

How Global Languages Spread in Africa? A Geographic Insight from International Language Promotion Institutions

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Abstract

Language promotion institutions are important platforms for countries to promote language and cultural exchanges. Taking the typical international language promotion institutions established in Africa as the research objects, this paper explores their spatio-temporal evolution and formation mechanism from a geographical perspective. The methods used in this research are mathematical statistics and spatial analysis and the results show that: The temporal pattern of international language promotion institutions in Africa can be divided into three stages; namely "slow growth - ups and downs - rapid growth." The spatial pattern shows that international language promotion institutions are present in most African countries. In the development, they have shown a trend of coastal distribution, and are mainly concentrated on the southern coast of Central Africa and the eastern coast of the whole continent. There are three distribution preferences in Africa for typical international language promotion institutions from different countries: Scattered distribution in a few countries, concentrated distribution in coastal areas, and proximity to promotion countries. The regression results show that GDP, import of cultural goods, historical international language promotion institutions of a country, and the bilateral trade volume affect the development of international language promotion institutions in Africa. This paper argues that the spatio-temporal pattern of international language promotion institutions in Africa has been formed under the push of the promotion country and the pull of the host country.

Keywords: international language promotion institutions, spatio-temporal evolution, influencing mechanism, Africa

1. Introduction

In the process of continuous development and evolution of human civilization, culture functions as a soft power of a country or a nation while language serves as the primary medium for transmitting culture. Together, they provide essential means for international communication and integration across diverse cultural backgrounds. Language promotion institutions are international cultural institutions that serve as platforms for countries to engage in international language promotion through language teaching and

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exchange activities, thereby facilitating interpersonal communication (Cheng, 2015). Language promotion institutions have been developing for around 140 years. After creating the Alliance Française in 1883, countries followed suit and established international language promotion institutions such as the Italian Dante Alighieri Society, the British Council, and the Bulgarian Cultural Centre for language promotion and cultural awareness. The Confucius Institutes were established in 2004 in China based on the explorations of the experience of language promotion in Western countries. The practice has shown that these specialized institutions have become the mainstay of language promotion policy implementation and cultural advancement in various countries. They not only effectively facilitate the global dissemination of national languages and cultures but also serve as catalysts for national foreign direct investment and international trade by leveraging language and culture. Moreover, they assist countries in reaping economic dividends (Lien and Lo, 2017), rectifying negative perceptions, fostering tourism, facilitating international exchanges, thereby bolstering soft power capabilities, and contributing to the cultivation of harmonious international relations (Zakharova, 2017, Hartig, 2015). Therefore, conducting comprehensive academic analysis and comparative research on the world's leading language and culture promotion institutions holds both theoretical significance and practical implications for the global dissemination of languages and cultures across nations.

Since the time they had emerged, language promotion institutions have drawn the interest of academics from various disciplines, including culture and politics. For a long time, academics have studied language promotion institutions, mainly concentrating on policy and cultural aspects. They contend that language promotion institutions have a positive impact on promoting the worldwide spread of language and culture, facilitating international trade and contacts, building national brands, and improving international relations, and are an important part of national cultural diplomacy (Kessel, 2011; Lien and Lo, 2017; Paschalidis, 2009; Vaughan, 2005). Simultaneously, the forces of globalization and information technology expedite the global dissemination of languages, prompting discussions on neo-imperialism and neo-colonialism. The objective repressive impact of globalization on non-central cultures is evident (Holton, 2011). The excessive emphasis on the English language has, to some extent, impacted the status of Arabic in Saudi Arabia, thereby compromising the expression of Muslim identity (Al Allaq, 2007). Preserving national culture and upholding national identity are paramount concerns for all nations. Establishing international institutions dedicated to promoting linguistic diversity stands as one measure to address this issue. As for the objective of the study, there are more studies on individual institutions,

especially the Alliance Française (Horne, 2018), the British Council (Gu, 2005), the Goethe-Institute (Zeitgeschichte and Michels, 2005) and other well-established European language promotion institutions with a rich developmental heritage. After the establishment of Confucius Institutes, Chinese scholars have gradually paid more attention to language promotion institutions. The existing research primarily encompasses: (1) Institution overview, which introduces the background and process of establishment, purpose and objectives, organizational model, operational mechanism, and funding sources (Cao, 2016), (2) Comparative analysis between different institutions that compares their differences and similarities in terms of organizational structure, cultural communication models, language teaching resources, activities, and cooperation methods with other institutions (Cai, 2019; Cao, 2014) and (3) Discussion on the language communication function and cultural communication function of language promotion institutions by investigating their policies, communication models, methods, approaches to language education as well as evaluating their effectiveness (Wu, 2009; Zhang and Zhang, 2022).

Based on a geographic viewpoint, there are fewer studies of language promotion institutes, with most of the studies falling on the global and national scales. For instance, it has been analyzed whether there are other motives of international language promotion institutions other than promoting their national languages abroad determining their global distribution (Treutlein and Schneider, 2006). Gao Yong'an (2014) conducted a cultural geography analysis on the correlation between the global distribution of Confucius Institutes and population, economy, and culture. Wang Li (2022) identified three developmental stages in the establishment of Confucius Institutes and examined their global layout and associated influencing factors from a diachronic perspective. As the continent with the highest concentration of developing countries in the world, Africa is increasingly communicating with the world, but few studies have been conducted on international language promotion institutions in Africa. Huang Changbin et al. (2020) conducted an analysis on the status of the distribution of Confucius Institutes in Africa and proposed optimizing their layout while presenting a sustainable development strategy for these institutes.

Previous studies have indicated that the geographical distribution of an organization can partially reflect its competitiveness and level of development. When an organization exhibits a certain degree of spatial agglomeration, its competitive advantage is influenced not only by internal attributes but also by external spatial factors (Lien and Lo, 2017). However, existing research primarily focuses on descriptive analyses of the organizational structures, operational mechanisms, and functional responsibilities of international

language promotion institutions, with less exploration of their external geographical distribution characteristics and locational influences. In these geographical studies, the research scales primarily focus on the global and national levels, overlooking the intercontinental distribution disparity and the uneven development of international language promotion institutions. In addition, despite the increasing emphasis on cultural exchanges with Africa by countries worldwide, the number of language promotion institutions in Africa remains relatively small compared to other developed regions globally. Consequently, there exists significant untapped potential for development in this area, which has received insufficient attention from relevant organizations regarding its distribution or layout. To broaden the research perspective on international language promotion institutions and provide guidance for their creation, this paper uses a combination of mathematical statistics and spatial analysis to examine the spatial and temporal distribution characteristics of international language promotion institutions in Africa and their influence mechanisms from a geographical perspective.

2. Study area and data

Located in the western part of the Eastern Hemisphere, Africa covers a land area of approximately 30.2 million square kilometers, or 20.4% of the world's total land area, making it the second largest continent in terms of area and the second most populous in the world. Africa comprises 56 sovereign states (54 of which are member states of the United Nations), where a multitude of indigenous and colonial languages coexist, resulting in a rich linguistic diversity and intricate language dynamics. According to the annual reports of prominent language promotion institutions in recent years, Africa exhibits a comparatively smaller number and scale of international language promotion institutions compared to other countries and regions worldwide. Additionally, efforts towards cultural communication with Africa are relatively weaker. The challenges related to funding, teachers, and infrastructure also pose more significant issues. Therefore, studying typical international language promotion institutions in Africa from a geographical perspective holds significance in optimizing the spatial distribution of African language promotion institutions and fostering cultural exchanges between Africa and the global community.

Considering the availability of data, this paper selects seven typical international language promotion institutions with a relatively large scale and quantity in Africa for the study: the Alliance Française, the Dante Alighieri Society of Italy, the Goethe-Institute of Germany, the British Council, the Instituto Cervantes of Spain, the Confucius Institute of China, and the Sejong Institute of Korea. The data was collected by reviewing the official websites

and annual reports of the international language promotion institutions, 271 pieces of data about the location, number, and opening dates of the international language promotion institutions created in 53 African nations and territories as of January 2022. For the analysis of the influencing factors, the geographical distance was obtained from ArcGIS measurements. The bilateral trade volume was sourced from the United Nations Commodity Trade Statistics database, and total GDP and imports of cultural products were obtained from the World Development Indicators (WDI) compiled by the World Bank.

3. Results

3.1 Quantitative distribution

The statistical data on the number of seven major language institutions in African countries is presented in Figure 1. six countries—Madagascar (33), South Africa (28), Nigeria (19), Morocco (17), Kenya (11), and Ghana (10), are in the top group with more than ten language promotion institutions, far ahead of all other countries. The quantities of language promotion institutions in other countries are relatively less. Benin, Equatorial Guinea, Djibouti, Guinea, Gabon, Lesotho, Liberia, Libya, South Sudan, and Chad have only one language promotion institution in total in these ten countries, demonstrating the unequal distribution of language promotion institutions across Africa. Through the examination of countries with limited presence of international language institutions, it is observed that these nations exhibit certain distinctive characteristics: small territorial size, exemplified by Lesotho and Swaziland as compact South African states; political instability and social unrest, evident in Somalia and Libya; unfavorable natural environment, such as Niger and Chad situated in the Saharan hinterland, along with South Sudan and Central Africa located on the southern fringes of the Sahara Desert characterized by arid climates and challenging ecological conditions. Concurrently, these countries also share a common attribute of diminished global influence.

Four categories of European language promotion institutions, namely the Alliance Française, the Dante Alighieri Society, the Goethe-Institute, the British Council, and the Instituto Cervantes have established a total of 200 institutions in Africa, representing a significant proportion of 73.8%. With a concentrated distribution characteristic, four countries; Madagascar, South Africa, Nigeria, and Morocco have more than ten language promotion institutions. The comparison of the number of language institutions from Europe and Asia is illustrated in Figure 2. In terms of scope and level of development in Africa, the Alliance Française has a clear advantage owing to its 115 institutions, or 42.4% of the total, which has the largest number of

European language promotion institutions. The number of Asian language promotion institutions is less than that of the European counterparts, with China’s Confucius Institute and Korea’s Sejong Institute opening a combined 71 institutions in Africa, or 26.2% of the total. Though the total number of Asian language promotion institutions is small, they are distributed widely among 47 African countries and regions. The Confucius Institutes have established 61 branches in Africa, constituting 22.5% of the total number, thereby serving as the predominant institution for promoting Asian languages in Africa.

Overall, the quantitative characteristics of language promotion institutions in Africa are dominated by the Alliance Française and the Confucius Institute, which are leading the number of other language promotion institutions. International language promotion institutions have spread to almost all African countries and regions, but compared to other continents in the world, the total number is small, and the level of development is low. The number of international language promotion institutions in most countries is even less than 10, showing that there is still plenty to play for.

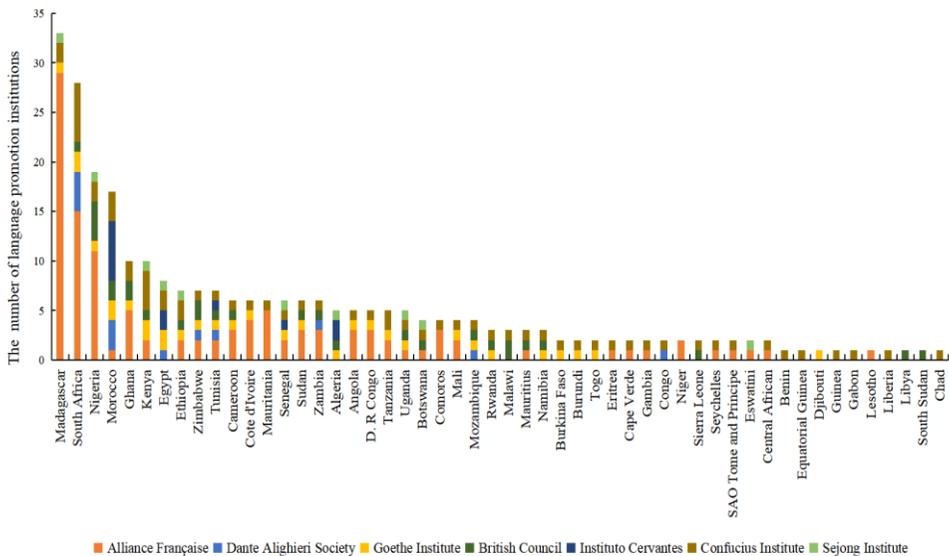


Figure 1: Ranking of the number of language promotion institutions in Africa

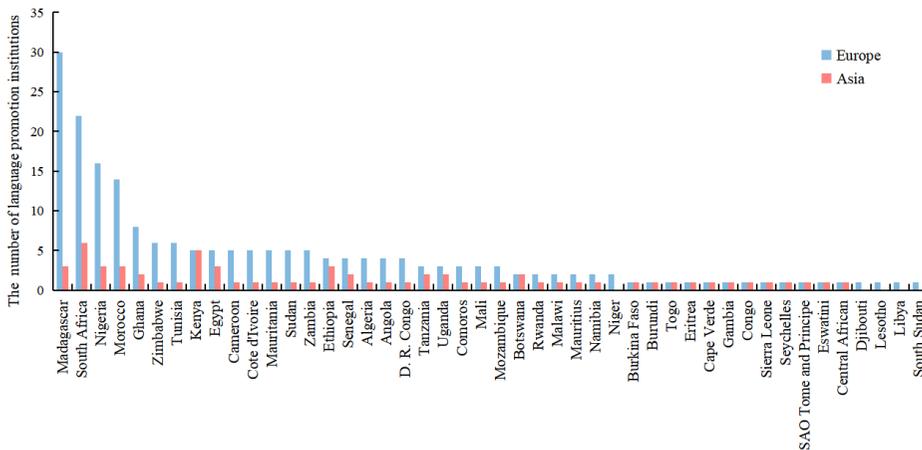


Figure 2: Comparison of the number of international language institutions opened in Africa between Europe and Asia

3.2 Chronological evolution

In July 1883, France made Tunisia its “protectorate” and supported the French government in consolidating its rule in Tunisia, which was one of the direct causes of the establishment of the Alliance Française. It was also the beginning of developing language promotion institutions in Africa (Cao, 2016). Since then, other countries have established language promotion institutions in Africa to disseminate languages and cultures to Africa, and the number of African language promotion institutions has grown to this day. Regarding chronological evolution, the development of language promotion institutions in Africa can be divided into three stages, as illustrated in Figure 3, based on available data when establishing international language promotion institutions.

Before World War I and between the two world wars (1883-1945), the number of new language promotion institutions in Africa was very small and grew slowly, with only 21 new institutions added during sixty years, which was the initial period in the development of language promotion institutions in Africa. After that, Western European countries established language promotion institutions for cultural propaganda. Following the defeat of the Franco-Prussian War in 1970, France lost its European hegemony, and its political, economic, and military power also weakened, prompting the French elite to shift their mindset and place more emphasis on “soft power” over the colonies through some ways like political systems, ideology, culture, and art. Using the Alliance Française’s unofficial status to teach French to colonized populations in Africa proved to be one of the most effective methods, and the first four international language promotion institutions in Africa were all Alliance Française. After forming the Alliance Française in Africa, Western

European countries such as Italy and the U.K. soon relied on language and culture to maintain their influence.

From the end of World War II to the Cold War (1946-1991), countries actively established language promotion institutions to showcase their language and culture, develop international relations, and promote international cooperation to satisfy the demand for increased international communication. With 76 language promotion institutions established in Africa, this was a golden period for developing European language promotion institutions. Aside from the U.K., France, and Italy, many other countries actively established international language promotion institutions in Africa, and the growth rate of new language promotion institutions in Africa accelerated with an undulating increase in numbers. The mutual promotion of multilateral government interaction, world markets, global trade, multinational enterprises, international organizations, population mobility, international tourism, and international higher education had significantly increased demand for language learning and use, and countries noted the economic value of language promotion institutions during this period, with economic factors gradually becoming a major factor for driving language diffusion.

From the end of the Cold War to the present day (1991-2021), the growth rate of institutions established in Western European countries has gradually decreased, and growth has become saturated, with a total of 39 new institutions. During this time, Asian language promotion institutions began to take off and grow rapidly, with a remarkable increase from 1 in 2005 to 71 in 2020. In the 21st century, China and Africa have deepened their cooperation in many fields, and African countries' interest in learning about China and the Chinese is growing. In 2005, Kenya established the first Confucius Institute in Africa, marking a new step in the international promotion of Chinese in Africa. After more than ten years of rapid growth, Confucius Institute has developed to become one of Africa's most prominent international language promotion institutions in terms of both quantity and scale.

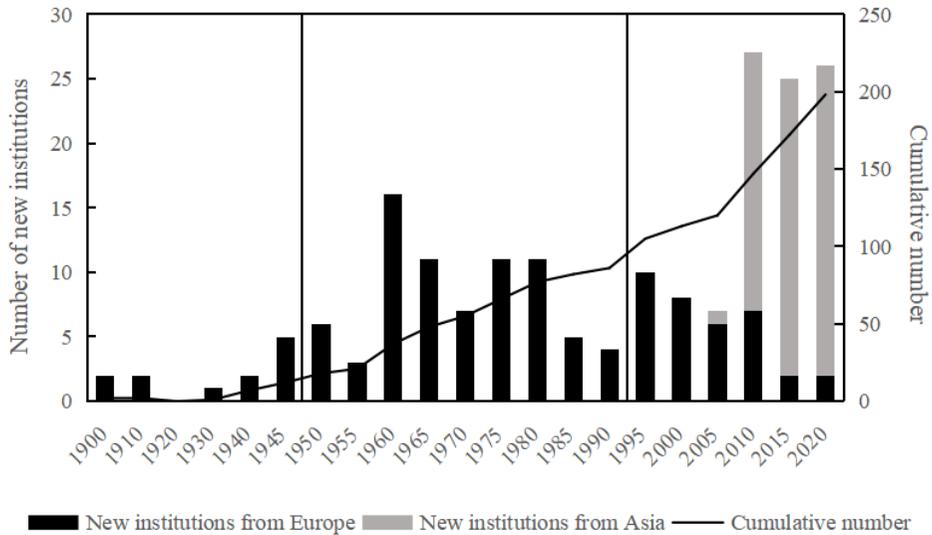


Figure 3: The chronological evolution of international language promotion institutions in Africa

3.3 Spatial evolution

The evaluation has been done according to the year of establishment and the geographical distribution of international language promotion institutions in Africa. By analyzing the chronological evolution, we have extracted and visually analyzed the cumulative cross-sections at three key stages of development for these institutions in Africa (1945, 1991, 2011) to identify spatial evolution features.

Between 1883 and 1945, international language promotion institutions were established in Côte d'Ivoire, Nigeria, Ghana in the Central African region, Mauritius, South Africa, Zimbabwe in the South African region, and Ethiopia in the East African region. The overall number of international language promotion institutions in this period was small, and the distribution pattern was dotted around the Central African region, the South African region, and the coastal countries of the East African region on a country-by-country basis. Regarding the distribution scale, except for Nigeria, which has four, Côte d'Ivoire, Ghana, Mauritius, South Africa, Zimbabwe, and Ethiopia all have only one or two institutions.

The period 1946-1991 saw a rapid spatial spread of international language promotion institutions in Africa, with new institutions established in 27 countries. The spatial spread of the newly established institutions, with the first institutions as the core of their development in the periphery, was marked by a gradual expansion, which began to change from a sporadic distribution to

a full distribution in the coastal countries. The Central African region, South Africa, and the coastal countries of East Africa were beginning to show a concentrated pattern of establishing international language promotion institutions. Most of the Central and North African regions' interiors have a development gap. The Alliance française in Madagascar grew rapidly during this period and became the nucleus of development in the southeastern islands. The number of international language promotion institutions in Africa increased dramatically during this period, with a pattern of national distribution across many countries along the coast and a significant increase in the size of the distribution, with Madagascar having the largest number of 15 Alliance francophones, followed by Nigeria and South Africa with 10 and 9, and other countries with a smaller distribution of less than 5.

Between 1991 and 2021, international language promotion institutions in Africa spread spatially inland, except in Guinea-Bissau and Somalia, which have international language promotion institutions. Regarding spatial clustering, the trend towards a more extended coastline has become more pronounced, with two clusters forming on the southern coast of the Central African region and the east coast of Africa.

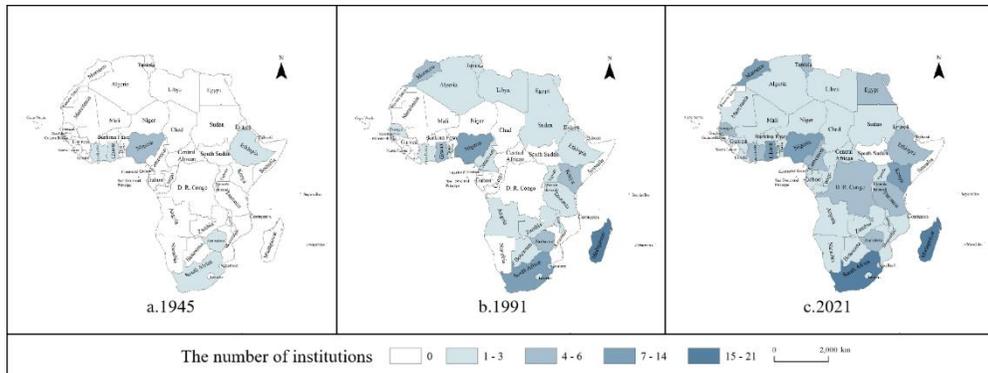


Figure 4: The Spatial evolution of international language promotion institutions in Africa

3.4 Spatial network features

There are numerous languages worldwide; however, not all languages can be effectively promoted in Africa. The diverse comprehensive strengths, developmental histories, language promotion policies, and geographical locations of different countries contribute to the varying geographic distribution patterns of language institutions established by these nations in Africa. Consequently, this study analyzes the spatial network features of different international language promotion institutions based on the location and number of branches they have established in Africa.

The Alliance Française has been developing in Africa for the longest time, has the largest number of members, and is relatively widespread. Except for a few countries in North Africa and South Africa, it covers almost all other African countries. Madagascar, South Africa, and Nigeria have the largest distribution, far more than any other country, and are the core countries for the development of Alliance Française in Africa. The widespread presence of Alliance Française in Africa is deeply influenced by its colonial history, during which almost a third of African countries were colonies or vassals of France. French has a long history in Africa, dating back to the early colonial period when France made French the official language of its African colonies. At the same time, French is also recognized as a world language, with a high level of acceptance in Africa. This makes Africa the continent with the world's largest number of French speakers, and the influence of the French language and culture on Africa is widespread.

Italy was one of the first Western countries to recognize the role of cultural propaganda and language communication abroad. The Dante Alighieri Society is an important institution in Italy for teaching Italian to foreigners. The Dante Alighieri Society has 466 branches overseas, but its overseas work is mainly concentrated in Europe and South America. In Africa, the number of branches is very small, only set up in 8 countries and 13 institutions, mainly distributed in Africa's north and south coast. After the Second World War, with the independence of Italy's African colonies and the start of the European integration process, the status of Africa, especially sub-Saharan Africa, experienced a gradual decline in its significance within Italy's foreign policy framework and was generally subjected to marginalization throughout the Cold War (Li, 2020), making the Dante Alighieri Society's status in Africa gradually lag behind other old European language institutions.

The Goethe-Institut established an early branch in Africa in 1958, aiming to "preserve German language and culture abroad". At present, Goethe-Institut covers many countries, mainly in Central Africa, South Africa, and coastal countries in East Africa. However, the overall number of institutions is small, and most countries have only one institution distributed. Most personnel allocation consists of one or two people, which is called a "one-person branch" (Kathe, 2005). Although the development of the Goethe- Institut in Africa has reached a peak, its operation in developing countries in Africa is often unsatisfactory, such as the library is not visited, and language laboratory equipment is idle and abandoned (Bai, 2016). So, the growth of Goethe-Institute in Africa slowed down after a small peak in the 1950s and 1960s.

The British Council was founded in the inter-war period when Britain's political control over its dominions and colonies was weakening, and it needed

to maintain its influence through economic and cultural links. Nigeria is Africa's most populous country and a British colony. The British took the lead in establishing British Councils in many Nigerian cities, making Nigeria the first country with the largest number of British Councils in Africa. Since then, the British Council has tended to establish offices in countries with a colonial history. Of the 23 countries where the British Council is based, 18 had been colonized by Britain.

Spain is located at the southern tip of the European continent, close to Africa, and has close ties with Africa. Africa is one of the key regions in Spain's global language communication strategy. Among the Instituto Cervantes institutes worldwide, a large proportion is in Africa and is concentrated in North Africa. From a geographical point of view, Spain is the gateway for Africans to Europe. As a window country, Spain attaches great importance to cooperation with the countries of North Africa. The dissemination of the Spanish language and culture in North Africa has a historical basis and geographical advantages, so the Instituto Cervantes has a relatively wide influence in North Africa.

Since the Confucius Institute opened its first overseas institution in 2004, more than 100 branches have been added globally every year, and its development in Africa is also very rapid. It has grown into Africa's most widely distributed international language promotion institution. The average number of Confucius Institutes in each country is small, but great attention is paid to the spread of Confucius Institutes in Africa, especially in Central African countries, filling many gaps in the region. At present, Confucius Institutes have not been opened in individual countries with small land areas, social unrest, and poor natural environment but have covered most African countries and formed the South African regional Cluster with South Africa as the core and the East African regional cluster with Kenya as the core. The distribution of Confucius Institutes in Africa matches the current situation of extensive cooperation between China and African countries.

The Sejong Institute was established in 2007 to teach the Korean language and culture to those who plan to learn a foreign language or Korean as a second language. Sejong Institute is currently in the development stage of dotted distribution with only one branch in nine countries, including Nigeria and Madagascar. In recent years, South Korea has seen the important opportunities brought by the rapid economic development of Africa (Gao, 2022) and started language promotion organizations in Africa to carry out more profound cultural exchanges with Africa. But compared with established language institutions in Europe and the United States, Sejong Institute has a short development time and a weak historical connection with Africa.

Compared with the Confucius Institutes, the development of the Sejong Institute in Africa is still in its infancy because Korea has less economic and political cooperation with Africa and needs less language communication.

Through the above analysis of the spatial distribution of typical international language promotion institutions in Africa, the universal characteristics of the spatial distribution of international language promotion institutions in Africa can be summarized. (1) Scattered distribution in a few countries. Due to their small scale, short development history, and promotion policies, language promotion organizations such as the Italian Dante Alighieri Society, the British Council, and the Sejong Institute are in small numbers and scattered in the distribution in Africa. (2) Concentrated distribution in coastal areas. Due to the influence of the geographical environment, the inland areas of Africa have dry climates and poor natural conditions, while the coastal areas are convenient for foreign exchanges and have a high degree of openness, which is the window of a country. Larger and more numerous language promotion organizations, such as the French Alliance, Confucius Institutes, and Goethe-Instituts, are more likely to take advantage of geographical advantages to develop in coastal areas and form a ribbon or dot core in coastal countries. (3) Proximity to promotion countries. The Instituto Cervantes is only distributed in North Africa near Spain because of its geographical location. Due to its proximity to Europe, the distribution of language promotion institutions in North Africa is more significantly affected by the geographical proximity effect. Centralized distribution in North Africa is more cost-effective for the Instituto Cervantes and other European language promotion institutions with a small overall scale and small capital investment.

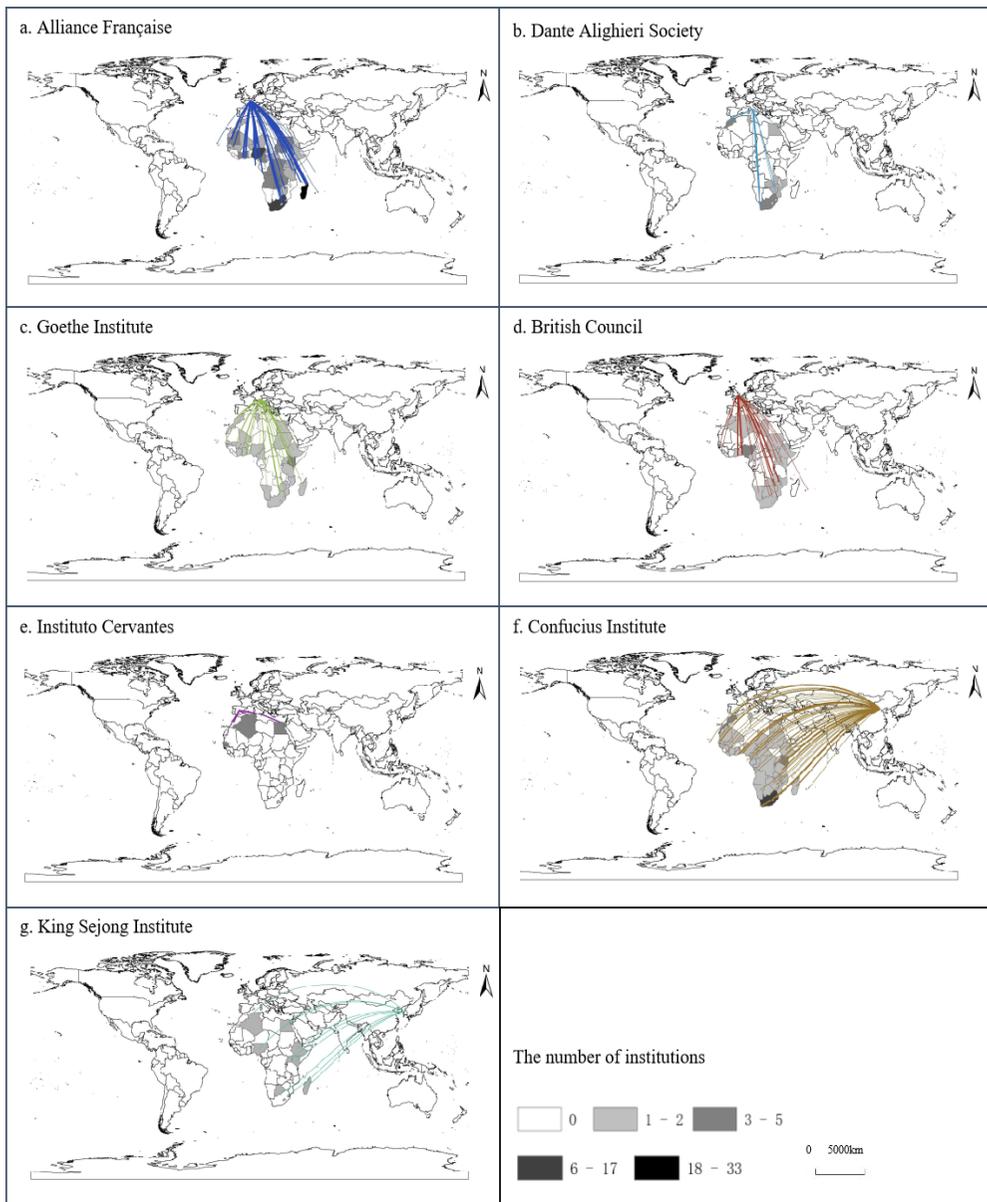


Figure 5: The spatial network between host and promoting countries

3.5 Mechanisms of spatial pattern formation

3.5.1 Indicator selection

As a cultural institution, the spatial distribution of language promotion institutions is linked to several factors and is the result of mutual agreement between the host country and the promoting country (Li and Tian, 2015). Therefore, the factors influencing the addition of international language promotion institutions in Africa since 2000 are analyzed in terms of two dimensions: the host country's own economic and social conditions and the relationship between the host country and the promoting country. After correlation analysis, variables that were not significantly correlated with the spatial distribution were excluded, and five variables were finally selected. In the socio-economic conditions dimension, the total GDP was selected to reflect the level of economic development of each country, the import volume of cultural products was selected to reflect the degree of foreign cultural exchange of each country, and the number of historical language promotion institutions in each country was selected to reflect the degree of historical path dependence. In the relationship between the host country and the promoting country, the geographical distance between the location of the language promotion institution in the host country and the headquarters of the language promotion institution in the promoting country was selected to reflect the geospatial relationship between the two countries, and the bilateral import and export trade volume was selected to reflect the economic and trade relationship between the two countries.

3.5.2 Analysis of results

A stepwise regression model was used to examine the factors influencing the spatial distribution of African international language promotion institutions. After model identification, total GDP, imports of cultural products, the number of historical language promotion institutions, and bilateral import and export trade were the main factors influencing the spatial distribution of international language promotion institutions in Africa.

The dimension of socio-economic conditions: All three variables in this dimension passed the significance test. The regression coefficient for total GDP is negative, indicating that the spatial distribution of international language promotion institutions in Africa negatively correlates with total GDP. This demonstrates that in recent years, countries have preferred to create language promotion institutions in African countries with lower levels of economic development. For the promoting country, cultural communication is a matter of national image building. By using language and culture as a vehicle to build language promotion institutions in the "blue ocean" where economic

development is low, they can increase the influence and attractiveness of the country where the language is being promoted, and give the country a competitive advantage in subsequent investment and trade as well. For economically backward host countries, there is a greater need than for economically developed countries to access the resources they bring to the country's socio-economic development by learning the language of a strong or large country. Moreover, the stronger the language-promoting country, the more resources it will bring to the learners. The positive regression coefficients for cultural product imports and historical language promotion institutions suggest a positive effect on the spatial distribution of international language promotion institutions in Africa. To some extent, the volume of imports of cultural products reflects the degree of cultural openness and acceptance of foreign cultures in a country. Countries with a high acceptance of foreign cultures usually have a greater need for humanistic exchanges and are receptive to the spread of foreign languages, leading to further cultural exchanges in various areas such as history, geography, and philosophy. The location of historical language promotion institutions in the host country will influence the location of subsequent language promotion institutions, and their distribution is somewhat path dependent. If the institution is built again in a country where there is already exchange and cooperation, there will be fewer obstacles in terms of policy and communication, and it will be less difficult to build. Establishing a new institution in a country with better achievements and achieving more comprehensive institutional coverage meets the needs of both the host and the promoting country's interests.

The dimension of the relationship between the host country and the promoting country: The amount of bilateral import and export trade passes the significance test and has a positive relationship with the spatial distribution of international language promotion institutions to Africa. The amount of bilateral import and export trade reflects the degree of exchange of goods, technology, and services between the host country and the promoting country. There is a greater demand for language exchange due to frequent economic interactions. International language promotion institutions have partially satiated this demand by providing cultural support and human resources for interactions and cooperation between the promoting and the host countries. Geographical distance did not pass the significance test, indicating that there is no significant effect of geographical distance on spatial distribution. Geographical distance usually leads to transport costs and information inequality, but language promotion institutions require lower transport costs than cultural institutions. Many language promotion institutions choose to build in collaboration with local universities to reduce transportation costs and improve information exchange and are thus unconcerned about geographical

distance. Furthermore, most international language promotion institutions in Africa are built across continents, so the influence of geographical distance is weakened, and the soft domestic environment of the host country is prioritized.

Table 1: Stepwise regression results

Dimension	Variable	Regression coefficient	95% CI	VIF
	<i>Constants</i>	0.936**(11.317)	0.774 ~ 1.098	-
Socio-economic conditions	GDP	-0.003**(-3.129)	-0.004 ~ -0.001	2.013
	Import of cultural goods	0.000**(2.708)	0.000 ~ 0.000	1.730
	Number of historical institutions	0.022*(2.303)	0.003 ~ 0.042	1.419
Relations between the two countries	The bilateral trade volume	0.000**(6.970)	0.000 ~ 0.000	1.544
<i>R</i> ²			0.588	
<i>Adjusted R</i> ²			0.562	
<i>F</i>			<i>F</i> (4,64)=22.841, <i>p</i> =0.000	

Dependent variable: Number of international language promotion institutions
D-W: 2.569

* $p < 0.05$ ** $p < 0.01$ t-values in parentheses

3.5.3 Influencing mechanism

The driving force behind the international spread of a language is a key factor. The Mixed Mode of Language Spread in the Era of Globalization; it is believed that the mode of language spread in the era of globalization is not a single one. Both the government and the market play roles in language spread in varying degrees, and the effect of language spread depends on the optimal combination of government's willingness, ability and market demand. The dependence of language spread on modern information technology has significantly increased. In the context of globalization, the expansion of the spread of a language or language variant requires the collaboration of government and market. The government focuses on policy guidance and language planning, while the market plays a unique role in developing language learning demand and providing language products. The government's willingness and ability to promote language reflects the

government's understanding of the role of language in the process of globalization and the improvement of cultural soft power, namely the government's language awareness, as well as the government's policy support and resource allocation for language promotion. The market reflects the popularity of a language, namely the market's language preference. The degree and speed of language spread are the result of the joint action of the government's language awareness, policy support and resource allocation, and the market's language preference. The government's impetus and the market's pull differ in magnitude and the combination of the two forms different types of mixed modes of language spread (Wang, 2019).

When combining mixed mode of language spread with the above analysis, the formation of language promotion institutions in Africa is essentially a 'supply-demand' system between the promoting country and the host country, and their spatial distribution is the result of a joint choice between the two parties. The 'push-pull' model is therefore used as a basis for exploring the mechanisms underlying the spatial and temporal distribution patterns.

For the promotion country, comprehensive national power, language vitality, and promotion policies are the 'push' for language promotion institutions to enter Africa. Firstly, comprehensive national power for the promotion country is the basis for building and sustaining language promotion institutions abroad, and only the countries with sufficient funds and educational resources can afford to establish them across continents in Africa. Secondly, when the promoting country has a language with many speakers, a wide range of uses, and a high degree of linguistic vitality as a mother-tongue country, it is usually delighted to establish specialized institutions to disseminate the language abroad. Finally, an active language promotion policy in the country of promotion can provide political support for establishing a language promotion institution abroad.

For the host country, socio-economic conditions, demand for international exchange, and historical ties are the 'pull' that attracts language promotion institutions. The economic and social development of African countries varies, and language promotion institutions are often set up in countries where the economic and social conditions are better suited to their needs. The increasing economic cooperation and trade between Africa and the world is an important means for Africa to establish good diplomatic relations with powerful and large countries. Cultural exchange through language promotion institutions is an important means of participating in international exchanges. In addition, due to Africa's complex colonial history, languages such as French and English have a long history of development in Africa, and some countries have a higher acceptance of French and English among their

populations.

Language promotion institutions in Africa positively impact the country of promotion and the host country in spreading language and culture. For the host country, the language promotion institutions facilitate international exchange and cooperation, promote learning from the advanced technology and culture brought by the promoting country and provide training from foreign language personnel. For the promotion country, it further enhances the vitality and appeal of the language, increases its international influence and attractiveness, and brings social and economic benefits.

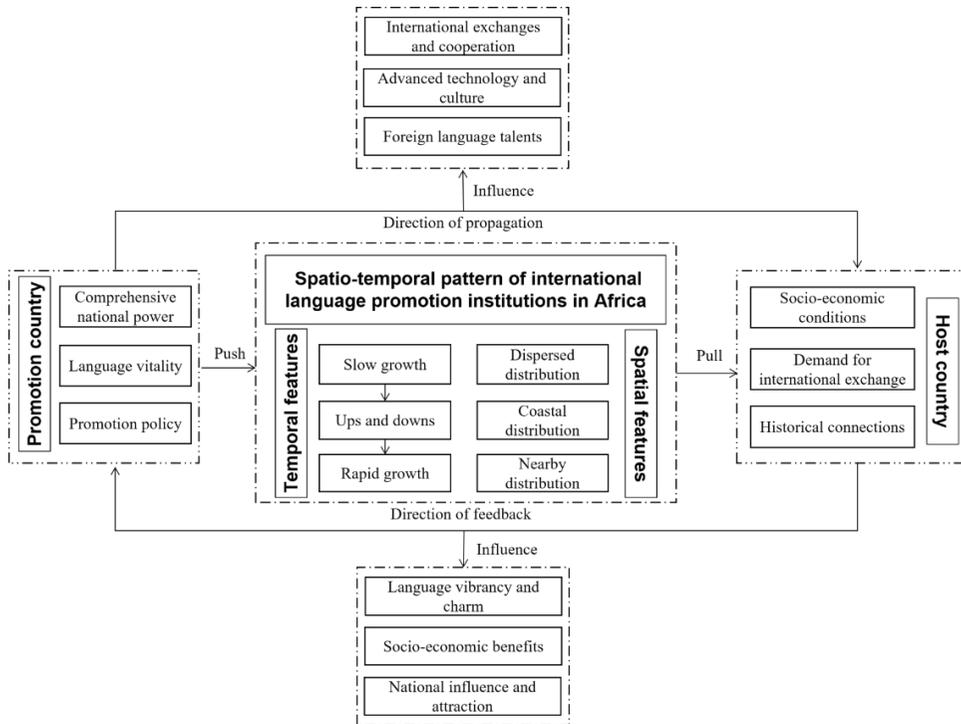


Figure 6: Influencing mechanism

4. Conclusion

4.1 Summary of key findings

This paper examined the spatial and temporal characteristics of international language promotion institutions in Africa from a geographical perspective, using a combination of mathematical and statistical methods, spatial analysis, quantitative research methods, the mixed mode theory of language transmission, and the push-pull model to analyze the factors and mechanisms that influence their formation.

The temporal evolution of international language promotion institutions in Africa can be divided into three stages: "slow growth - ups and downs - rapid growth". International language promotion institutions in Africa began to develop before the outbreak of World War I and between the two world wars, a period when they were few and grew slowly. The number of new institutions accelerated between the end of the Second World War and the Cold War, with fluctuating growth. By the end of the Cold War, Asian language promotion institutions grew rapidly, with growth rates far exceeding those of Western language institutions.

Language promotion institutions in Africa were first developed in the parts of central and southern Africa. There is a gradual trend along the coastline of the Central African, South African, and East African Regions. After nearly three decades of development, institutions are present in most African countries, with a more pronounced distribution trend along the coastline, forming two agglomerations, the south coast of the Central African Region and the east coast of Africa.

A certain universality characterizes the spatial distribution of the various international language support institutions in Africa. Institutions that are few and small are mostly only scattered in individual countries. Institutions with many branches form a ribbon or dotted cores in coastal countries. The geographical proximity effect strongly influences the northern part of Africa and attracts a concentration of some European institutions.

The spatio-temporal pattern of language promotion institutions in Africa is shaped by economic, cultural, and historical factors. The comprehensive national strength, language vitality, and language promotion policies act as the driving forces for the establishment of language promotion institutions in Africa. On the other hand, socioeconomic conditions, international exchange needs, and historical connections serve as attracting factors for host countries to welcome these institutions. Throughout the process of disseminating languages and cultures, African language promotion institutions exert a positive impact on both promoting and host countries.

4.2 Development proposals

Firstly, we should recognize the important role of international language promotion institutions in language dissemination, cultural exchange, and international image building. Western European countries were early to recognize the value of international language promotion institutions. China needs to use institutions such as the Confucius Institute to expand its cultural exchanges with Africa and use language promotion institutions to exert more significant cultural influence.

Secondly, the combined influence of the language promotion countries in Africa is a key factor in determining the size of a language promotion institution. Their total impact on Africa is substantial, and the economic worth of their respective languages is substantial. Local people will only be willing to spend time and money on learning a language if they have access to more resources or benefits through learning it. When considering the Confucius Institutes, China has always regarded African countries as "brothers" and has carried out a great deal of aid and assistance, and it is Africa's largest trading partner in economic terms. This is why the Confucius Institute has surpassed other European language institutes in number and distribution in just over a decade.

Thirdly, there are still large areas of unmet demand for language learning in Africa, and there is much scope for developing language promotion institutions. The trend is for them to proliferate across Africa, but the geographical distribution is not evenly distributed, with international language promotion institutions having long been skewed towards developed coastal or medium-sized countries. This does not mean that there is no demand for foreign language learning in many less-developed regions in central Africa. Since the Confucius Institute was founded, many bright African students from disadvantaged families have sought to improve their circumstances by coming here to study to have more access to education and work (Yang et al., 2018). There is a strong demand for the Chinese language in Africa. Although the layout of Confucius Institutes has shown a demand-oriented trend in recent years, the number of Confucius Institutes is extremely limited. If China can overcome the difficulties in terms of economic conditions and the natural environment, and improve the quantity and quality of Confucius Institutes, it will achieve better development in Africa.

Fourthly, development should be sought through competition and cooperation. When looking at the development of typical language promotion institutions in Africa, many countries and languages worldwide have joined in spreading languages to Africa, and countries and regions in a position to do so have set up specialized institutions in Africa. In today's situation, language promotion institutions face competition with other institutions. For the Confucius Institute, must compete with the many long-established language promotion institutions in Europe while at the same time keeping an eye on new language promotion institutions that are catching up. In this context, looking more actively for partnerships to build the institution, such as working with local universities to develop new markets and sharing software and hardware resources with other language promotion institutions, is important.

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