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A Pilot Study of Global Competence Questionnaire for College Students in the Hainan Free Trade Port

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Abstract

Global competence has emerged as an essential core capability for global talents. The OECD introduced the Global Competence Framework, encompassing knowledge, skills, attitudes, and values. which was initially integrated into the PISA 2018 assessment. However, it did not incorporate the dimension of values in its evaluation. Studying the global competence of college students in the Hainan Free Trade Port is profoundly significant because the Hainan Free Trade Port represents the highest level of China's economic openness and requires more talents. To explore the global competence of college students in the Hainan FTP, this study developed the Global Competence Questionnaire for College Students in the Hainan Free Trade Port, combining relevant research. A pilot study was conducted to evaluate the reliability and validity of the research instrument. Data collection was carried out through an online survey, which distributed 70 questionnaires and received 65 valid responses. The analysis of results was performed using IBM SPSS 27.0 software. The survey results indicated high reliability and validity, with KMO values ranging from 0.672 to 0.907 and Cronbach's alpha coefficients ranging from 0.779 to 0.961. These findings suggest that the questionnaire is a reliable tool for measuring the global competence of college students and warrant further experimental research.

Keywords*:* Global Competence, Pilot Study, College Students, Hainan Free Trade Port.

1. Introduction

1.1 Research Background

Global competence is an important dimension of core capacities in the 21st century (Mansilla, et al, 2013). The cultivation of students' global competence has become a primary educational objective, attracting critical attention from academia and international organizations worldwide (Kim, 2019; Moskal & Schweisfurth, 2017). In light of the intensifying economic globalization, students in the 21st Century are immersed in an interconnected, diverse, and dynamically evolving global landscape. Various emerging factors, such as economic, digital, cultural, demographic, and environmental forces, significantly influence the lives of young individuals across the world and amplify their regular intercultural interactions. Global competence is not a luxury, not just for the elite, it is a necessary skill for everyone, and that it is necessary to vigorously promote the implementation of international standards for university admission and employment preparation, to help students better understand and comprehend the world, as well as to cultivate students' language skills and professional knowledge (U.S. Department of Education, 2016). In the context of globalization, constructing a global competence development model implies cultivating knowledge, skills, attitudes and values in talent from multiple perspectives, which is conducive to enhancing the overall quality of talent.

In the world, countries and regions such as Canada, Singapore, and the European Union have successively incorporated global competence into their respective core competency frameworks (Ministry of Education of Canada, 2020; Ministry of Education of Singapore, 2021). Singapore, which demonstrated impressive performance in the Programme for International Student Assessment (PISA) 2018 global competence assessment, has also actively promoted the internationalization of education and published 21st Century Skills, requiring the school to carry out curriculum reform and reconstruction of knowledge, skills and values under the leadership of core values. The cultivation of global competencies among Singaporean citizens encompasses the development of global awareness and cross-cultural communication skills. These skills are regarded as crucial components of the broader spectrum of learning skills (Ministry of Education of Singapore, 2020). In addition, more than 90% of Singaporean students are proficient in two or more languages, which is inseparable to the government's Bilingual Policy in school education, which requires students to master their native language and English (Qiao & Yang, 2019). Japan, which highly emphasis on education, has launched many government initiatives in the past decade aimed at internationalizing universities and cultivating graduates with global competence. The cultivation of global competence as part of university education has been vigorously promoted in pursuit of these initiatives (Sakamoto & Roger, 2022). There are four essential abilities of Japanese students in the 21st Century are emotional intelligence, interpersonal intelligence, cultural intelligence, and international intelligence (Deardorff & Arasaratnam, 2017). Germany, as one of the leading forces in European development, is the strongest country in Europe in terms of economic power. Since the 1990s, Germany has recognized the importance of human resources development in international organizations. It has begun to implement a series of policies and promote various measures across the board. Since 2008, when the German Federal Government first published the Report of the Federal Government on the German Personnel Presence in International Organizations, the number of German employees in international organizations has increased greatly. This shows that Germany has made considerable breakthroughs in developing international personnel in recent years through long-term efforts (Xiao, 2020).

In 2018, the Organisation for Economic Co-operation and Development (OECD) introduced the global competence framework, encompassing knowledge, skills, attitudes, and values, which was initially integrated into the PISA 2018 assessment, and this marked a significant milestone as it was the inaugural inclusion of global competence as an evaluative component within a large-scale international assessment initiative led by an international organization. The announcement has drawn great attention as it implies that the importance of global competence in student development is now equal to that of traditional school subjects such as reading, math, and science (Chu, 2022). PISA is a unique test. Previous global competence models are often based on multinational business management perspectives, which have the limitations of under-representation, single cultural background, and far from basic education, while this model proposed by the OECD based on the 21st Century Learning Skills theoretical framework includes consideration of multiple perspectives and basic theories of human development, and has the most comprehensive indicators (Doyle, 2023). The PISA results have become synonymous with quality bench marking (Bailey et al., 2022). It is a relatively official tool at present (Liu, 2020). Since the implementation of PISA, the assessment concept and technology have been the object of learning and reference in the field of education of various countries (Prenzel et al., 2006; Glewwe et al., 2017). However, it did not incorporate the dimension of values in its evaluation.

In China, with the growth of globalization, transnational and cross-cultural interactions and cooperation have increased in frequency, creating previously unimaginable opportunities and difficulties for the global development of

all nations. To adapt to and promote this new era of globalization, China needs a large number of globally minded talents to better participate in global governance and enhance its openness to the world (Chu, 2022). Contemporary students are integral members of interdependent and connected on a global scale (Subedi, 2010). Consequently, China has increased its emphasis on the development of college students' global competence (Yang, 2014). China's current evaluation targets for college students are relatively narrow, mainly manifested in a focus on screening and selection rather than educational guidance, emphasis on outcome evaluation rather than process growth, and a preference for comprehensive evaluation over individualized development (Tang, 2010). China has lagged behind Western developed nations in its study on the development of college students' global competence, and the existing areas and university types of research are relatively limited. However, China is facing the dual challenges of a shortage of global talent and a lack of quality in their competence (Chu, 2022). Under such circumstances, as the representative of China's higher institutions, Tsinghua University and Peking University are focusing on the international vision and moving towards cultivating global competence. China currently does not have an official global competence framework model (Liu, 2023), and Chinese college students exhibit a comparative deficiency in global competence, encompassing both knowledge and skills, when juxtaposed with their counterparts from European and American universities that share similar rankings (Chang & Du, 2013; Meng et al., 2017). At the same time, compared with research investment, undergraduate education in Chinese universities is neglected (Wang et al., 2020). Currently, China is facing the dual challenges of a shortage of global talents and a lack of quality in their competence. The inadequacy in both the quantity and ability of talents to adapt to the needs of the new globalization may become one of the bottleneck factors for China to enhance its global governance capacity, improve its degree of openness to the outside world, encourage superior economic and social development (Chu, 2022). Therefore, incorporating the education of global competence into college students is not only in line with the national demand for high-level talents in both the quantitative and qualitative domains, but also meets the demand for improving weak areas in undergraduate education, which in turn promotes the development of college students' education (Ren, 2021). Chinese universities urgently need to innovate talent development models to cultivate individuals with global competencies (Zhu, 2023).

In the Hainan Island, the Chinese government initiated the construction of the Hainan FTP in 2018, a significant milestone that led to the official designation of Hainan Island as a comprehensive free trade port (China Government Website, 2018). This initiative showcases China's distinctive approach to free trade. A free trade port represents a designated zone situated within a nation's or region's boundaries, operating independently and separate from regular customs checkpoints. Within this port, the unrestricted flow of commodities and financial resources is allowed, facilitating the movement of capital and products (Zhang et al., 2020). The development of the Hainan FTP not only provides novel avenues for the economic progress of Hainan province, but also introduces fresh prospects and challenges for the advancement of its education sector. College students assume a crucial role in advancing the growth of the free trade port in this situation (Luo, 2021). The colleges in Hainan, which are located in the Free Trade Port, should be assess the current situation and adopt proactive measures to cultivate highly skilled international talents that are essential for the free trade port's extensive growth. This necessitates a heightened emphasis on enhancing the college students' global competence.

However, it is not adaptable to the national strategic concept that although Hainan province has good location advantages, climate advantage and policy support advantages, it is a relatively backward region in China's economic development (Yan & Xie, 2018). The present state of college student development in the

Hainan FTP is primarily characterized by the following aspects: 1) Insufficient education policies, systems and measures, and a lack of mature and feasible precedents; 2) The supporting educational facilities are incomplete, and the industrial foundation is relatively weak, with many economic indicators still below the average level in China (Shi & Xu, 2022).

1.2 Problem Statement

(1) Lack of research on the cultivation of global competence in the Hainan FTP.

The government in the Hainan FTP lack attention to the cultivation of high-level talents and global competence among college students (Ding et al., 2021). In the ranking of the Gross Domestic Product (GDP) total values of 31 provinces in China in 2023, Hainan province ranked 28th (People. cn., 2024), indicating that Hainan's economic condition and development level are relatively backward. Given the current circumstances, the Hainan government must boost education investment, improve educational quality and standards, and offer university students better resources and a conducive growth environment. As previously mentioned, the phenomena of globalization and the development of the Hainan FTP underline the importance of developing global competence. This not only includes designing effective tools for assessing global competence but also encouraging university students to develop their global competence. This study conducted a review of various literature databases, including Google Scholar, Web of Science, Scopus, and CNKI, as well as websites, using the keywords: global competence, global competency, Hainan Free Trade Port, Hainan FTP, Hainan province, college, and university. Unfortunately, although global competence is crucial for college students, as of now, there have been no relevant studies or empirical research instruments focusing on the global competence of college students in the Hainan FTP. Thus, researching the global competence of college students in the Hainan FTP is profoundly significant.

(2) Lack of a comprehensive instrument to assess global competence.

This study mainly used the PISA 2018 global competence framework which categorized global competence into four dimensions—knowledge, skills, attitudes, and values. It is worth noting that the values had not measured by PISA in 2018 due to its complexity and subtlety, values are described as, beyond the scope of the PISA 2018 assessment (OECD, 2020, p.64). However, the cultivation of values plays a crucial role in fostering global competence (Wallenberg-Lerner, 2013; Awaida-Nachabe, 2017). Therefore, this study integrates the PISA 2018 global competence framework, which evaluates knowledge, skills, and attitudes, alongside Karanikola's (2022) research on value, to develop the "Global Competence Questionnaire for College Students in the Hainan Free Trade Port." This instrument can completely evaluate the global competence across four dimensions: knowledge, skills, attitudes and values.

Therefore, this study integrates the PISA 2018 global competence framework, which evaluates knowledge, skills, and attitudes, with Karanikola's (2022) research on values, which assesses global competence among undergraduate and graduate students. This integration aligns well with the research background and content of our study, leading to the development of the "Global Competence Questionnaire for College Students in the Hainan Free Trade Port." And then a pilot study was conducted to verify the reliability and validity of this questionnaire. This instrument can completely evaluate the global competence across four dimensions: knowledge, skills, attitudes and values.

1.3 Research Significance

(1) This study expands upon the PISA 2018 global competence assessment framework. By comprehensively interpreting the PISA 2018 global competence assessment framework, this research incorporates previously unmeasured dimensions of values. Consequently, the PISA 2018 global competence assessment framework achieves a comprehensive evaluation of global

competence across four dimensions: knowledge, skills, attitudes, and values.

(2) This study contributes to the development of higher education in Hainan. Existing research has not yet to integrate studies on global competence with the construction of Hainan FTP. Through questionnaire development, this research provides a measurement instrument for studying the college students' global competence of in Hainan Free Trade Port.

2. Research Design

The quantitative research design includes identifying the appropriate sample that represents the population, the research instrument (including evaluating its validity and reliability), data collection, and data analysis techniques (McLafferty, 2003). This study aims to evaluate the reliability and validity of the questionnaire through a pilot study.

2.1 Target Population

This study focused on universities in China located in the Hainan FTP which is the only free trade port in China, and situated in the central South China Sea, as shown in Figure 2.1. It is the largest island province in China. The total enrollment of college students in the Hainan FTP reached approximately 200,000 (Education Department of Hainan Province, 2023).

Figure 2.1 The Setting of Study

(Source: https://en.wikipedia.org/wiki/Hainan)

2.2 Sample Size

During the planning phase of research, it is imperative to establish the appropriate sample size for each study (Chuan & Penyelidikan, 2006). The growing necessity of obtaining a representative statistical sample has engendered the requirement for an efficient approach to ascertain sample size in empirical research. The researcher used an acceptable sample size to generalize the findings because the sample fairly represents the community. To ensure generalizability and minimize the occurrence of sampling errors or biases, it is imperative that the sample be of sufficient size and randomly selected (Taherdoost, 2017). To facilitate consultation, Krejcie and Morgan, in 1970, created a table designed to determine the appropriate sample size based on population size (Chuan & Penyelidikan, 2006). In this research, the primary research's sample size was established by utilizing the Krejcie and Morgan table, depicted in Figure 2.2.

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Figure 2.2 Sample Size from Morgan Table

About 200,000 students are enrolled throughout all universities or colleges in the Hainan province. Based on the sample size calculation table created by Krejcie and Morgan in 1970, a population that surpasses 100,000 individuals

necessitates a sample size of 384 to accurately reflect the population's diversity. In this pilot study, a total of 70 questionnaires were distributed, with 65 valid responses, resulting in an effective response rate of 93%.

2.3 Scale of the Questionnaire

This instrument encompassed four key variables: cross-cultural contact, global learning activities, students' SES and students' global competence. Considering the employment of the Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology, all sub-variables assessed through the 5-point Likert scale for data analysis. The 5-point Likert scale serves as a widely recognized instrument for assessing opinions and perspectives. It comprises five response options, encompassing two polar extremes, a central neutral choice, and two intermediate responses (Voxco, 2022).

(1) Dependent Variables

The dependent variable of this study was the college students' global competence, which included four interrelated dimensions: knowledge, skills, attitudes, and values. Specifically, the items related to knowledge, skills, and attitudes were measured using the PISA 2018 global competence assessment scale (OECD, 2020, p.61), while items related values were assessed using Karanikola' research (2022).

(2) Independent Variables

Cross-cultural Contact: Cross-cultural contact measured with the students' interactions with individuals from different countries, which has the potential to stimulate curiosity, expand perspectives, and promote mutual understanding. In the PISA 2018 assessment, students were asked about their engagement in cross-cultural contact across multiple domains (a yes-or-no question), including school, their family, their neighborhood, and their circle of friends (OECD, 2020, p.123). In this study, students were asked about the frequency of their interactions with individuals from different countries in various contexts, also including school, their neighborhood, their family, and their circle of friends. A 5-point Likert scale has been applied: 1=Never, 2=Seldom, 3=Often, 4=Sometimes, 5=Always.

Global Learning Activities: Global Learning Activities are measured by assessing students' engagement in global competence-related activities at universities. In the PISA 2018 assessment, respondents were presented with a series of ten questions regarding their participation in various learning activities (OECD, 2020, p.180). We employ ten items to gauge global learning activities and inquire about the frequency of students' engagement with learning activities at universities (Zhao, 2022). A 5-point Likert scale has been utilized: 1=Never, 2=Seldom, 3=Often, 4=Sometimes, 5=Always.

(3) Mediating Variable

The 2018 PISA global competence assessment confirmed the mediating effect of students' SES. This study also views students' SES as a mediating variable. Considering China's cultural context, this study utilized two key indicators to assess students' SES, including parental education and parental occupation.

The level of parental education was assessed across five categories, based on the current construction of China's educational system, as outlined by Wang and Guo (2019). These levels range from level 1, denoting individuals with primary school education or lower, to level 5, indicative of those who have completed postgraduate qualifications.

The level of parental occupation was assessed across five categories, as detailed by Shi and Shen (2007) and Kuang et al. (2023). At level 1 are individuals occupying positions with lower occupational status, while level 5 encompasses those holding occupations characterized by higher occupational status.

2.4 Structure of the Questionnaire

The study utilized quantitative measures to evaluate potential correlations between variables. The research instrument was developed by incorporating items from well-established and validated measurement tools. These items were meticulously revised to

ensure clarity among the respondents and enable the researcher to obtain the most accurate responses. This study employed a questionnaire survey, developing the "Global Competence Questionnaire for College Students in the Hainan Free Trade Port."

The questionnaire is organized into three distinct parts: Part One gathers demographic details, Part Two focuses on questions regarding students' SES, and Part Three delves into questions related to global competence, encompassing the dependent variables (knowledge, skills, attitudes, and values), independent variables (cross-cultural contact, global learning activities), and the mediating variable (students' SES). For more details, see Table 2.1.

Table 2.1 The Structure of Questionnaire

Parts	Variables		Indicators	No. of Items
Part One	Demographic Information		Age	1
			College/University	1
			Grade	1
			Gender	1
			Major	1
			Experience as a Student Leader	1
Part Two	Mediating variable	Parental Education	Father's Education Level Mother's Education Level	4
		Parental Occupation	Father's Occupation Level Mother's Occupation Level	
Part Three	Dependent variables	Knowledge	Self-efficacy regarding global issues	6
			Awareness of global issues	7
		Skills	Perspective-taking	5
			Cognitive adaptability	6
			Awareness of intercultural communication	7
			Multilingualism	4
		Attitudes	Interest in learning about other cultures	4
			Respect for people from other cultural backgrounds	5
			Global mindedness	6
		Values	Identify one's own culture and worldview	3
	Independent variables	Cross-cultural Contact	Frequency of interactions with people from other countries	4
		Global Learning Activities	Frequency of participating in learning activities by students	10

2.5 Translation of the Questionnaire

Given the demographic of the study participants, who are Chinese college students, it has been imperative to employ a dual-language approach in the design of the questionnaire. Consequently, two distinct versions of the questionnaire, encompassing both English and Chinese languages, have been implemented. The measurements for all variables in this study have been obtained from two scales: The evaluation questions related to independent variables (cross-cultural contact and global learning activities), the mediating variable (students' SES), and the dependent variables (dimensions of knowledge, attitudes, and skills) are based on the PISA 2018 global competence framework. Both English and Chinese versions of these evaluation questions are available on the official website of PISA. The evaluation questions related to the dependent variable (dimension of values) are sourced from the corresponding Chinese journal article (Karanikola, 2022; Liu & Kong, 2018).

Meanwhile, in order to maintain the logical consistency and precision in translating the questionnaire, this study also enlisted the assistance of Li Sijing, an expert in Chinese teaching translation at the School of Foreign Languages of Hainan Medical University, to refine the entire set of questionnaires. This refinement involved clarifying and correcting

any potential ambiguities or vague expressions, adjusting the logical sequence and coherence of translations, and restructuring words and sentences to better align with the cultural background and linguistic habits of the target audience. Through this refinement process, the questionnaire translation not only became more linguistically precise and fluent but also more comprehensible and acceptable to the respondents. Consequently, it enhanced the effectiveness and reliability of the questionnaire survey.

3. Data Collection and Analysis

3.1 Data Collection

In the context of globalization and substantial advancements in information technology, it is imperative to enhance the convenience of the survey and fully utilize the large number of intelligent platform users among the surveyed subjects. this study chose to distribute and collect data in the form of electronic questionnaires. Specifically, we utilized Wenjuanxing (www.wjx.cn), a nationwide online data analysis platform in China. Wenjuanxing platform has many advantages, including fast distribution speed, wide coverage, and the ability to set the requirement for respondents to complete all questions before submitting the questionnaire, greatly improving the questionnaire completion and efficiency. Additionally, we could instantly view the collected data information, which enhances the convenience and efficiency of the data collection process. It is worth mentioning that similar data collection methods have been successfully applied in past studies (e.g., Ramanathan et al., 2019; Chen et al., 2013).

By adopting this advanced data collection method, we were confident that we could more effectively complete this study, obtain rich and accurate data, and thereby provide strong support and evidence for the formal study.

3.2 Data Analysis

This study employed SPSS 27.0 to test the validity and reliability of the research scale. The pilot study was conducted using the online platform Wenjuanxing to distribute and collect questionnaires.

It is crucial to inquire to the reliability and validity of the research process in order to establish and uphold academic rigor (Roberts & Priest, 2006; Johnson & Christensen, 2004). Woodrow (2011) emphasized that in quantitative research, both reliability and validity represent critical components.

Reliability refers to the extent of consistency with which items on a test measure a singular construct or concept, and reliability tests serve as indicators of the internal consistency of a measurement scale (Johnson & Christensen, 2004). One prominent measure extensively employed in the fields of social and organizational sciences to assess reliability is Cronbach's alpha reliability (Cronbach, 1951). This measure signifies the internal consistency of a measurement scale (Bonett & Wright, 2015). To examine the reliability, we referred to the findings of Yeung (2014), who offer comprehensive methodologies for evaluating research reliability. Cronbach's alpha values standardized to exceed 0.7 suggest a reliable assessment. However, higher values, such as 0.8, indicate stronger internal consistency within the instrument across its items (Santos, 1999; Wadkar et al., 2016).

Validity refers to the degree to which a test measures what it is supposed to measure and, consequently, permits appropriate interpretation of scores (Borsboom et al., 2004). To examine the validity, we used the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity statistical measures. The KMO test determines whether the sampling size is adequate for each variable. Tabachnick et al. (2013) recommended that a value above 0.6 is acceptable when the sample size is fewer than 100, and a value between 0.5 and 0.6 is suitable if the sample size is between 100 and 200. However, the minimum value for a good factor analysis is 0.6 (Pallant, 2020). Bartlett's Test of Sphericity tests the relationships between the items and should be significant ($p < 0.05$) to indicate that the factor analysis is appropriate for the data (Shrestha, 2021).

4. Pilot Study

4.1 The Importance of Pilot Study

The researchers and statisticians highly recommend designing and conduct a pilot study prior to leading research, which checks and confirms the reliability of the instrument of research (Goodman et al., 1998; Smith & Studd, 1992). Cohen et al. (2013) claimed that the data collected through a pilot study inform the researchers about the clarity of items and also guide the researcher about the primary study data collection. The pilot study not only identifies the lacking of instruments but also helps researchers to ensure the accuracy of data collection. For the formal study, the pilot study will carry out, which enable researcher to check the reliability of questionnaire, identify and remove ambiguous items, and clean the instrument for main research.

Several goals can be achieved by conducting a pilot study on a few participants: (1) The pilot study aims to evaluate the research instruments' validity and reliability for use in the principal investigation, and some necessary modification is to be made after the testing of the measurement model. (2) The pilot study enables the researcher to assess the feasibility of the research and determine the value of proceeding to the formal study. (3) The pilot study assists in identifying the most appropriate research methodology for addressing the questions of the formal study. (4) The pilot study provides a chance to evaluate and refine the data collection techniques and the execution of surveys as needed, ensuring their suitability for the research. (5) The pilot study enables an initial examination of the research questions, which may give some feedback on the tenability and suggest whether a further adjustment is needed. (6) The pilot study can save time and effort by addressing the unanticipated problems that appear at this stage (In, 2017; Donald et al., 2010).

In conclusion, the primary objective of the pilot study is to evaluate the validity as well as reliability of the research instruments utilized in the formal investigation. Following the testing of the measurement model, certain modifications may be necessary. Moreover, the pilot study enables the researcher to determine the feasibility and significance of proceeding with the formal study (Donald et al., 2010). This also assists in identifying the most appropriate research methodology to tackle the questions presented in the formal study (In, 2017). Additionally, the pilot study offers an opportunity to assess the data collection techniques and survey administration, allowing for necessary adjustments to be made if required. It also facilitates the preliminary testing of the research questions, providing valuable feedback on their tenability and suggesting the need for further refinement if necessary.

4.2 The Result of Pilot Study

The sample collection location for this study was the Hainan FTP, in China, targeting university students from various universities in Hainan. To ensure the final quality of the questionnaire, a questionnaire testing procedure was conducted after the preliminary formation of the questionnaire. The study conducted a pilot study of college students in the Hainan FTP from December 4th to 9th, 2023, using random sampling methods. The pilot study included respondents of different genders, grades, majors, types of universities, hometowns, etc. A total of 70 questionnaires were distributed, with 65 valid responses, resulting in an effective response rate of 93%. The pilot study was conducted using the online platform of Wenjuanxing to distribute and collect questionnaires. Subsequently, the data obtained were processed to assess the validity and reliability of the questionnaire. Respondents were required to complete the survey and provide feedback on three key aspects: (1) the clarity of each statement, (2) the applicability of each statement and their relevant experiences, and (3) the applicability of the survey, ensuring that it was neither too lengthy nor cumbersome. The pilot study results are shown in the Table 4.1.

Table 4.1 Results of the Pilot Study

Variables	Dimensions	Cronbach's α	KMO	
Dependent Variables	Knowledges	0.937	0.888	Sig.＜0.01
		0.959	0.851	Sig.＜0.01
	Skills	0.940	0.816	Sig.＜0.01
		0.931	0.876	Sig.＜0.01
		0.948	0.831	Sig.＜0.01
		0.779	0.672	Sig.＜0.01
	Attitudes	0.891	0.785	Sig.＜0.01
		0.952	0.818	Sig.＜0.01
		0.923	0.774	Sig.＜0.01
	Values	0.904	0.693	Sig.＜0.01
Independent Variables	Cross-cultural Contact	0.904	0.806	Sig.＜0.01
	Global Learning Activities	0.961	0.907	Sig.＜0.01
Mediating Variable	Students' SES	0.817	0.726	Sig.＜0.01

5. Conclusion

Table 4.1 presents the results of a pilot study, including various variables, their dimensions, Cronbach's alpha values, KMO measures, and significance levels (Sig.).

(1) Dependent Variables:

Knowledges: The Cronbach's alpha values range from 0.937 to 0.959, indicating high internal consistency. The KMO values range from 0.851 to 0.888, suggesting that the variables are suitable for factor analysis. The significance levels are less than 0.01, implying strong statistical significance.

Skills: The Cronbach's alpha values range from 0.779 to 0.948, with corresponding KMO values ranging from 0.672 to 0.876. All variables exhibit strong statistical significance (Sig.＜0.01).

Attitudes: Cronbach's alpha values range from 0.891 to 0.952, and KMO values range from 0.774 to 0.818. The significance levels are all less than 0.01, indicating significant results.

Values: The Cronbach's alpha values is 0.904, and the KMO value is 0.693. The significance level is less than 0.01, suggesting significant findings.

(2) Independent Variables:

Cross-cultural Contact: The Cronbach's alpha values is 0.904, and the KMO value is 0.806, both indicating strong reliability and suitability for analysis. The significance level is less than 0.01.

Global Learning Activities: Cronbach's alpha values is 0.961, and the KMO value is 0.907, indicating high internal consistency and suitability for factor analysis. The significance level is less than 0.01.

(3) Mediating Variable:

Students' SES: The Cronbach's alpha values is 0.817, and the KMO value is 0.726, suggesting acceptable internal consistency and suitability for analysis. The significance level is less than 0.01.

These results indicate strong reliability, suitability for analysis, and statistical significance across all variables examined in the pilot study, supporting the validity of the study's findings. The "Global Competence Questionnaire for College Students in the Hainan FTP" has passed reliability and validity tests, indicating that this quantitative instrument has proven to be highly feasible and dependable.

In conclusion, these results affirm the robustness and validity of the "Global Competence Questionnaire for College Students in the Hainan FTP." The high Cronbach's alpha values, along with the favorable KMO values and significant statistical findings, underscore the reliability, suitability for analysis, and robustness of the questionnaire. This quantitative instrument has

passed rigorous reliability and validity tests, demonstrating its feasibility and dependability in assessing global competence among college students in the Hainan FTP. The results of this pilot study provide confidence that the instrument accurately measures expected global competence level, thereby offering a reliable measurement instrument for the study of colleges students' global competence in the Hainan FTP.

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