve digitalisation and intelligence in the fields of healthcare, pensions, education, etc., improve the quality and efficiency of services, optimise the allocation of resources, and promote social equity. , which plays an increasing role in empowering the process of realising common wealth, helping all people to enjoy the dividends brought by digitalisation. Digital technology, as the core driving force and data as the key production factor, through linking with modern information network carriers, integrates with the real economy, reconstructs and forms a new form of digital economy, injects new vitality into China's economy, promotes the transformation of China's economy from high-speed development to high-quality development, and provides a driving force to realise common wealth.

2.1.2. Population Ageing

Population ageing refers to the dynamics of a corresponding increase in the proportion of older persons in the total population due to a decrease in the number of younger persons and an increase in the number of older persons as a result of a decrease in the fertility rate of the population and an increase in life expectancy per capita. It consists of two specific meanings: first, the process of the relative increase in the number of older persons and their rising share in the total population; and second, the socio-demographic structure of a society showing old age and entering into an ageing society. Internationally, the general view is that when the elderly population over 60 years of age accounts for 10 per cent of the total population of a country or region, or when the elderly population over 65 years of age accounts for 7 per cent of the total population, it means that the population of that country or region is in an ageing society.

2.2. Rationale

2.2.1. Social Emotional Choice Theory

Social-emotional choice theory occupies a pivotal position in the field of gerontology. The activity theory proposed by Havighurst (Havighurst 1953) profoundly elaborates that older adults can significantly enhance their subjective mood and quality of life by engaging in a certain level of social activities. This theory has been widely recognised by academics, providing a strong theoretical underpinning for understanding quality of life in old age and opening up new directions for subsequent research. Building on Havighurst's activity theory, Carstensen (Carstensen 1990) further developed a theory of emotional choice. She emphasised that in old age, individuals engage in social activities not only for knowledge acquisition, but more important-

ly for emotion management. As older adults enter retirement, while the need to learn new things may diminish, the willingness to pursue happiness and other subjective emotional experiences grows stronger and becomes a central pursuit in their lives.

In recent years, studies in the fields of sociology and gerontology at home and abroad have verified this point. Numerous studies have shown that the more frequently older people participate in social activities, the more significantly their subjective mental status improves (Almedom 2005; Liu Song 2007). In this era of increasing digitalisation, the Internet has become one of the most important platforms for older people to actively participate in social activities. The use of the Internet not only helps the elderly to cross the geographical limitations and keep close contact with the society, but also provides them with abundant information and resources to enrich their spiritual world. Therefore, if the use of the Internet can influence and promote the greater participation of older persons in social activities, it will undoubtedly have a profound impact on their subjective well-being.

2.2.2. Theory of Active Ageing

The theory of active ageing originated from the Declaration on Health and Ageing issued by the World Health Organization (WHO) in 1996, and it was first put forward as a core "working objective". Subsequently, the European Union organised an international conference to explore in depth the theoretical significance and practical feasibility of active ageing, and in 2002, the WHO further published the Policy Framework for Active Ageing, which marked the widespread attention to the concept of active ageing on a global scale. Based on the three pillars of health, participation and security, active ageing emphasises the active role of older persons in the family and society, and aims to promote their health and improve their quality of life. According to the World Health Organisation, active ageing is constrained by multiple factors, including but not limited to gender, culture, health and social services, individual differences, physical and social environments. In China, scholars generally agree that active ageing is a process in which the elderly population combines their own needs and actively participates in economic and social activities, thus effectively improving the quality of life in their later years. This concept not only helps to enhance the quality of life of older persons, but also further strengthens their social security.

This paper intends to explore the actual situation and information barriers faced by older people in Huailai County, Zhangjiakou City, in integrating into the digital era from the perspective of active ageing, and to explore how to bring together all parties to improve the construction of information accessibility, develop age-appropriate digital products and services, and promote the digital integration of older people.

2.2.3. Theories of Social Exclusion

Social exclusion theory stresses that structural factors lead to the marginalisation of disadvantaged groups, while the digital divide further exacerbates this process. Based on social exclusion theory and the digital divide, this study

reveals the dual exclusion mechanism of "system-self" faced by the rural elderly. According to the data, 86.4% of rural elderly people have only primary school education or below (Table 1), and their use of digital services shows a significant disconnect: the mastery rate of online payment is only 0.8%, which is 15 times lower than that of the group of people with high school education or above ($\chi^2=35.67$, $p<0.001$). This institutional exclusion stems from structural deficiencies in the design of digital services-existing product interfaces generally require ≥ 5 -step processes and rely on abstract icon recognition capabilities, directly exceeding the cognitive thresholds of older adults with low levels of education. For example, mainstream e-banking systems require the simultaneous completion of compound operations such as password entry, bank selection and amount confirmation, creating a technical barrier to entry.

Under the psychological mechanism of technology fear, 34.53 per cent of the interviewees fell into a vicious circle of self-exclusion (table 9). According to the theory of emotional selection, older people have a natural tendency to avoid technological scenarios that may trigger anxiety. Typical examples show that 67 per cent of the interviewees voluntarily gave up basic digital services, such as e-payment, for fear of property loss due to operational errors (e.g., the general anxiety that "if you enter the wrong password, the money will be lost"). This interaction between institutional design and psychological mechanisms ultimately creates a closed-loop exclusion system of "operational difficulties $\rightarrow$ use anxiety $\rightarrow$ active avoidance $\rightarrow$ skill degradation".

The solution to this dilemma lies in the construction of a "techno-social" integration programme within the framework of active ageing. Although WHO emphasises "participation" as a core principle, this study found that only 8.8% of villagers were aware of the digital village policy (Table 11), revealing a disconnect between the current policy dissemination channels and the daily lives of the elderly. It is recommended that digital literacy training be embedded in existing social scenes such as square dance gatherings and village committee meetings, and that learning anxiety be reduced through peer demonstration and instant tutoring. At the same time, the development of an age-appropriate interface with "voice guidance + physical buttons" is recommended to achieve breakthroughs in both technical usability and emotional acceptance, and ultimately achieve the dual goals of digital inclusion and social participation.

3. Objects Of Study And Research Methodology

3.1. Subjects of Study

This study takes the aging population in rural areas of Hebei Province as the research object, and villagers over 60 years of age in Fangkou Village, Ruiyunguan Township, Huailai County, Hebei Province, were selected as the survey object. The specific situation is shown in Table 1.

As can be seen from Table 1, 58.40 per cent of the sample were male and 41.60 per cent were female; the ages were concentrated in the 65 - 70 (49.60 per cent) and 60 - 65 (32.80 per cent) age groups; the level of education

Table 1 | Basic information of villagers surveyed

Investigative projects	personal profile	classifier for number of participants	per cent
distinguishing between the sexes	male	73	58.40 per cent
	women	52	41.60 per cent
(a person's) age	60-65 years	41	32.80 per cent
	65-70 years	62	49.60 per cent
	70-75 years	17	13.60 per cent
	75 years and over	5	4.00 per cent
	Primary and below	108	86.40 per cent
educational attainment	junior high school	11	8.80 per cent
	congrats! (on passing an exam)	5	4.00 per cent
	University and above	1	0.80 per cent
Number of persons permanently residing in the household	1-2 persons	96	4.80 per cent
	3-5 persons	23	18.40 per cent
	5 or more	6	4.80 per cent
Whether or not you have served as a village cadre	be	3	2.40 per cent
	clogged	122	97.6 per cent

was mainly primary school and below (86.40 per cent); 76.80 per cent of the villagers had 1 - 2 permanent residents in their households; and only 2.40 per cent of the villagers had served as village cadres. The sample meets the requirements of the survey, is random and representative, and is helpful for in-depth study of the digital divide in the elderly population. The surveyed villagers generally have a low level of education, which correlates with the use of smart devices and is one of the barriers to empowering villages with digital technology. In addition, Fangkou Village has obvious characteristics of aging and hollowing out, most of the elderly live alone, and families have limited help in the use of smart devices for the elderly. The villagers who have served as village cadres know relatively more about digital products and policies, so we can consider launching related knowledge popularisation activities centred on village cadres to improve villagers' digital literacy.

3.2. Research Methodology

3.2.1. Literature Research Method

Against the backdrop of the intersection of ageing and rural digitalisation, it is crucial to explore the issue of digital technology-enabled rural "last mile" in depth, and to fully understand the current development, obstacles to upgrading, and feasible strategies to solve the problem. To this end, this study systematically carried out literature research. Relying on Wanfang, China Knowledge Network and other databases, we conducted a cross-search using compound keywords such as "aging countryside + digital divide", focusing on core journals and policy documents in the past five years. We searched the policy contents related to the digital development of the countryside and the protection of the digital rights and interests of the elderly, and categorised and summarised the screened literature in terms of theoretical foundations, practical cases, research methods and other dimensions. The content analysis method is used to analyse the conceptual connotation of digital technology empowering the aging countryside, sort out the existing dilemmas (e.g., infrastructure shortcomings, technology adaptation problems, talent shortages, etc.), and summarise the existing countermeasures (e.g., policy support, technological innovation, training and promotion, etc.). The literature study not only provides a solid theoretical support for the thesis topic, but also clarifies the direction for constructing the research system and ensures the cutting-edge and scientific nature of the research.

3.2.2. Questionnaire Method

This study takes villagers over 60 years old in Fangkou Village, Ruiyunguan Township, Huailai County, Hebei Province, as the object of investigation, and with the help of questionnaires, initially understands the development status of digital technology in the aging villages.

3.2.2.1 Basis for questionnaire design

In the process of questionnaire design, the United Nations Digital Inclusion Indicator Framework and the local characteristics of ageing were fully integrated to form a scale with four dimensions (digital inclusion, digital resources, digital participation and digital cognition) and 22

questions. In order to ensure that the language of the questionnaire is easy to understand and easy for the elderly to comprehend, the formulation of the questions was revised several times, and some elderly people were invited to conduct a pre-test, and the formulation was adjusted according to the feedback.

3.2.2.2 Sample selection criteria

The aging ratio of Fangkou village is higher than the national average aging level, and the economic structure and demographic structure of the village are representative of similar villages. The reason for choosing villagers over 60 years old as the sample is that this group is the main body of aging villages, and its ability to accept digital technology directly determines the effect of digital transformation in villages; its behavioural characteristics can accurately reveal the key contradictions and implementation paths of the aging villages in which digital technology is not feasible; and as a pilot area for digital villages in the senior population, its adaptive capacity can provide empirical evidence for the development of policies in similar areas.

3.2.2.3 Questionnaire design and reliability tests

On the basis of literature research, the questionnaire was designed to cover basic personal and family information, digital access (access to network facilities), digital resources (ownership of smart devices), digital literacy (digital cognition), and reasons for digital participation (non-participation) bar. SPSS software was used for reliability analysis, and Cronbach's alpha coefficient was used to assess the reliability of the questionnaire. It is generally considered that the reliability of a test or scale is good when the Cronbach's alpha based on standardised items is above 0.9. In this study, the coefficient was 0.92, $P < 0.05$, indicating that the questionnaire is highly reliable and stable and can be used in subsequent studies.

3.2.2.4 Recovery of questionnaires

A total of 135 questionnaires were distributed in the official survey, and the recovery process strictly followed the principles of quality control. Invalid questionnaires were deleted according to the following three principles: first, questionnaires with missing items (missing answers to key questions); second, questionnaires with a high degree of consistency in the answers (such as the same answers to a number of consecutive multiple-choice questions); and third, questionnaires judged to have been answered with obvious malice (answers with confusing logic that run counter to common sense). Meanwhile, questionnaires with an answer time of less than 50 seconds were excluded, considering that a short answer time may reflect a lack of seriousness in answering. In the end, 125 valid questionnaires were recovered, with a validity rate of 92.6 per cent.

3.2.3. In-Depth Interview Method

In order to enrich the research data and enhance the accuracy and depth of the findings, the study used stratified sampling to select 32 interviewees, including: elderly villagers (20 selected stratified by age group), co-residing children (8), and village cadres (4). A semi-structured interview outline was designed, containing core questions such as specific difficulties in the use of digital devices for the

elderly, willingness and barriers to digital learning, and the actual effects of village digital services and directions for improvement. During the interviews, the interviewees were encouraged to express their views freely and ask in-depth questions on the topics of interest. The interviews lasted for 30-60 minutes, and the whole process was audio-recorded and organised into textual materials in a timely manner at the end of the interviews.

3.2.4. Data Analysis Methods

This study adopts a combination of qualitative and quantitative data analysis methods to systematically reveal the reality picture of digital technology empowerment in aging villages by integrating two-dimensional data from questionnaire surveys and in-depth interviews. Descriptive statistics of the questionnaire data were conducted using SPSS 26.0 to outline the basic characteristics of digital access, resource acquisition and participation behaviour of the elderly group; correlation analysis was used to explore the association mechanism between digital literacy and variables such as frequency of device use and service satisfaction; and multiple regression models were used to identify the key impediments to the enhancement of digital literacy (e.g., resource input, degree of social support, etc.). Through structural equation modelling and mediation effect analysis, the complex relationship between factors in the process of empowering villages with digital technology is comprehensively and deeply revealed. These results provide solid theoretical and data support for the development of precise and effective strategies to enhance the digital literacy of rural elderly and promote the effective application of digital technology in the countryside.

4. Results And Analysis

4.1. Descriptive Statistical Analyses

4.1.1. Basic Information on the Digital Inclusion of Older Persons

As shown in Table 2, 93.60 per cent of villagers usually go online, indicating that digital village construction has been integrated into the daily life of most villagers, but there are still 6.40 per cent of villagers who do not have access to the Internet, and subsequent digital village construction needs to pay attention to this group.

As shown in Table 3, 58.40 per cent of villagers are connected at home through Wifi, 37.60 per cent use mobile/telecom and Unicom traffic, and 4.00 per cent are connected through a network cable. This reflects that there are various ways to promote digital construction in aging villages, but different networking methods have differences in network stability, speed and cost, which may affect the digital learning and use experience of the elderly. For example, mobile traffic may be limited by signal and cost, network access is stable but limited in coverage, while Wifi is more favoured by villagers as it is relatively balanced in terms of convenience and stability. In the context of urban and rural digitalisation policies, urban network infrastructure is relatively well developed, with extensive coverage of high-speed broadband and 5G networks, while

Table 2 | Internet access of the surveyed villagers

Access to the Internet	Proportions
first (of multiple parts)	93.60 per cent
get out of (a predicament)	6.40 per cent

Table 3 | Connectivity in the homes of surveyed villagers

Networking method	proportions
Mobile/Telecom, Unicom traffic	37.60 per cent
Wifi traffic	58.40 per cent
network cable	4.00 per cent

Table 4 | Time of the surveyed villagers' connection to the Internet

connection time	proportions
0 years	6.40 per cent
1-2 years	12.00 per cent
3-5 years	62.40 per cent
5 years and above	25.60 per cent

Table 5 | Level of digitisation of the countryside in the surveyed areas

Degree of digitisation	proportions
poorly	13.00 per cent
mediocre	14.40 per cent
usual	62.00 per cent
rather or relatively good	8.60 per cent
an excellent	2.00 per cent

rural areas still have gaps in network construction, which also limits rural older persons' access to and use of digital resources.

As shown in Table 4, the duration of villagers' connectivity varies greatly, with 3 - 5 years accounting for the largest proportion (62.40 per cent), and some villagers have been connected for a long time, but 6.40 per cent of villagers are still not connected at home. This means that when promoting the construction of digital villages, it is necessary to take into account the connectivity of different villagers' households, strengthen network coverage for unconnected households, and provide more digital skills training and support for households that have been connected for a shorter period of time.

As can be seen from Table 5, 62.00 per cent of villagers believe that the degree of digitisation of village construction in their area is average, 13.00 per cent believe it is very poor, and only 2.00 per cent believe it is very good. This indicates that the current level of digital construction in vil-

lages needs to be improved, and the lower level of digitisation may affect the acceptance and application of digital technology among the elderly, thus exacerbating the digital divide.

4.1.2. Basic Information on Digital Resources for Older Persons

As shown in Table 6, 92.64% of the villagers use smartphones, indicating that smartphones have a high penetration rate in the aging villages, but 7.36% of the villagers still use non-smartphones, which may have problems such as limited use of functions.

As shown in Table 7, 95.42 per cent of villagers have mobile phones at home, while the ownership rate of desktop and laptop computers is lower. This is because mobile phones are compact, easy to carry and relatively simple to operate, which is more in line with the usage habits of the elderly. In terms of the difference between urban and rural digital policies, urban households have a higher computer penetration rate and are rich in online educational resources, while rural areas have a low penetration rate of computers and other digital devices due to economic conditions and infrastructure constraints, and older people have limited access to digital resources. Mobile phones have become the main tool for older persons to access the Internet, and their functional diversity meets their basic communication, social and entertainment needs, such as making phone calls, taking photos, sending messages, and swiping short videos, but their limitations are also more obvious when it comes to accessing professional knowledge and complex digital services.

4.1.3. Basic Digital Participation of Older Persons

As can be seen from Table 8, nearly half of the elderly will use smartphones and senior citizens' phones, and only 0.41 per cent will use computers. This is because smart phones and old people's machines are relatively simple to operate, the interface design is more in line with the cognitive level of the elderly, and have basic functions such as voice calls and SMS, which can meet the daily communication needs of the elderly. Computer operation, on the other hand, is complicated and requires a certain level of typing and mouse operation skills, which requires a higher level of learning ability for the elderly. In the context of urban and rural digitisation policies, urban older people have more access to computers and digital learning resources,

Table 6 | Whether the current mobile phone of the surveyed villagers is a smartphone or not

Smartphone or not	proportions
be	92.64 per cent
clogged	7.36 per cent

Table 7 | Which of the following electronic devices do the surveyed villagers own at home?

electronic equipment	proportions
mobile phones	95.42 per cent
desktop computer	2.29 per cent
notebook computers	1.53 per cent

Table 8 | Smart devices that the surveyed villagers would use

smart device (smartphone, tablet, etc)	proportions
geriatric machine	51.44 per cent
smartphone	48.15 percent
laptops	0.41 per cent
neither	0.00 per cent

Table 9 | Which functions of mobile phones do the surveyed villagers use?

mobile phone function	proportions
make a telephone call	16.98 per cent
take a picture	16.30 per cent
post a message	15.76 per cent
Brush Video	13.99 per cent
Internet chat	15.63 per cent
online payment	1.90 per cent
watch a play	0.95 per cent
Watch out for the news	1.77 per cent
(sth. or sb) else	0.41 per cent
go to the web	2.31 per cent

Table 10 | Whether the surveyed villagers encountered the following incidents

event	proportions
Inconvenience in purchases due to not being able to use code payment, such as being refused cash	6.19 per cent
Unable to travel on buses or other transport because they do not know how to use the code-sweeping function to buy tickets	22.48 per cent
Unable to use mobile phone e-banking and unable to go out during the epidemic, resulting in the inability to complete bank transfers, etc.	34.53 per cent
Because they did not know how to use the Alipay payment function, they could not go out during the epidemic and were unable to pay for water, electricity, gas and other fees.	25.08 per cent
No similar incidents have been reported.	12.38 per cent

while rural older people have lower computer-use skills due to insufficient equipment and training.

As can be seen from Table 9, the use of mobile phones by the elderly mostly focuses on basic functions such as making phone calls, taking photos, sending messages, swiping short videos, and chatting on the Internet, with a lower proportion (only 1.90 per cent) of the use of online payment and other functions. This is mainly due to the fact that basic functions are simple to operate, which is in line with the learning ability and daily life needs of the elderly; whereas online payment involves fund security and is relatively complicated to operate, requiring steps such as binding a bank card and entering a password, and the elderly are worried that operational errors may lead to property loss, so their willingness to use the service is relatively low. In a comparison between urban and rural areas, urban older people have a relatively high proportion of online payment use due to the high degree of financial literacy and the high degree of digitisation of their surroundings; in rural areas, financial literacy is not sufficiently publicised, and offline payment scenarios are still predominant, making rural older people's participation in this area lag behind.

As can be seen from Table 10, among the problems arising from the digital divide, not being able to use mobile phone e-banking, Alipay bill payment function, and code-sweeping ticket purchase function are more prominent. This reflects that after the expansion of online payment functions, the complexity of related operations has caused much inconvenience to the elderly, affecting their daily life and social participation. In terms of urban and rural digital policies, urban digital service systems are relatively well-developed, with a high degree of integration of online service functions and more guidance and training on digital services for the elderly; in rural areas, the promotion of digital services fails to give full consideration to the acceptance ability of the elderly, leading to difficulties for the elderly in facing these digital services.

4.1.4. Basic Digital Cognition Among Older People

As can be seen from Tables 11 and 12, most villagers have a very low level of understanding of digital villages and their related policy documents. This indicates that the digital village construction is deficient in publicity and promotion and does not adequately cover the rural elderly groups, making it difficult for them to understand and participate in the construction of the digital village, further aggravating the digital divide. A government-led, multi-party social support system for the digital divide among the elderly should be constructed, and relevant policies should be formulated to support public intelligent technological innovation for ageing, so as to truly satisfy the needs of the elderly, enhance their digital literacy, and gradually narrow the digital divide between the elderly and younger groups.

As can be seen from Table 13, publicity by village cadres in villages and households is the main channel for villagers to learn about digital villages (83.55 per cent). This shows that in rural areas, traditional publicity still plays an important role, but the publicity effect of other channels needs to be improved. From the perspective of urban and rural digital policy publicity, urban publicity channels are

Table 11 | Knowledge of the surveyed villagers about digital villages

depth of knowledge	proportions
Not at all.	78.0 per cent
unknown	10.4 per cent
general knowledge	8.8 per cent
relatively knowledgeable	1.6 per cent
understand completely	0.12 per cent

Table 12 | Whether the surveyed villagers have learnt about the relevant policy documents

depth of knowledge	proportions
Not at all.	83.02 per cent
unknown	7.2 per cent
general knowledge	8.8 per cent
relatively knowledgeable	0.8 per cent
understand completely	0.18 per cent

Table 13 | Channels through which surveyed villagers learnt about digital villages

Understanding Channels	proportions
Media channels such as television and newspapers	27.36 per cent
Publicity through village displays, banners, etc.	29.97 per cent
Rural cadres go to villages and households to promote	83.55 per cent
Jitterbug, WeChat, Weibo and other apps	9.12 per cent

diversified and online publicity is strong; while rural areas rely excessively on offline publicity, and online publicity resources are not fully utilised, resulting in the elderly having limited access to information about digital villages.

As shown in Table 14, villagers' knowledge of the content of digital village construction mainly focuses on network infrastructure, information service facilities, digital transformation of traditional infrastructure and agricultural production and management services. This reflects that villagers are more concerned about the digital village construction content that is directly related to their own life and production, but have insufficient knowledge of relatively abstract and complex content such as the digitisation of rural governmental governance and the digital village big data platform. In the process of implementing urban and rural digitalisation policies, cities are at the forefront of digitisation of government affairs and big data applications, while rural areas are lagging behind, and the acceptance and understanding of these emerging digital contents by rural elderly people require more guidance and training.

4.2. Multiple Regression Analysis

An ordered logistic regression model was built with total digital literacy as the dependent variable and age, educa-

Table 14 | What the surveyed villagers think digital village construction includes

Construction content	proportions
Network infrastructure (4G, 5G, broadband)	29.07 per cent
Information service facilities (towers)	29.07 per cent
Digital transformation of traditional infrastructure (in transport, logistics, etc.)	28.14 per cent
Rural livelihoods (education, health, culture, etc.)	12.33 per cent
Digitisation of rural governance (internet+ platforms for government, internet+ village and other services)	0.70 per cent
Digital Rural Big Data Platform	0.47 per cent
Various aspects of agricultural production, management and services	58.40 per cent
unknown	0.00 per cent

Table 15 | Results of regression analysis of factors influencing digital literacy

variant	Beta coefficient	standard error	Wald value	Exp(B)	95% CI
(a person's) age	-0.12	0.08	2.25	0.89	[0.77,1.03]
educational attainment	0.73**	0.15	24.07	2.08	[1.55,2.79]
solitude	-1.22***	0.28	18.91	0.29	[0.17,0.51]
Number of chronic diseases	-0.34*	0.16	4.52	0.71	[0.52,0.97]
Level of social support	0.61*	0.18	11.43	1.84	[1.29,2.62]
(Note: *p<0.05)	**p<0.01	***p<0.001)			

tion, living alone status, number of chronic diseases, and level of social support as the independent variables, and the results are shown in Table 15.

The results showed that educational attainment ($\beta=0.73$, $p<0.01$) and social support level ($\beta=0.61$, $p<0.05$) were significant positive predictors, while living alone status ($\beta=-1.22$, $p<0.001$) and number of chronic diseases ($\beta=-0.34$, $p<0.05$) constituted the main inhibitory factors, and the model had an explanatory power of Nagelkerke $R^2=0.62$. This suggests that educational attainment and level of social support contribute positively to the digital literacy enhancement of rural older adults, whereas living alone status and number of chronic diseases inhibit the development of their digital literacy. Elderly people with a high level of education have a relatively strong knowledge base and learning ability, which makes it easier for them to understand and master digital technologies; a high level of social support means that they can get more help in the process of learning digital technologies, such as guidance from family members and community training. Due to the lack of family companionship and support, it is difficult for the elderly living alone to get timely solutions to the difficulties they encounter when learning digital technology; the physical and cognitive abilities of the elderly suffering from chronic illnesses may be affected, and their ability and motivation to learn digital technology may also be reduced. Therefore, in the practice of enhancing the digital literacy of rural elderly people, we should focus on the two groups of elderly people living alone and those suffering from chronic diseases, and help rural elderly people to enhance

their digital literacy and narrow the digital divide by increasing the input of educational resources and strengthening the social support system.

4.3. Structural Equation Modelling

Structural equation modelling can be used to explore complex relationships between multiple variables, integrating multiple factors such as digital literacy, digital access, and social support, and analysing the direct and indirect paths of influence between them. In this study, digital literacy is taken as the core outcome variable, and digital access and social support are taken as exogenous variables to construct structural equation modelling. AMOS software is used for model estimation and fitting, and the data are collated in the following table in order to present the relationship between the variables and the degree of influence more clearly.

From the results of the model, digital access has a significant direct positive effect on digital literacy (standardised coefficient of 0.45, $p < 0.01$), indicating that good digital access conditions help to improve the digital literacy of rural older people. Social support also has a significant positive effect on digital literacy (standardised coefficient of 0.38, $p < 0.01$), implying that the higher the level of social support, the more pronounced the enhancement of digital literacy among the elderly. In addition, digital access also indirectly affects digital literacy by influencing social support, with an indirect effect value of 0.16 (0.40×0.40 , $p < 0.05$). The overall model had good fit indicators ($\chi^2/df = 1.85$, RMSEA = 0.06, GFI = 0.92, AGFI = 0.89, NFI = 0.90),

Table16 | Structural equation modelling path coefficients and effects analysis

trails	Standardisedco efficient	significance	P-value	direct effect	indirect effect	aggregate effect
Digital Access → Digital Literacy	0.45	statistically significant	<0.01	0.45	0.16	0.61
Social support → digital literacy	0.38	statistically significant	<0.01	0.38	-	0.38
Digital access → social support	0.4	statistically significant	<0.01	0.4	-	0.4

Table 17 | Results of the analysis of intermediation effects

move	independent variable	implicit variable	regression coefficient	t-value	P-value	Percentage of intermediary effects
1	educational attainment	Digital learning channels	0.55	6.23	<0.001	-
2	Educational attainment, digital learning channels	numeric attainment	0.38 (educational level) 0.30 (digital learning channels)	4.25 (educational level) 3.57 (digital learning channels)	<0.001 (education level) <0.01 (digital learning channels)	35.30 per cent
Sobel inspect	-	-	-	3.35	<0.01	-

suggesting that the model was able to explain the relationship between the variables well.

4.4. Analysis of Intermediation Effects

In order to explore the mechanism of action between the variables in depth, the mediating role of digital learning channels between the two was examined with educational attainment as the independent variable and digital literacy as the dependent variable, and the data were collated in the following table.

From the data in the above table, it can be seen that education level significantly and positively predicts digital learning channels. That is, the more educated rural older adults are, the more likely they are to acquire digital knowledge and skills through a variety of digital learning channels, such as the use of online courses, digital learning software, etc.; both educational attainment and digital learning channels significantly and positively predict digital literacy. This suggests that both educational attainment and digital learning channels have a positive effect on enhancing digital literacy among rural older adults; the mediating effect was significant ($Z = 3.35$, $p < 0.01$), indicating that digital learning channels partially mediate the relationship between educational attainment and digital literacy. The mediating effect was further calculated to be 35.3% of the total effect. This means that about 35.3% of the effect of educational attainment on digital literacy is achieved through digital learning channels.

5. Conclusion

The Party and the State have always attached great importance to the issue of rural farmers, and the construction of digital villages, as an important strategy for promoting rural development, is being steadily promoted. However, the phenomenon of "urban-rural digital literacy gap" is prominent at present, and the enhancement of rural residents' digital literacy has become a key factor restricting the construction of digital villages. Enhancing the digital literacy of rural residents is not only an inevitable trend for rural agricultural development in the era of the digital economy, but also a realistic need to promote the quality of rural residents' production and life and increase their income.

A survey and study of villagers over 60 years of age in Fangkou Village, Ruiyunguan Township, Huailai County, Hebei Province, found that rural older people have many problems with digital inclusion. Although most villagers have access to the Internet, some villagers are still not connected, and the differences in stability, speed, and cost of different networking methods affect older people's digital learning and use experience. In terms of digital resources, although the penetration rate of smartphones is high, the ownership rate of computers and other devices is low, and access to expertise and complex digital services is limited. Digital participation is low, with most older people using only the basic functions of mobile phones, and online payment and other functions less frequently, making the inconvenience of living due to the digital divide more prom-

inent. At the same time, rural older people do not know enough about digital villages and their related policies and documents, and there is a need to improve the effectiveness of the single channel of publicity and promotion. Further data analyses show that education and social support levels have a significant positive impact on the digital literacy of the rural elderly, while living alone and the number of chronic diseases inhibit the development of digital literacy. Digital access has a direct positive effect on digital literacy and also indirectly enhances digital literacy by affecting social support, and digital learning channels partially mediate the relationship between educational attainment and digital literacy.

5.1. Age-Friendly Technical Design

In order to solve the problem of the inconvenient use of digital access equipment for the elderly in rural areas, all efforts should be made to promote age-friendly technology design. In terms of hardware design, in strict accordance with the Design Standards for Aging-Ready Mobile Terminals, and starting from the physiological characteristics of the elderly, the contrast ratio of the screen should be increased to $\geq 4.5:1$, and the size of fonts should be increased to ≥ 18 pt, so as to ensure that the elderly can easily see the screen content. In terms of software design, drawing on the successful experience of the "Village Digital Assistant" APP in Wuzhen, Zhejiang Province, we have developed applications with practical functions such as voice navigation and remote handling (e.g., payment of water and electricity bills), and simplified the operation steps to less than three steps to reduce the difficulty of operation and improve the acceptance and efficiency of the elderly in the use of digital equipment and software. In addition, it will simplify the operation steps to less than three steps, improve the acceptance and use efficiency of digital devices and software for the elderly, and make digital technology better serve the elderly.

5.2. Tiered Digital Literacy Training System

In view of the significant impact of educational level on the digital literacy of rural older persons, it is necessary to build a tiered digital literacy training system. For older persons with an education level of less than primary school, "digital skills microcourses" are broadcast regularly on a daily basis, taking advantage of the wide coverage of village radio stations. The content of the lessons is centred on the digital skills needed in daily life, such as code-sweeping payment and the use of simple social software, helping them to gradually improve their digital literacy in an easy-to-understand way. For older people with junior high school education or above, special workshops are set up in townships with professional staff to provide guidance. The training focuses on e-government-related skills, such as online declaration for health insurance and online government affairs, to enhance their ability to participate in digital social affairs and better adapt to digital life.

5.3. Strengthening Social Support Networks

Considering the positive contribution of the level of social support to the digital literacy of rural older persons, an all-round social support network needs to be constructed.

At the family level, children are encouraged to take the initiative to care about the digital learning needs of the elderly, and to give them patient guidance and companionship in their daily lives, so as to help them overcome their fear of digital technology. At the community level, volunteers should be actively organised to carry out regular digital technology training activities and provide one-to-one support services to solve problems encountered by the elderly in the process of using digital equipment. The government and social organisations should increase investment in rural digital education, improve the construction of digital education infrastructure, create more places suitable for the elderly to learn digital technology, provide rich learning resources, and create a good external environment for the enhancement of the elderly's digital literacy.

5.4. Improvement of Digital Village Promotion

In view of the lack of understanding of the digital village policy among the elderly in rural areas, it is necessary to optimise publicity and promotion strategies. On the one hand, fully explore and make use of the advantages of the existing publicity channels in rural areas, for example, when rural cadres go into villages and visit households to publicise, they adopt graphic and interesting ways to explain the digital village policy and its practical benefits, so as to ensure that the elderly can understand and accept it. On the other hand, actively expand online publicity channels, with the help of short-video platforms, WeChat public number and other new media communication power, the production of publicity content in line with the cognitive characteristics of the elderly, such as simple and easy-to-understand animation, oral explanation video, etc., to improve the knowledge of the digital countryside policy in the rural elderly groups, to stimulate their participation in the construction of the digital countryside of the initiative and initiative, and to promote the process of the construction of the digital countryside together.

1. Li Tian. Research on the enhancement of rural residents' digital literacy in China's digital village construction [D]. Jilin University, 2023(02).
2. Zhou Hui. A study on the plight of the rural elderly in the digital divide[J]. Rural Economy and Technology, 2023, 34(08):153-157.
3. He Binfeng, Wu Lili. Building digital countryside to empower rural revitalisation[J]. Shanghai Rural Economy, 2023(06):18-19.
4. Zhang Xiaolan. Core Issues and Countermeasure Suggestions of Digital Economy Helping Rural Revitalisation[J/OL]. Southwest Finance:1-12[2023-06-18].
5. PENG Gang, GAO Jinsong. Digital economy, digital divide and urban-rural factor allocation--an empirical study based on 257 cities in China[J]. Research World, 2023(06):71-82.

<https://doi.org/10.70731/epk65524>

Madama Butterfly: Western Art, Cultural Mobility, and the Construction of Asian Identity from an Orientalist Perspective

Hongling Wu ^a, Jianfeng Zhang ^{a,*}^a College of Literature and Journalism, Jishou University, Jishou 416000, China

KEYWORDS

Madama Butterfly;
Cultural Mobility;
Orientalism;
Surrounding Communication

ABSTRACT

The Italian opera *Madama Butterfly*, which was created in the early 20th century, is one of the representative works of Western art that integrates Eastern elements. This paper examines the evolution of *Madama Butterfly* in its global dissemination and explores how power dynamics within a colonial context have shaped Western perceptions of Japan and its cultural hierarchy. It focuses on the shaping, dissemination and reproduction of the image of Asian women in Western art works, revealing how they have been symbolized and commodified, gradually solidifying into stereotypes of submission, sacrifice, and tragedy to align with Western aesthetic and cultural expectations. At the same time, it explores how *Madama Butterfly* has been reinterpreted in different historical stages, especially in the context of the awakening of Asian cultural subject consciousness, how Japan and other Asian countries reflect on and challenge the image of the East created by the West through reinterpretation and adaptation. The study reveals that the dissemination of *Madama Butterfly* not only reflects Western cultural hegemony in shaping Asian identities but also underscores the dynamic nature of cultural exchange. In the process of globalization, Asian nations are increasingly transitioning from passive recipients to active cultural agents, driving the reconstruction and critique of Orientalist narratives.

1. Introduction

Composed by Italian opera master Giacomo Puccini, *Madama Butterfly* is considered one of the most outstanding works in opera history. This Western artistic creation from the early 20th century serves as a classic text of "Oriental" narrative. The work not only carries Western imagination of Eastern culture but also influences subsequent reconstructions and productions of Eastern culture across different media. As a work rooted in Western cultural systems yet set against a Japanese backdrop, *Madama Butterfly* profoundly embodies the power dynamics in cultural transmission. Depicting Japan during its colonial period,

the author constructs and symbolizes Asian imagery through Orientalist narrative logic, deeply influencing the representation of Eastern women in 20th-century films and other artistic works about the East.

This paper conducts research on texts related to *Madama Butterfly*, analyzing them through theoretical frameworks including Orientalism, cultural semiotics, and surrounding communication theory to explore the unequal cultural relationship between the Western center and Eastern periphery. The research focuses on analyzing how *Madama Butterfly* constructs stereotypes about "Asia" within the context of "Orientalism," and reveals its image-shaping process during global dissemination. This process not

* Corresponding author. E-mail address: zhang2023xueshu@163.com

only embodies the cross-cultural flow of artistic works but also reflects the continuation and reinforcement of cultural hegemony under the Oriental discourse system. Additionally, this paper explores the intertextuality between artistic works, political rituals, and cultural communication, thereby transcending pure artistic evaluation to deeply reveal the cultural and political implications behind the work. Ultimately, in the context of contemporary globalization, we hope to reexamine and deconstruct Asian image representations rooted in colonial history, thereby promoting critical reflection on cultural representation and power structures.

2. The Birth of Madame Butterfly: an “Oriental” Story Centered on the “West”

2.1. The Representation and Narrative in Different Texts

The main storyline of the opera *Madama Butterfly* first originated from the French writer Pierre Loti's novel *Madame Chrysanthème* (1887), which was written in the form of a long diary. In this work, Loti narrates, in an autobiographical style, the story of a naval officer's brief marriage to a Japanese woman during his stay in Japan. The novel is set in Nagasaki, a city heavily influenced by Western culture. Even during Japan's period of national isolation (*sakoku*, 1633–1852), Nagasaki remained an essential port for Japan's interactions with the Western world. Through the perspective of the French officer, the novel provides extensive descriptions of the economic, cultural, and political impacts that the opening of Japan had on Nagasaki, illustrating the city's transformation under Western influence.

In the hands of American writer John Luther Long, *Madama Butterfly*, written in 1898, retained the story's original setting from Pierre Loti's work but shifted its focus more toward the protagonists' interracial marriage and cultural conflicts. Long's novel even introduced a scene in which the female protagonist, Cho-Cho-San, attempts suicide after being abandoned by a Western man, adding a deeper sense of tragedy to the narrative. This portrayal also laid the foundation for the stereotypical image of Asian women in the Western imagination.

John's novel later became the inspiration for American playwright David Belasco's stage adaptation. In 1900, Belasco adapted Long's story into a play, further intensifying the tragic elements by depicting the heroine's ultimate suicide for love. From this point on, the Western portrayal of Asian women as “gentle, submissive, and self-sacrificing” was fully established, profoundly influencing subsequent artistic works of a similar nature.

After watching Belasco's play in 1904, Giacomo Puccini was deeply moved and, following the operatic trends of the time, adapted the drama into an opera. By combining music and theatrical performance, Puccini heightened the emotional intensity and tragic elements of the story, culminating in Cio-Cio-San's death in the final act. Although the opera incorporated Japanese elements such as music, stage design, and rituals, Puccini himself had never visited Japan. As a result, his depiction of Japan was based on a

Western imagination of the East. Despite these “misinterpretations,” *Madama Butterfly* continued to be performed worldwide, even in East Asian countries such as Japan and China, reinforcing its status as a classic.

Although the opera *Madama Butterfly* emerged as a derivative “cultural byproduct” of a French novel, an American novel, and a stage play, its creation and global dissemination reflect a distinctly cross-cultural trajectory. However, its core narrative and artistic representation remained centered on Western cultural perspectives. At every stage of its textual transformation, Western portrayals of Oriental women as submissive and easily conquered, as well as the notion of the East as a colonial subject of the West, were preserved and reinforced. While the story is set in Nagasaki, its interpretation and depiction of “Japan” were not narrated by the Japanese themselves but rather constructed through the cultural and artistic lens of France, the United States, and Italy—countries that shaped and reinterpreted Japan within a Western framework. The opera's evolution exemplifies a process of cultural reconstruction dominated by the West, in which the authentic cultural identity of Japan, as the peripheral subject, was continually filtered and reshaped through layers of Western reinterpretation.

2.2. Geopolitical and Cultural Context of the Colonial Era

As a work born in the early 20th century, the setting of *Madama Butterfly* is deeply connected with the background of the time. During this period, Japan ended its “closed-door” policy that lasted for more than two centuries. Due to the “black ship” incident of the United States, Japan gradually opened its doors and quickly integrated from a feudal society into the Western modern world (Perry, 1968). Faced with the Japanese culture that was completely different from Western modern society, Westerners did not try to understand and tolerate these “novel” cultures. Instead, they were influenced by the “samurai spirit” and “hara-kiri” that were completely alien to the West. The Japanese culture labeled this country as “singular” or “extraordinary” to “emphasize the difficulty in understanding Japan and the Japanese.” (Yokoyama Toshio, 1987). Japanese culture is indeed completely different from Western culture. It was not established through the Western colonial system during its development, and it is not a “peripheral” product of Western colonial cultural expansion. Therefore, it is very difficult for the Western world to discuss Asian culture within the Western framework. In order to gain the right to explain and define the East, the West always incorporates the East into its own discourse system for interpretation.

As a work that emerged in the early 20th century, *Madama Butterfly* is deeply connected to the geopolitical and cultural context of its time. During this period, Japan had ended its more than two-century-long policy of national isolation (*sakoku*). Following the arrival of Commodore Perry's “Black Ships,” (Maldonado, 2014) Japan gradually opened its doors and rapidly transitioned from a feudal society to integration into the Western modernized world.

Confronted with Japanese culture, which was vastly different from that of the modern West, Westerners did not attempt to understand or embrace these “novel” cultural

elements. Instead, influenced by concepts such as “samurai spirit” and “seppuku” (ritual suicide), which appeared entirely alien to Western perspectives, they labeled Japan as “singular” or “extraordinary” to “emphasize the difficulty of comprehending Japan and its people” (Yokoyama Toshio, 1987: 5).

Indeed, Japanese culture was fundamentally different from Western culture, as its development had not been shaped by the colonial structures of the West and did not emerge as a “peripheral” product of Western colonial expansion. As a result, integrating Asian cultures into a Western interpretive framework posed a significant challenge for the Western world. In its pursuit of the power to define and explain the East, the West consistently incorporated the Orient into its own discursive system, interpreting it through a lens shaped by Western ideology and cultural dominance.

However, by positioning Eastern culture as the Other, Europe gained control and discursive authority over it. “the Orient is one of its deepest and most recurring images of the Other.” (Said, 2008:20) Europe, leveraging its geographical proximity to Eastern countries, engaged in plundering and colonization. Although the concept of the “East” encompasses a broad geographical scope, extending beyond East Asian nations such as Japan and China, it also includes parts of the eastern Mediterranean, such as Turkey, Palestine, Egypt, and the Maghreb—predominantly Muslim countries (Tromans, 2008:158). From a geographical standpoint, Japan is much farther from Europe, making it difficult to be incorporated into Europe’s “periphery” in a spatial sense. As a result, in order to establish colonial rule, European countries had to invest greater costs and effort to assert their dominance over Japan and other distant Eastern territories.

When *Madame Chrysanthème* (1887) was published, Japan had already entered the Meiji Restoration (1868–1912) and was actively pursuing industrialization and modernization, striving to integrate into the Western-dominated international order. By the time *Madama Butterfly* was created, Japan had not only achieved significant economic growth but had also begun its own colonial expansion in Asia. Despite this historical context, the storyline of *Madama Butterfly* remained consistent with Western cultural narratives, portraying Japan as static, traditional, and backward within the framework of Western colonial expansion. Through a Western-centric perspective, the opera selectively ignored Japan’s actual social and cultural development.

In shaping the plot of *Madama Butterfly*, the opera highlights the special privileges Westerners enjoyed in Japan. In the story, the American officer Pinkerton purchases a house for his convenience and boasts to his colleague that Americans are entitled to 999-year residency rights in Japan. Likewise, he mentions that if he marries under Japanese customs, the marriage could also be contracted for 999 years, but its validity is entirely at his discretion—he may dissolve it whenever he chooses. As an American, Pinkerton does not need to assimilate into Japanese culture or understand Japanese customs. By reinforcing Western superiority, the narrative positions Japan as the

“Other,” granting the West the authority to define and interpret its culture.

The creation and dissemination of *Madama Butterfly* coincided with a historical moment when Japan was beginning to challenge Western hegemony. This temporal coincidence gave the opera’s depiction of Japan a deeper political significance. By reimagining Japan as a traditional, weak, and easily dominated nation, the Western narrative effectively countered anxieties surrounding Japan’s rise. In doing so, it reaffirmed the West’s perceived cultural and moral superiority over the East.

3. The Construction of Power and Discourse in *Madama Butterfly*

3.1. Symbolism of Core and Periphery in Character Representation

The narrative of *Madama Butterfly* is entirely dominated by Western characters. The story is centered around an American naval officer as the protagonist, while the female lead is a Japanese geisha. This character and gender arrangement symbolically reflects the power dynamics between the core and the periphery.

As an American officer, Pinkerton enjoys supreme privilege in both material wealth and social status. His sense of superiority is evident in his interactions with the Japanese, as he displays open arrogance and disdain toward them. Despite residing in Japan, Pinkerton never shows any intention of integrating into local culture; instead, he views this foreign world with a detached and condescending gaze. This attitude is particularly evident in the wedding scene—what is considered a sacred ceremony by the Japanese is, to him, nothing more than a ridiculous farce. He exhibits clear contempt and rejection toward traditional Japanese marriage customs, perceiving them as bizarre, absurd, and even repulsive. During the wedding, he openly expresses his desire to return to America and marry a “real” American wife, reinforcing his perception of cultural superiority.

In stark contrast to Pinkerton’s arrogance, the Japanese characters in the story display almost blind admiration and reverence toward him. To them, this Western officer appears almost like a “king,” embodying supreme dignity and charm. Some of Cio-Cio-San’s female relatives even secretly hope that he will soon abandon her so that they might have the chance to marry this “noble” Western man. This self-deprecating attitude in their language further reinforces the unequal power dynamics between the East and the West, depicting a clear hierarchy in which the Japanese characters willingly place themselves in a subordinate position.

This starkly contrasted power structure reveals the underlying cultural relations embedded in Western narratives. Pinkerton, as the representative of the West, remains firmly positioned at the center of power, even in a foreign land, while the Eastern characters on the periphery are depicted as reverent and submissive toward Western authority. This characterization not only reflects the cultural biases of the creators but also serves as a metaphor for the real-world

dynamics of the colonial era—where Western influence continued to dominate even in the heart of Japan. This dominance granted the West the unchecked freedom to interpret, define, and even reshape Japanese culture to align with Western expectations and imagination.

3.2. The Representation of Asian Women in Colonial Aesthetics

The portrayal of female characters in this work most clearly reflects the way Western colonial aesthetics, represented by Europe, construct an imagined vision of Eastern women. When discussing the East within the framework of Western discourse, Said consistently depicts the Orient as “irrational, depraved, naive, and abnormal,” whereas The West represented by Europe “is rational, chaste, mature, and normal.” (Said, 2008: 25).

One of the most controversial aspects of the operatic adaptation of *Madama Butterfly* is the protagonist’s “American Dream.” After her marriage, Cio-Cio-San seeks to gain acceptance by abandoning her own culture and beliefs to conform to the expectations of her Western husband. She diligently learns Western customs, dresses in Western clothing at home, worships Western deities, and even insists that her servant call her “Miss Pinkerton”—all in an effort to sever her ties with Japanese society.

Cio-Cio-San remains unwavering in her faith that she will reunite with her husband, fantasizing that one day, Pinkerton will return and take her to America to live as a true American wife. Through her character, it becomes evident how the West seeks to construct an idealized image of the Oriental woman—one defined by ultimate self-sacrifice, unquestioning loyalty, delicate exotic charm, and absolute obedience to Western men. These characteristics embody the Western gaze’s romanticized vision of Eastern women. In a broader sense, Cio-Cio-San herself can be seen as a symbolic representation of the West’s imagination of the East.

When explaining the relationship between “Orientalism” and “gender,” Chizuko Ueno points out that “the Orientalist schema is identical to that of gender in the structuralist paradigm of binary oppositions” (Chizuko Ueno, 1996: 167). She simultaneously quotes Lévi-Strauss’s statement expressing binary opposition relationships “West, East, men, women; culture, nature.” (Chizuko Ueno, 1996: 167). A binary opposition structure also exists in Orientalist discourse: the West corresponds to men and culture; the East corresponds to women and nature. This structural correspondence explains why the West, when creating artistic works about the East, especially on Asian themes, tends to place “women” at the center of the narrative. The East in Western cultural imagination lacks “masculine qualities”—such as strength, decisiveness, and the desire to conquer—and this stereotype reflects the West’s underlying mentality to weaken Eastern images. By feminizing the East, Western culture constructs an implicit power relationship that positions the East in a perpetually passive and conquered position within this binary opposition.

The French sociologist Michel Foucault viewed discourse as a form of power, stating that “discourse is not simply that which translates struggles or systems of domi-

nation, but is the thing for which and by which there is struggle, discourse is the power which is to be seized.” (Foucault, 1970: 52-53). The character design in *Madama Butterfly* exemplifies the discursive dominance of the West over the East under cultural hegemony.

Through artistic works, the West defines and reconstructs the “Orient,” reinforcing a power dynamic in which the West—much like Pinkerton—is depicted as strong, wealthy, and possessing absolute authority, while the East is portrayed as respectful, submissive, and filled with admiration and fantasies about the West. This artistic representation reinforces the West’s control over the East, conveying a form of discursive surveillance that mirrors the hegemonic gaze Western nations impose upon their colonized Eastern counterparts.

3.3. The Dissemination and Reproduction of the “Asian Female” Representation

The representation of *Madama Butterfly* conforms to the stereotype of “Asian women” in Western art, such as “docile, passive, loyal, and sacrificial.” This image has been continuously replicated and reinforced through subsequent film and artistic works. Nearly all love stories set in China and Japan during the 20th century constructed this impression. For example, *Sayonara* (Joshua Logan, 1957), *The World of Suzie Wong* (1960), *Flower Drum Song* (1961), and the musical of 1989 *Miss Saigon* all reinforced the Asian female image in Western public consciousness by repeating character designs and story patterns similar to those in *Madama Butterfly*.

In *Sayonara*, the romance between a U.S. Air Force pilot and a Japanese dancer continues the narrative structure of an Eastern woman falling in love with a Western man, much like *Madama Butterfly*, though with a different ending. In *The World of Suzie Wong*, the contrast between the Hong Kong prostitute Suzie Wong and the British painter further amplifies the commodification and sexualization of Asian women. Although *Flower Drum Song* appears to depict the Chinese-American community, it continues the implicit narrative that Eastern women must undergo Westernization to achieve happiness. Meanwhile, *Miss Saigon* reinforces the core Orientalist themes of *Madama Butterfly*, setting its story against the backdrop of the Vietnam War. (Edward, 1991) The protagonist, a Vietnamese prostitute, falls in love with an American soldier, only to be abandoned, forced into separation, and ultimately driven to suicide. Despite the inclusion of a romantic element, the underlying narrative logic remains unchanged—the departure of the Western man, the waiting, and ultimate sacrifice of the Eastern woman.

These works share a common approach in defining their female protagonists, consistently portraying Asian women in marginalized roles—whether as a Japanese dancer, a Hong Kong prostitute, a Chinese-American immigrant, or a Vietnamese sex worker during the Vietnam War. These character choices serve a dual purpose: on one hand, they emphasize the accessibility of Eastern women; on the other, they reinforce their position as cultural “Others.” The depiction of geishas and prostitutes caters to Western sexual fantasies about Asian women,

while simultaneously justifying these fantasies under the pretext of cultural differences. Meanwhile, the characterization of immigrant or displaced women strengthens the notion of the East's dependence on the West, implying that Eastern women can only attain a better life through the assistance of Western (male) figures.

The persistence and reproduction of these portrayals also reflect the political attitudes of the West toward Asian countries during the Cold War era. Within the context of U.S. military alliances with Japan, South Korea, and other Asian nations, the unequal romantic relationships between Western men and Asian women serve as an implicit metaphor for the discursive and power dynamics between the West and East Asia. (Green, 1999)

In this framework, the West provides protection and guidance to countries like Japan and South Korea, while the East reciprocates with loyalty and obedience. As a result, even though some narratives deviate from the tragic ending of *Madama Butterfly*, they do not fundamentally challenge the existing power structure. Even in seemingly progressive storylines, the value of female characters remains defined through their relationships with Western men. Their dependence on and "love" for Western men ultimately signifies acceptance and internalization of Western values.

Thus, "Asian women" as a symbolic construct have never truly emerged as independent from the Western "periphery." Instead, they continue to exist in relation to and in dependence upon Western narratives and authority.

3.4. The Stability of the Western Artistic as "Center"

Juri Lotman introduced the concept of the "semiosphere," arguing that, much like the biosphere, signs exist within a specific domain known as the semiotic space. He stated: "The semiosphere is the totality of all cultures and constitutes the environment in which culture emerges and exists." (Lotman, 1998: 20). This space consists of both a "center" and a "periphery", with cultural symbols not being static but continuously circulating and transforming between these two areas. Signs flow from the periphery toward the center, providing continuous dynamism to the semiotic space. Throughout this semiotic exchange, the core elements of the work maintain a certain stability, while the periphery injects new vitality and evolving meanings, ensuring its relevance across time and space. (Kang Cheng, 2006)

As scholar Lu Di noted, "Any information spreads spatially from the center or periphery to the periphery or center in sequence, gradually increasing or decreasing; any change progresses from simple to complex and takes a long or short time." (Lu Di, 2021: 29).

As a work embedded with Orientalist stereotypes, *Madama Butterfly* establishes itself at the center of the semiotic space through Western operatic traditions and Orientalist narratives. Meanwhile, various artistic derivatives and adaptations surrounding the figure of *Madama Butterfly* form the periphery of this space. These peripheral elements continuously feed new creative interpretations and insights back into the center, shaping a cyclical

process of transmission, where meaning flows from periphery to center and then back again. This dynamic process has allowed *Madama Butterfly* to be continuously performed, disseminated, and consumed across different cultural contexts, solidifying its status as a timeless artistic classic.

4. Modern Interpretations of *Madama Butterfly*

4.1. The Transformation of Japan's Political and Cultural Status

Although the Meiji Restoration brought significant changes to Japanese society, marking its transition from feudalism to modernization, this transformation occurred alongside the expansion of Western imperialism. As an Asian nation, Japan occupied an ambiguous geopolitical position—it was the first country in Asia to achieve industrialization while simultaneously experiencing cultural infiltration from the West. As a peripheral entity within the Western world, Japan was not only at a disadvantage geopolitically but also found itself in a passive role within the structures of cultural representation. Japan lacked the authority to define its own image and was instead imagined and interpreted through Western artistic perspectives.

However, after the World War II, particularly from the 1960s to the 1980s, Japan underwent a period of economic recovery and cultural revival, significantly altering its position within the global peripheral communication system. The country's remarkable transformation—from a defeated nation to the world's second-largest economy—provided Japan with both the capital and agency to redefine its cultural identity. During this period, Japan transitioned from a passive receiver of Western culture to a cultural exporter. Traditional Japanese arts such as architecture, fine arts, and classical music, as well as modern cultural forms like anime and pop music, gradually gained acceptance in the West and were even imitated. The Japanese modern culture that had emerged as a peripheral product of Western influence in the 20th century was now being redefined.

Peter Burke describes cultural change as follows: the history of culture, in general, can be seen as a struggle between two forces. Sometimes one trend dominates; at other times, another prevails. In the long run, a balance is maintained between the two. (Burke, 2009). In this historical shift, the relationship between Japan and Western culture evolved from inequality to parity. The passive, submissive, and self-sacrificing image of Japan, as represented in *Madama Butterfly*, starkly contrasts with its modern international status. In the global cultural market, Japan has transitioned from being a mere subject of exotic consumption to a semi-peripheral cultural powerhouse capable of exporting its own cultural symbols, thereby engaging in a more complex interaction with the Western cultural center.

By integrating itself into the Western cultural framework, Japan has effectively shed its peripheral identity. This transformation disrupts the traditional center-periphery binary structure, creating a more complex, multi-centered cultural network. In this process, Japan has successfully

shifted from being the “Other” to an active participant with cultural agency and discursive power.

4.2. Madama Butterfly in the East: Reception and Criticism

As a globally renowned and phenomenon-level opera, *Madama Butterfly* has frequently encountered resistance upon entering Eastern markets. Eastern scholars and audiences often approach the opera with a critical perspective, analyzing it beyond mere artistic appreciation. Many Eastern viewers argue that the story clearly reflects stereotypes and cultural biases against the East.

Katahira Miyuki, a professor at Momoyama Gakuin University in Japan, conducted a survey on the opera’s reception among Japanese audiences. The majority of respondents expressed confusion over Cio-Cio-San’s blind devotion to a Western man and her self-destructive love. Many pointed out the opera’s numerous stereotypes and misconceptions about Japan, which, in their view, cannot be easily altered in current Italian productions of *Madama Butterfly*.

For Eastern audiences, particularly Japanese viewers, the opera presents a unique dilemma of “reverse adaptation”: they must either accept the distorted self-image presented in the story—essentially acknowledging the Western-constructed version of “Japan”—or completely reject a work that has already established itself as an authoritative piece in global art history.

Japanese artists have also made efforts to modernize and reinterpret *Madama Butterfly*. Japanese opera singer Takao Okamura revealed in the documentary “Puccini ni Idomu: Okamura Takao no Opera Jinsei” (*Challenging Puccini: The Opera Life of Takao Okamura*) that he once performed as Cio-Cio-San’s uncle at a German opera house. In that production, the character wore a traditional Japanese wig, a Western-style dress, and held a torii gate in his hands. When Okamura requested to wear an authentically Japanese costume instead, he was told that only he and a few Japanese audience members knew what was right or wrong. Determined to present a more authentic portrayal of Japanese culture, Okamura decided to correct the cultural inaccuracies in *Madama Butterfly* by modifying the Italian version of the opera. He not only revised certain misconceptions about Japanese culture in the libretto but also introduced costume and stage design changes to better reflect an authentic Japanese aesthetic. However, these efforts did not lead to a fundamental transformation of the opera. To this day, the Italian version of *Madama Butterfly*, laden with Japanese stereotypes, continues to be performed in major theaters across Japan.

Some Western scholars have also explored the cultural complexities and reception issues surrounding this work. Groos directly addresses the colonial mindset embedded in the opera, arguing that Cio-Cio-San is “sacrificed” because she embodies three layers of marginalization: being a woman, an Easterner, and a Japanese person. This multi-layered marginalization not only reflects the power inequalities of Western imperialism but also reinforces stereotypical depictions of Eastern women. As Groos notes, “the Japanese response would inevitably resist and

in some instances actively subvert it.” (Groos, 1989: 177). Similarly, Slonimsky questions the incompatibility between Western musical aesthetics and Japanese audience perception, stating, “I can say nothing for the music of *Madama Butterfly*. Western music is too complicated for a Japanese person. Even Caruso’s celebrated singing does not appeal very much more than the barking of dogs in faraway woods.” (Slonimsky, 1969: 5).

Opera, as an artistic medium, is not culturally neutral; rather, it is a product of the long-term development of Western civilization. Its musical structure follows Western tonal and harmonic systems, its vocal techniques are rooted in European bel canto traditions, and its dramatic construction relies on Western narrative logic and modes of emotional expression. These deeply ingrained elements inherently carry Western cultural values and aesthetic preferences, forming an implicit cultural framework.

As a result, when Japanese artists attempt to revise the cultural representations in *Madama Butterfly* while preserving the operatic form, they face an inherent contradiction. Even if costumes, stage designs, or specific cultural details are altered, the opera’s fundamental Western artistic framework remains intact. This makes it nearly impossible to achieve a truly transformative cultural adaptation.

For Asian audiences today, viewing these works—once considered “peripheral” by the Western cultural center—can be equally unsettling. This discomfort stems not only from the superficial distortions of culture but also from the deep-seated power imbalance embedded in the cultural representation.

When Asian audiences engage with these works, they do not merely see a misrepresented version of themselves; they also witness how the Orient has been shaped through the Western gaze to serve as a symbol fulfilling Western fantasies. This construct makes it difficult for Asian audiences to find authentic cultural recognition within these narratives. Instead, it heightens their awareness of Western cultural hegemony, reinforcing critical perspectives on how power dynamics influence representation and prompting deeper reflection on how to redefine and assert their own cultural identity.

5. Conclusion

As an artistic medium, opera serves as a unique representation of social and cultural transformations. This study has traced the evolution of *Madama Butterfly* in its global dissemination, revealing how Western art has constructed an imagined vision of Japan and Asia through the symbolization of Eastern female figures. The opera’s creators and its Western adaptors, using the operatic medium, have shaped an “Oriental” space that aligns with Western aesthetic and cultural expectations. This artistic representation is not a neutral cultural expression but rather a cultural construct embedded with power dynamics. The emergence of *Madama Butterfly* exemplifies the profound influence of Orientalism in artistic works.

As a cultural symbol, *Madama Butterfly* has undergone a complex process of movement from the center to the periphery, and back to the center throughout its global dis-

semination. Western opera traditions and Orientalist narratives have established the opera as a semiotic center, yet when introduced into Asian cultural contexts, reinterpretations and critiques from the periphery have reinvigorated the core with new meanings. This cyclical cultural flow not only reflects the role of Western cultural hegemony in shaping Asian identities but also illustrates the fluidity and complexity of cultural exchange.

With the increasing cultural awareness of Asian nations, interpretations of *Madama Butterfly* are no longer confined to a Western-centric perspective. Asian artists have actively reinterpreted and reconstructed the figure of Cio-Cio-San, deconstructing and challenging the long-standing stereotypes of Eastern women. These efforts have also prompted the West to critically reassess its own Orientalist narratives, contributing to a broader dialogue on cultural representation and power dynamics.

In conclusion, *Madama Butterfly*, as a symbolic vehicle for the dissemination of Orientalism, reflects not only the historical trajectory of East and West cultural encounters but also the emerging trends of cultural exchange in the context of globalization. Throughout this process, Asian nations have gradually shifted from passive recipients to active cultural creators, driving the reconstruction and critique of Orientalist narratives. This transformation fosters a more equitable and interactive cultural dialogue, challenging dominant representations and enabling a more balanced exchange of perspectives.

1. Behr, E. (1991). *The story of Miss Saigon*. New York: Arcade Publishing.
2. Foucault, M. (1970). *The order of discourse*. In *Untying the text: A post-structuralist reader* (pp. 48-78). Boston: Routledge & Kegan Paul.
3. Green, M. J., & Cronin, P. M. (Eds.). (1999). *The U.S.-Japan alliance: Past, present, and future*. New York: Council on Foreign Relations.
4. Groos, A. (1989). Return of the native, Japan in *Madame Butterfly* / *Madame Butterfly* in Japan. *Cambridge Opera Journal*, 1(2), 167-194.
5. Kang, C. (2006). Spatial interpretation of cultural semiotics: A study of Yuri Lotman's semiosphere theory. *Foreign Literature Review*, 2006(2), 100-108.
6. Katahira, M. (2016). How has Puccini's *Madame Butterfly* been perceived in Japan?: The issue of representation and cross-cultural understanding in media literacy education. *Media Literacy Education in the Bulletin of the Momoyama Gakuin University Research Institute*, 42(1), 125-142.
7. Lotman, Y. (1998). *Semiosfera Volume II*. Madrid: Ediciones Cátedra, S. A.
8. Lu, Di (2021). Construction and deepening of the paradigm of peripheral communication theory. *Contemporary Communication*, 2021(03), 28-31.
9. Lu Di, Xu Kepu, & Chen Si. (2015). The concept and characteristics of peripheral communication: A study on peripheral communication theory (Part 1). *Modern Communication (Journal of Communication University of China)*, 2015(3), 29-34.
10. Maldonado Baeza, J. I. (2014). Japón a los ojos de un italiano: *Madama Butterfly* de Giacomo Puccini. *Revista Pro Ópera*, 38-41.
11. Said, E. W. (2008). *Orientalismo* (J. Goytisolo, Presentation; M. L. Trans.). Barcelona: Mondadori.
12. Slonimsky, N. (2000). *Lexicon of musical invective: Critical assaults on composers since Beethoven's time*. New York: W. W. Norton & Company.
13. Tromans, N. (2008). *The lure of the East: British Orientalist painting*. London: Yale University Press.
14. Ueno, C., & Franco Toriz, G. (1996). *Orientalismo y género*. *Debate Feminista*, 14, 165-186.
15. Yokoyama, T. (1987). *Japan in the Victorian mind: A study of stereotyped images of a nation, 1850-80*. London: Palgrave Macmillan.
16. Zhou, Xiaobing, & Wang, Yanqi (2022). A new cultural historiography interpretation of "Cultural Mobility." *Practice and Theory of SEZS*, (3), 100-105.

<https://doi.org/10.70731/pr1wwk40>

A Swot Analysis of the Construction of a National Junior Paddleboard Instructor Training Course

Jiahui Li ^{a,*}, Yabin He ^a

^a Beijing Normal-Hong Kong Baptist University, Zhuhai 519087, China

KEYWORDS

*Paddleboarding;
Junior Coaches;
Course Construction;
Swot Analysis*

ABSTRACT

The purpose of this review is to analyse the current situation of junior paddleboard instructor training courses in China, and to explore their strengths, weaknesses, opportunities and challenges, in order to promote the standardised development of instructors, raise awareness of water sports safety, and encourage the consumption of fitness and sports tourism for all. This study used questionnaire data from 103 junior coaches to comprehensively assess the current situation of paddleboard coaches in China. The results of the study show that the strengths of China's paddleboard instructor training courses lie in the abundance of university resources, frequent races and a relatively complete curriculum system; the weaknesses lie in the incomplete curriculum system, inadequate safety services, small market capacity and unclear policy on water development. Opportunities lie in national support for the development of outdoor sports, and threats are mainly the lack of training funds. The conclusion is that there is still much room for improvement in China's paddleboard instructor training courses, and excessive competition should be avoided, focusing on experience, consumption and cultural promotion, and promoting the development of sports tourism and the industrial chain. It is recommended to enrich the course content, provide career development channels, strengthen instructor training, and establish a systematic and efficient instructor training mechanism

1. Introduction

The development of the social economy has resulted in an improvement in the living standards of residents; however, the fast-paced lifestyle has also given rise to a number of issues, including high pressure, urban diseases and sub-health (Lu, 2022). The increase in per capita disposable income has led to an elevated expectation of quality of life, which is no longer met by traditional lifestyle and sports programmes (Liu, 2022). Consequently, there has been a gradual shift towards the pursuit of emerging sports

such as surfing, diving, paddle boarding, rugby, skiing, and rock climbing.

On 4 August 2016, the Brazilian International Olympic Committee announced that five sports, including surfing, had been included in the 2020 Tokyo Olympic Games, thereby providing an opportunity for the development of water sports (Chen & Dong, 2022). In October of the same year, the State General Administration of Sports issued the Aquatic Sports Industry Development Plan, which emphasised the full use of China's rivers, lakes, seas and other natural water resources to drive the development of fitness, leisure, entertainment and related industries and in-

* Corresponding author. E-mail address: aug02h@126.com

dustry chains (General Administration of Sport of China, 2016). The plan also required the strengthening of the discipline construction of aquatic sports projects, and the establishment of a cultivation system that combines theoretical teaching and practical learning to further promote the development of aquatic projects.

Nevertheless, the development of paddleboarding and other water sports in China has been comparatively recent, resulting in a paucity of professionals and an absence of international paddleboard judges who could participate in international paddleboarding events. Consequently, there is a particular necessity to enhance the training of paddleboard coaches in China

2. Research Objects and Research Methods

2.1. Research Objects

The present study takes the training course for junior paddleboard coaches of the State General Administration of Sports as the research carrier, with the aim of analysing the standard training system and assessing its application value.

Surfing and paddleboarding courses in some of China's colleges and universities are utilised to carry out the required elements of the curriculum, including the teaching objectives, class scheduling, course offerings of venues and equipment, teachers, teaching priorities and difficulties, and course evaluation and so on.

2.2. Research Methods

2.2.1. Literature Method

A search was conducted on the China Knowledge Network for keywords such as "paddle board", "course system", and "SWOT analysis", among others, to understand the current status of the paddle board instructor training programme and to provide theoretical support for this study.

2.2.2. Questionnaire Method

A questionnaire survey was conducted through the coaches of the primary paddleboard coach training, and the questionnaire was distributed through Questionnaire Star for statistical purposes, and the link for completion was distributed inside the coaches' group, explaining the precautions for completion. The content of the questionnaire included the situation of coaches participating in training, and what problems exist in the course training content, etc., to provide data support for this study. A total of 103 questionnaires were distributed and subsequently recovered, with all of these being deemed valid. This resulted in a recovery rate of 100% and an efficiency rate of 100%.

2.2.3. Mathematical and Statistical Method

Excel software was used to centrally manage the data from the survey and to analyse the data collected to complete this study.

3. Research Findings and Analyses

3.1. Significance of the Construction of the Training Programme

Paddleboarding originated in Hawaii, U.S.A., and is loved by sports enthusiasts all over the world for its relaxation, leisure and close contact with nature. In recent years a number of higher education institutions in China have introduced new programs (Su, 2018). such as Xiamen University and Beijing University of Physical Education, have opened paddleboarding courses (Zhang, 2020) and in 2024, Hainan for the first time included paddleboarding in the single examination of colleges and universities, which indicates that paddleboarding is increasingly valued in the country

Paddleboarding controls body balance through leg strength, which can effectively exercise balance ability, and attracts many social enthusiasts to participate because of its strong adaptability of the venue and low learning difficulty (Sun, 2019). Although a number of paddleboarding events have been held around the world in recent years, the degree of participation and the frequency of the events are still not as high as other sports. Therefore, it is particularly important to strengthen the training of paddleboard coaches.

3.2. Definition of SWOT analysis Concept

SWOT analysis includes four aspects of Strength, Weakness, Opportunity and Threat, and is proposed by a professor of management at the University of San Francisco, U.S.A. SWOT can be divided into two parts: SW analysis focuses on the use of internal strengths to overcome weaknesses, and OT analysis focuses on the changes in the external environment. analysis focuses on the opportunities and threats brought by changes in the external environment see Table 1 (Chen & Chen, 2024). The SWOT analysis of the paddleboard instructor training programme aims to comprehensively assess its internal strengths and weaknesses, as well as the opportunities and challenges presented by the external environment

3.3. SWOT Analysis of Paddleboarding Coach Training Course Construction

3.3.1. Strengths of the Coach Training Course Construction

3.3.1.1. Some colleges and universities in China offer paddleboarding courses

Despite the recent emergence of paddleboarding in China, it was included in the sports single enrolment programme in 2023 (Liu, 2023). As an emerging fashionable leisure sport, paddleboarding presents diverse forms of development in domestic colleges and universities (Li & Li, 2024) showing the trend of its gradual recognition and popularity.

3.3.1.2. Frequent domestic and foreign paddleboarding events International organisations

such as the International Surfing Association (ISA) and the World Surfing League (WSL) regularly hold water

Table 1 | Matrix model table for SWOT analysis

	Advantage (S)	Weaknesses (W)
Opportunities (O)	SO Relying on internal strengths Taking advantage of external opportunities	WO Overcoming internal disadvantages Taking advantage of external opportunities
Threat (T)	ST Relying on internal strengths Evasion of external threats	WT Overcoming internal disadvantages Evasion of external threats

sports events around the world, and paddleboarding, as one of the important elements, has been widely promoted.

Paddleboarding can be played both on land and in bodies of water such as lakes and rivers, as well as in swimming pools. In China, there are famous large-scale paddleboarding events (Zhang, 2022) such as the Eight Hundred Miles Oujiang (Lishui) Landscape Poetry Road Paddleboard Race, the CHINA Jiangle Kayak Paddleboard Marathon Open, the Qingtian International Paddleboard Race, and the 2024 Asian Paddleboard Championships (Han, 2019; Zhang et al., 2024).which have further promoted the popularity and development of paddleboarding.

3.3.1.3.Enhanced paddleboard course construction

(1) Teaching objectives: The survey indicates that over 90% of junior coaches consider the training objectives to be clear and practical.The course is meticulously designed into two segments: the initial segment focuses on imparting theoretical knowledge of paddleboarding, while the subsequent segment is dedicated to the practical application of the skills and actions, thereby ensuring the successful mastery of the relevant competencies by the trainees. Additionally, the course incorporates essential safety knowledge and rules of the sport, ensuring that participants fully master the fundamental skills.Upon completion, students are required to pass both a theoretical and a practical test to verify their learning outcomes.

(2) Course arrangement: The duration of the course must be considered to ensure it is neither excessively brief, nor unduly protracted, thus compromising the educational efficacy or impeding the trainees' capacity to adhere to the programme. A survey of junior coaches revealed that the total duration of the training programme is approximately 72 hours, comprising 24 lessons of 3 hours each, which is analogous to the curriculum of paddleboard courses in institutions of higher education, ensuring systematic and effective learning (He et al., 2022).

(3) Course venues: paddleboarding venues are versatile and can be conducted either in school swimming pools or outdoors in natural bodies of water, such as lakes. The survey revealed that more than half of the training venues were located in lakes, emphasising the importance of safety measures. Trainees are required to wear life jackets during all paddleboarding activities to ensure their safety (Liu, 2023).

(4) The quality of the participants: The survey demonstrated that all 103 participants in the training programme attended due to their passion for paddleboarding or their future career development needs.All participants have participated in municipal and above paddleboarding competitions and obtained relevant certificates, and more than 80% of them have more than two years of paddleboarding experience, indicating that the overall quality of the participants is high.

(5) The quality of the instructors: The survey revealed that all instructors have successfully completed the coach training programme administered by the State General Administration of Sports. In addition, they have each coached more than 200 individuals, demonstrated their abilities in the organisation and officiating of paddleboarding events, and obtained the qualifications to officiate at a provincial level or above. The survey further revealed that all instructors possess a solid set of practical skills and a robust theoretical foundation, thus ensuring the quality of the training.

3.3.2.Inadequacies in the Construction of Coach Training Courses (Weakness)

3.3.2.1.Inadequate paddleboarding safety services

In the third section, which is entitled 'Inadequacies in the construction of coach training courses', the first point is 'Weaknesses in paddleboarding safety services'.According to a report by China Consumer News on 8 March, 023, the Consumer Rights Protection Committee of Pudong New Area, Shanghai, investigated 15 paddleboarding establishments and found that some of the establishments did not display information on the qualifications of coaches and did not set up safety warning signs.The survey showed that the ratio of instructors to students was uneven, ranging from 1:5 to 1:15.Excessively high teaching ratios lead to a lag in learning progress and a decline in experience for beginners. Furthermore, the investigation revealed that some clubs are remotely located and lack adequate changing and shower facilities, which is a cause of inconvenience to participants.In addition, the study found that some venues had insufficient safety measures in place, and that the instructors did not focus on explaining self-rescue techniques for falling into the water. Instead, they allowed the participants to go into the water on their own

after only simple instruction, which increased the safety risk for beginners.

3.3.2.2. Factors Restricting the Development of Paddleboard Sports

(1) Limited Participation Crowd: Paddleboarding can be considered a niche sport, with participants tending to be kayakers, swimmers, members of triathlon clubs, and water sports practitioners, and with less participation by school students and social youth. The limited availability of information on paddleboarding, coupled with the uncertainty surrounding the policy of opening up waters around the world, and the risk of management difficulties or over-utilisation of resources after the opening up of some waters, further limits the number of participants.

(2) Contradiction between the number and qualification of coaches: Paddleboarding has high requirements for coaches, who need to master first aid knowledge in addition to professional skills. Currently, coaches are required to pass the paddleboarding level training exam and hold the national paddleboard yoga junior coach induction qualification certificate. However, the number of qualified coaches is insufficient, which restricts the development of the industry (General Administration of Sport of China, Water Sports Management Center, 2022).

3.3.3. Opportunity for the Construction of Train-the-Trainer Programmes

November 2022, the General Administration of Sport, in conjunction with eight other departments, promulgated the Outdoor Sports Industry Development Plan (2022-2025), which expressly This document proposed measures to enhance the quality and efficiency of the outdoor sports service industry, with a view to strengthening the system of synergistic development of outdoor education, training, festivals, exhibitions and sports tourism, and other multi-industry modes, with competition and performance, fitness and recreation as the core. This provides policy support for the development of paddleboarding (Zhu & Zhang, 2023).

Concurrently, the Water Sports Management Centre of the State General Administration of Sport has facilitated an augmentation in the number of paddleboarding events, as evidenced by Figure 1. According to the Catalogue of National Paddleboard Events 2022-24 of the Aquatic Centre of the General Administration of Sport, the number of national paddleboard events escalated from 15 to 47 from 2022 to 2024 (General Administration of Sport of China, 2021). A similar trend is evident in the proliferation of provincial, municipal, and club races, suggesting a growing popularity and influence of paddleboarding in China. This development presents a favourable opportunity for the development of coach training courses.

3.3.4. Weaknesses in the Design of Trainer Training Programmes (Threat)

Training funds are an important part of instructor training and are used to pay for expenses related to teaching venues, coaches, equipment and so on. At present, the funding for paddleboard coach training mainly relies on the tuition fees of the students, which is RMB 2,800 per person, including coaching fees, equipment fees, examination

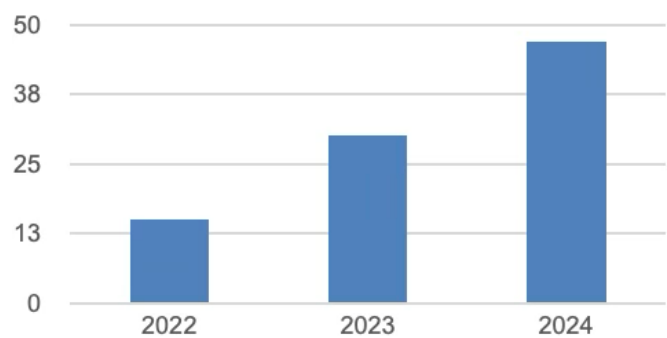


Figure 1 | National Paddleboard Race Statistics, 2022-2024

fees, venue fees, insurance fees, teaching materials, and so on. Due to limited funding, domestic coaches are generally invited to training courses, while hiring foreign first-line coaches, world champions or academic experts is more costly, limiting the further development of training.

To overcome this difficulty, it is necessary to diversify funding sources, make full use of social resources and project features, actively seek support from government departments, gradually improve the training framework for paddleboard coaches, and promote the long-term sustainability of the training programme.

4. Conclusions and Recommendations

4.1. Conclusion

4.1.1. Multiple Impacts of Paddleboard Training Courses

The surge in popularity of paddleboarding has led to a growing demand for coaches and senior technical athletes in the field. To address the limitations of the existing curriculum, the training programme should be grounded in university development, frequent competitions, and a meticulously designed curriculum. The scientific design of training courses has the potential to address these limitations, while concurrently imparting management skills to enhance the coaches' comprehension of course objectives, rhythm control, emotional management, teaching strain, and other domains. The multifaceted nature of paddleboarding, encompassing talent training, teaching content, and learner development, underscores the necessity for a comprehensive approach to address the emotional identity of participants at various levels (Lv et al., 2024).

4.1.2. Obstacles to Regional Development

Paddleboarding services are not perfect, the market volume is small, the policy of opening the waters is unclear and the division of rights and responsibilities is not clear. Water resources are considered public assets; therefore, the absence of a clearly defined policy regarding their utilisation carries the potential to heighten the risk of investment by clubs. The present domestic development model is predicated on the operation of clubs, while foreign development is driven by race operation and the sale of equipment. The utilisation of the nation's robust development of outdoor sports projects serves as a means to cir-

cumvent the challenge posed by the paucity of training funds.

4.2. Recommendations

4.2.1. Promotion Planning

The future water management centre will see an increase in the construction of water sports public service systems and industrial systems. This will serve to resolve the contradiction between the demand for national fitness activities and the lack of venues. It is anticipated that water sports will become intertwined with leisure tourism, water sports and equipment manufacturing, and other such activities. This will provide significant support to the fitness and leisure industry (Zhang & Zhang, 2017). Do not make the sport into a sports competition, to be made into an experience, to be made into a consumer, to be made into a culture to promote the sport, thus driving sports tourism consumption, and promote the development of the industry chain.

4.2.2. Enrichment of Teaching Content

The curriculum should combine with the latest trends and hotspots of paddleboarding to add new modules such as paddleboard golf, paddleboard fitness, paddleboard ball, ice paddleboarding, etc, so as to enhance the diversity and practicability of the curriculum.

4.2.3. Career Development Channels Should Be Provided.

A perfect professional standard and qualification system for paddleboard coaches should be formulated, and a systematic training system should be established. Social support and protection should be increased, and relevant policies should be introduced to create a favourable environment for career development.

4.2.4. Teacher Training and Capacity Building Should Be Strengthened.

Expert exchanges and cutting-edge knowledge training should be carried out regularly to improve the level of teachers. International paddleboard organisations should be engaged with to learn from foreign coach training experience and sports development concepts.

There is still much room for improvement in the training of paddleboard coaches in China, and a systematic and efficient training mechanism can be constructed through the cooperation of experts from colleges and universities, clubs, equipment manufacturers and other fields, so as to clarify the fundamental competencies, instructional materials, and evaluation criteria (e.g., paddling, lifesaving, physical fitness, etc.) must be delineated to align with the evolution of the sport and societal requirements, thereby fostering the collective utilisation of resources and fostering enduring collaboration.

- Lu, N. (2022, September 24). Camping, frisbee, paddleboarding: Trendy outdoor activities. *China Cultural Daily*, p.1. <https://doi.org/10.28144/n.cnki.ncwhb.2022.003325>
- Liu, Y. T. (2022). Paddleboarding becomes a sensation in Dalian. *Northeast Window*, 11, 66–67.
- Chen, L. M., & Dong, K. W. (2022). The development of surfing talent in China under the background of the 2024 Paris Olympics. In *Proceedings of the 12th National Sports Science Congress* (pp. 105–107). Wuhan Institute of Physical Education. <https://doi.org/10.26914/c.cnkihy.2022.008883>
- General Administration of Sport of China. (2016). Development plan for water sports industry. Retrieved March 3, 2025, from <https://www.sport.gov.cn/n315/n330/c774670/content.html>
- Su, H. (2018). Research on the construction of surfing and paddleboarding courses in some Chinese universities [Master's thesis]. Beijing Sport University.
- Zhang, D. T. (2020). The feasibility of paddleboarding in water safety education for college students. *Martial Arts Research*, 5(6), 147–149. <https://doi.org/10.13293/j.cnki.wskx.008438>
- Sun, Z. N. (2019). The impact of paddleboarding and land-based core training on the core function of swimming majors [Master's thesis]. Beijing Sport University. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFD201902&filename=1019140998.nh>
- Chen, S., & Chen, Z. X. (2024). SWOT analysis and targeted strategies for junior high school health education courses. *Sports & Health*, 8, 121–124.
- Liu, C. (2023). Focus points for sports single recruitment in 2023. *Examinations & Admissions*, 4, 5–6.
- Li, P. Z., & Li, Y. (2024). High-quality development of outdoor sports courses in Hainan universities under the new quality productivity perspective. In *Proceedings of the 1st National Outdoor Adventure and Leisure Sports High-Quality Development Seminar* (p. 875). Haikou Economic College. <https://doi.org/10.26914/c.cnkihy.2024.014420>
- Zhang, Y. J. (2022). The impact and pathways of paddleboarding events on urban image [Master's thesis]. Shanghai Normal University.
- Han, H. Y. (2019). Paddleboarding competition highlights fashionable Qingdao. *Towards the World*, 45, 70–75.
- Zhang, Y. H., Mao, L., Tang, J. C., Li, Y. X., & Niu, X. H. (2024). Exploring the high-quality development of mass water sports. *Sports Culture Review*, 9, 56–61.
- He, J. R., Xie, L. Y., & Tang, N. (2022, June 8). Jiangsu University of Science and Technology launches the first sports specialty course in provincial universities. *Jiangsu Science & Technology Daily*, p. A13. <https://doi.org/10.28472/n.cnki.njskj.2022.000562>
- Liu, H. (2023, March 8). Upgrading safety services for paddleboarding. *China Consumer News*, p.4. <https://doi.org/10.28867/n.cnki.nxfzb.2023.000408>
- General Administration of Sport of China, Water Sports Management Center. (2022). Notice on the release of the management measures for surfing (paddleboard) project clubs (trial). Retrieved March 3, 2025, from <https://www.sport.gov.cn/sszx/n5207/c24219531/content.html>
- Zhu, Y. C., & Zhang, Q. (2023). Interpretation of the development plan for outdoor sports industry (2022–2025). *Zhejiang Sports Science*, 45(4), 56–63.
- General Administration of Sport of China. (2021). Notice on the public solicitation of hosts for the 2022 national surfing events. Retrieved March 3, 2025, from <https://www.sport.gov.cn/n20001280/n20067662/n20067740/c23660335/content.html>
- Lv, H. L., Liao, L. J., Ma, P. Y., & Fu, T. R. (2024). Consumer spatial perception and value seeking in paddleboarding: Application of the means-end chain theory. *China Sports Science and Technology*, 60(1), 82–89. <https://doi.org/10.16470/j.csst.2024013>
- Zhang, N. N., & Zhang, P. L. (2017). Development path of China's water sports industry from a cross-border integration perspective. *Sports Culture Review*, 6, 124–129.

Call for Papers

The Journal of Global Trends in Social Science (JGTSS) invites researchers, scholars, and practitioners to submit high-quality, original research for publication. As a peer-reviewed, open-access academic journal, JGTSS is dedicated to advancing interdisciplinary research and fostering innovative insights into the evolving dynamics of social science.

Permanent Column: Surrounding Communications Research

This column serves as a strategic cooperation platform with the Center for Surrounding Communication Studies, Peking University. It is dedicated to advancing the systematic development of China's original "Surrounding Communication Theory" and fostering global dialogue. The theory was first proposed by Professor Di LU in 2013 and has since been recognized as one of the "Four Major Indigenous Theories in Journalism and Communication Studies in China" and one of the "Top Ten Original Theories in Chinese Philosophy and Social Sciences." It provides an innovative analytical framework for understanding geopolitical information flows and cross-cultural communication mechanisms. It seeks to:

- Paradigm innovation and empirical studies in surrounding communication
- Comparative analyses of regional communication ecosystems
- Digital media's evolving role in geopolitical discourse
- Mechanisms of cross-border cultural diffusion
- Policy evaluation in transnational communication governance

Guest Editor: Di LU

Professor, School of Journalism & Communication, Peking University, Beijing, China
Director, Center for Surrounding Communication Studies, Peking University

Permanent Column: Frontier Research in Intellectual Property Law

This column focuses on cutting-edge issues in intellectual property law, entertainment law, and the legal governance of traditional culture, exploring the adaptability and evolution of legal systems in the context of globalization and digital transformation. It also examines the practical applications of legal frameworks in industrial innovation, cultural protection, and social governance. It seeks to:

- Intellectual Property Protection and Legal Challenges in the Digital Economy Era
- Legal Mechanisms for IP Licensing, Financing and Industrial Innovation
- Platform Economy, AI-Generated Content (AIGC) and Legal Liability Issues
- Regulation and Countermeasures Against Malicious IP Litigation in Cyberspace

Guest Editor: Yanmin QUAN

Professor, School of Law, Xi'an Jiaotong University
Council Member, Intellectual Property Law Research Committee of China Law Society
Council Member, China Law Society on Science and Technology Law

Scope of the Journal

JGTSS seeks contributions across a broad spectrum of topics in the social sciences, emphasizing interdisciplinary perspectives and global relevance. The journal welcomes submissions in areas including, but not limited to:

- **Sociology and Social Theory:**
Social structures, inequalities, and societal transformations in the context of globalization and transnationalism.
- **Cultural Studies and Diversity:**
Multiculturalism, cultural heritage, identity formation, and conflict resolution strategies.
- **Economic Trends and Social Impact:**
Global economic shifts, labor markets, migration, income inequality, and poverty alleviation.
- **Political Science and Governance:**
Governance frameworks, public policy, democracy, populism, and international relations.
- **Psychology and Human Behavior:**
Mental health, social psychology, behavioral economics, and technology's influence on behavior.
- **Education and Lifelong Learning:**
Educational access, innovative teaching methods, and policies fostering inclusivity and equity.
- **Communication and Media Studies:**
Media narratives, digital communication trends, and their societal implications.
- **Public Health and Social Policy:**
Health equity, social determinants of health, and the intersection of public health and social policy.
- **Environmental and Social Sustainability:**
Climate adaptation, environmental justice, and sustainable community practices.
- **Linguistics and Language Studies:**
Multilingualism, sociolinguistics, translation studies, and discourse analysis.
- **Anthropology and Ethnography:**
Comparative studies of societies, ethnographic research, and cultural anthropology.
- **Criminology and Legal Studies:**
Justice systems, comparative legal frameworks, and policing strategies.
- **Social Work and Community Development:**
Strategies for social inclusion and community-driven development.
- **Globalization and Development Studies:**
Sustainable development practices, cross-cultural analyses, and globalization's societal impacts.
- **Interdisciplinary and Emerging Fields:**
Integration of digital humanities, data science, artificial intelligence, and public policy in social science research.

JGTSS especially encourages interdisciplinary submissions that bridge fields such as sociology, public policy, economics, and communication studies, offering innovative frameworks and global perspectives.

Types of Submissions

- **Research Articles (4,000–8,000 words):**
Presenting original findings and theoretical advancements.
- **Review Articles (4,000–8,000 words):**
Comprehensive overviews and critical evaluations of existing literature.
- **Case Studies (4,000–6,000 words):**
In-depth analyses of specific projects, policies, or social phenomena.
- **Perspective Articles (1,500–2,000 words):**
Brief, thought-provoking pieces proposing new ideas or offering expert commentary.

- **Special Issue Proposals:**

Thematic collections (6–10 articles) addressing timely and impactful topics in the social sciences.

**Note: Translations of articles originally published in another language will not be considered.*

Open Access and Peer Review

JGTSS is committed to the principles of open access, ensuring all published research is freely available to readers worldwide. Articles undergo a rigorous double-anonymous peer review process to maintain academic integrity, objectivity, and fairness.

Submission Guidelines

Manuscripts must adhere to the Author Guidelines and be prepared in Microsoft Word or PDF format. Detailed formatting instructions are available on the journal's website. Submissions should be made via the online portal at: <https://press.jandoo.ac/journals/jgtss>. For inquiries, please contact the JGTSS editorial team at **E-mail** (editorialoffice.jgtss@press.jandoo.ac).

Submission Deadline

Submissions are accepted on a rolling basis, ensuring timely review and publication.

We look forward to receiving your contributions and engaging in a shared effort to advance the field of social sciences.

JOURNAL OF GLOBAL TRENDS IN SOCIAL SCIENCE
VOLUME 2, NUMBER 3
(MARCH 2025)

Journal of Global Trends in Social Science (JGTSS) is an international, peer-reviewed, open-access academic journal committed to publishing cutting-edge research and fostering interdisciplinary dialogue in the social sciences.

JGTSS provides a platform for scholars, practitioners, and policymakers to share insights and engage in discussions about emerging trends, global challenges, and transformative opportunities in the field.

Address:

1-53-13, Nishigahara
Kita City, Tokyo
114-0024
Japan

Tel: +81 (0)80-8515-9423

E-mail: editorialoffice.jgtss@press.jandoo.ac

Official website: <https://press.jandoo.ac/journals/jgtss>

