

# Application of SPSS Data Processing Technology in International Education in China

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**Abstract**—In recent years, SPSS data processing technology has been increasingly applied to China's international education, especially to the analysis of influencing factors of international students. In this paper, SPSS22.0 is used to process data through frequency analysis and descriptive statistical analysis, so as to further analyze the influencing factors of foreign students coming to China. SPSS data processing technology not only enables this study to obtain more quantitative evidence, thus making international education research more profound and countermeasures more practical, but also the application areas of frequency analysis and descriptive statistical analysis has been further expanded.

**Key words:** Chinese Higher education; International students; Frequency analysis; Descriptive statistical analysis

## I. INTRODUCTION

Since China entered into the world trade organization in 2002, enrolling overseas students has become an indispensable step for higher education institutes in the internationalization process [1]. In 2014, China's President Xi Jin ping stressed the magnificence of recruiting overseas students as a device to consolidate national strength and international competitiveness. *Outline of the China national plan for medium and long-term educational reform and development (2010-2020)* made it clear to expand international students influx. The latest "*Study in China Program*" indicates China to enroll a total of 500,000 international students by 2020 [2], making China the biggest Asian host country. Under the current "One Belt, One Road" initiative (BRI), large numbers of students are flocking to China. In such a case, it is tremendously necessary to study the influencing factors because such research is valuable for the momentum of Chinese international education.

## II. RESEARCH PROCEDURE

### A. Data Source

Data in this paper is collected from a questionnaire. Section A is about the respondents' basic information. Section B is mainly about the international students' experience in China, items are coded as four categories: Language & Culture, Teaching Quality, Environment & Service, Financial

Conditions, each item includes 3-4 questions. Additionally, the Five-point Likert Scale ranging from Strongly Disagree (1 point) to Strongly Agree (5points) aims to assess different degrees of personal experience.

### B. Pilot Study

For the pilot study 140 international students studying in Hebei province are targeted. The pilot study used a person-administered method, the advantage of which is that the surveyor can personally control the whole situation and collect as many questionnaires as possible. Totally 140 copies were distributed, 131copies were returned, but 8 copies were not completed and were rejected as invalid, this led to 123 valid questionnaires. The purpose of pilot study was to test the reliability and validity.

### C. Reliability Test

SPSS22.0 was adopted for the reliability calculation of the initial questionnaire data, Cronbach alpha acts as the evaluation standard, and changes in item deleted alpha are investigated. The data obtained are shown in Table 1.

Table 1: The internal consistency coefficient of the questionnaire (N=123)

	Cronbach $\alpha$	Items
Totally	0.859	14
Language & culture	0.738	3
Teaching Quality	0.834	4
Environment & Service	0.753	4
Financial Conditions	0.723	3

Cronbach  $\alpha$  of the category "Language & Culture" was 0.738, "Teaching Quality of" was 0.834, "Environment & Service" 0.753, the fourth category "Financial Conditions" was 0.723, each was greater than 0.7. Scales Cronbach  $\alpha$  is 0.859, higher than 0.8. Thus all of five scales indicate a high reliability quality.

#### D. Validity Test

The questionnaires were sent to five experts for evaluation, who were respectively from government agencies and higher institutions, mainly engaged in the education and management of international students. According to these experts' comment, the ultimate questionnaire has a good content validity for further analysis.

### III. FINDINGS

The data are processed by means of frequency analysis. The following Table2 shows the specific information of international students.

Table2: Basic Information of International Students in China

1.surveyed 123 students from: Asia (n=33) Africa(n=45) Europe(n=42) South America(n=33)
2.Purpose for studying in China language program (n=38) academic degree (n=85)
3.Access to Chinese universities recommended by Friends studying or once studied in china(n=75) other accesses (n=37)
4.Decision makers of studying in China yourself(n=97) family(n=22) others (n=44)
5.Financial aid China government(n=53) family(n=54) China university(n=16)
6.Importance of scholarship Very important(n=71) not important(n=52)
7.Future employment in china(n=90) in home country(n=33)

From the source of origin, Africa ranks first, followed by Europe and Asia, and South America ranks last with a clear gap. For the purpose of study, the number of academic studies is significantly more than that of language programs. Similarly, also significantly different are the accesses of coming to China, the decision-makers, and the choice of future working places. According to the data, more students are recommended and introduced by friends and relatives who are studying or once studied in China, it's more often that students themselves make the choice of China, and most tend to stay and work in China after graduation. Regarding scholarships, the number of students funded by the Chinese government and Chinese universities is slightly more than that of those paid by family, and the understanding of scholarships is also consistent with this number distribution.

The next part presents the international students' dispositions in different areas, and the specific distribution of each item is summarized in Table 3.

Table 3: Comparing the Dispositions of International Students in China

SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree
Language & Culture

8a I like to learn and communicate in mandarin language SD(n=3) D (n=2) N(n=19) A(n=48) SA(n=51)
8b My culture is similar to the Chinese culture SD(n=22) D (n=41) N(n=37) A(n=18) SA(n=5)
8c I'd like to make friends with Chinese and invite them to my dormitory SD(n=2) D (n=3) N(n=30) A(n=52) SA(n=36)
Teaching Quality
9a I prefer English as the classroom language SD(n=10) D (n=28) N(n=35) A(n=36) SA(n=14)
9b I prefer the instructors have a wide range of knowledge SD(n=1) D (n=4) N(n=19) A(n=68) SA(n=31)
9c I prefer the instructors have excellent teaching ability SD(n=3) D (n=6) N(n=19) A(n=64) SA(n=31)
9d I prefer the instructors friendly and caring to international students SD(n=4) D (n=3) N(n=18) A(n=49) SA(n=49)
Environment & Service
10a The campus physical environment makes me comfortable SD(n=3) D (n=10) N(n=23) A(n=59) SA(n=28)
10b I feel safe inside and outside campus SD(n=2) D (n=3) N(n=24) A(n=60) SA(n=34)
10c I can get adequate study facilities (library, internet, lab, etc.) SD(n=2) D (n=4) N(n=16) A(n=70) SA(n=31)
10d The university provides good service for my life SD(n=3) D (n=10) N(n=32) A(n=53) SA(n=25)
Financial Conditions
11a I think China's economy makes my study very stable SD(n=1) D (n=3) N(n=34) A(n=56) SA(n=29)
11b I don't think the tuition in China is very high SD(n=4) D (n=0) N(n=12) A(n=55) SA(n=52)
11c I think I can afford the living expenses in China SD(n=8) D (n=29) N(n=52) A(n=28) SA(n=6)

As shown in the table, in the field of language & culture, although most students say that their culture is different from Chinese culture, about 80% of the students say they like learning Chinese language and are willing to communicate with local people and strive to integrate into the local culture. In the second area, nearly 100 of the 123 students interviewed admit that teachers are knowledgeable, have strong teaching abilities, and care for students, but only 50 people recognize that teachers' English level can meet their needs. In terms of the environmental facilities and services, the vast majority of students agree that the campus environment is comfortable and safe with complete facilities and adequate services. In the area of understanding China's political economy, while nearly all students agree that China's economy is developing rapidly and most admit China's stable political situation, only 27% of students agree with low tuition fee, and only 33% of them agree with the lower cost of living.

### IV. DISCUSSIONS

The study found various factors of overseas students inbound to China for higher education. These findings can interpret much distinction in source regions, purpose of study, and students' dispositions of studying in China. For example, there are significantly more students from Africa than from other regions; many more students hope to complete academic degree rather than language program.

In addition, my analysis results can provide interpretation for motivations of international students to China. Of course, not all international students come to China because of these factors, nor their experience represents that of all international students, it's just an explanation for the limited students in my sample. These explanations are elaborated in the following part.

Africa has more students than any other region just because of the close economic and educational ties between China and Africa. In 2000, in order to promote China-Africa cooperation in various fields including education, the Forum on China-Africa Cooperation was established. The forum's educational initiatives include the provision of Chinese scholarships for African students. In fact, from 2012 to 2016, the Chinese government funded 40,000 scholarships, resulting in African students enrolling in Chinese universities at a significantly higher rate than those from other countries or regions. In 2016, its year-on-year growth was 24%, which is 14 percentage points higher than that of non-Africa (see Figure 1).

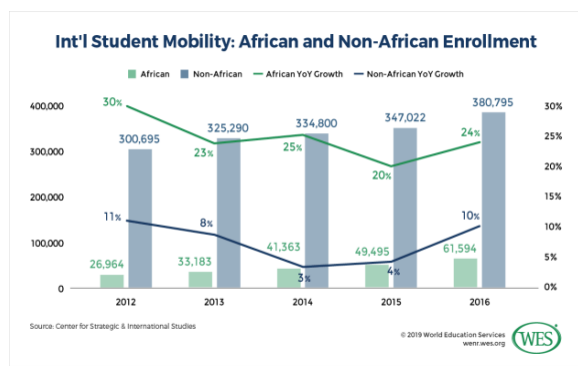


Figure 1: International Student Mobility: African and Non-African Enrollment

Source: China Center for Strategic & International Studies

Most students expressed their willingness to learn Chinese and integrate into the local culture. This psychological tendency is best interpreted by Blumer's Symbolic Interactionism. Blumer emphasizes that people use language to communicate, and the symbol of language gives meaning and explanation to things when dealing with them [3]. The use of English and Chinese for internal and external classroom is a process of continuous interpretation of symbols. Language influences students' classroom performance and interactions with others. In view of the rapid increase of international students in recent years, China is urgently facing the problem of quality of education [4]. lecturers' English ability is really one of the considerations. In the past few years, more and more Chinese universities are using English as the teaching language for various disciplines [5]. Therefore, English teaching is one of the factors that influence foreign students coming to China.

As for the questionnaire items of campus environment & services, the vast majority of respondents agree with the comfortable and safe environment with complete facilities and adequate services. On the contrary, most students do not consider tuition and living expenses low in terms of expenses.

Misra indicates that social and emotional support plays an important role in the psychological wellness of international students [6]. As international students live and study in universities, the social and emotional support comes mainly from host universities, such as assisting students to obtain visas, helping students adapt to differences in education systems, providing financial assistance in daily life, helping students develop friendship with local students and lecturers. These assistances are conducive to the psychological satisfaction of international students and enhance their dependence on universities. The higher the students depend on universities, the closer relationship students will make with the universities [7]. Hill has found that students cherish the social and emotional support provided by the universities when they are in need, so good campus service is an important factor to attract international students [8].

Compared with developed countries, China has reduced the economic burden for international students by virtue of low exchange and inflation rate. The low tuition and low cost of living in China has become one of the factors that attract foreign students. However, due to the rapid growth of the Chinese economy in recent years, prices are increasing significantly, and students from backward countries may feel consumption pressure. It's recommended that Chinese universities make every effort to provide international students with affordable high-quality accommodation, repast and other facilities on campus including scholarship, if possible. Studies have shown that if one country provides safe and comfortable environment for international students, international students and their family will easily choose this country as higher education destination in the future [9].

It is worth noting that friends or relatives who are studying or once studied in China play the roles of significant others. They can help lower the information cost, provide details of the institutions to facilitate the new comers' integration into the host universities. They may also reduce the psychological cost and make the acculturation easier, because being with people with the same language, culture and background can alleviate the discomfort with the new environment of the study destination, and eventually they may appeal increasingly more town-fellows to China.

Through the frequency analysis of the questionnaire data, it can be seen that the main factors for studying in China are scholarship, English teaching, quality services provided by the school and important people, etc. Higher institutions should improve themselves in these aspects to promote more international students to come to China.

## V. CONCLUSION

In this paper, the questionnaire survey and SPSS data analysis are applied to explore the influencing factors of international students studying in China. The application of Frequency Analysis and Descriptive Statistical Analysis provides a reliable quantitative basis for the research. At the same time, it also expands the application scope of SPSS data processing technology, it is hoped that the data technology can be applied in a broader field in future.

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