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Factors Influencing International Students to Study at Universities in Taiwan

Yao-Chuan Tsai[1], Le Thu Trang[1] and Kazuhiko Kobori[2]
[1]National Cheng Kung University, Tainan, Taiwan and
[2]Shu Zen College of Medicine and Management, Kaohsiung, Taiwan

Abstract

In order to survive and compete in the current world, a business needs to identify the needs of its potential customers and to develop products or services that can meet customers' needs. This is true for the educational business as well, which is essentially a service business with students as its clients. Given the growing competition between universities for recruiting international students, it becomes increasingly important for the university management to gain a better understanding of the factors that may influence student's decisions on selecting universities. This is especially necessary for Higher Education (HE) institutions in Taiwan where the number of international students has almost doubled over the past four years, studying a wide variety of majors.

This study applied conjoint analysis to analyze the factors which could influence international students' decisions on selecting universities to study at Taiwan. We found that the strongest influencing factor is "scholarship", followed by the factors of "desired course", "language", and "international environment" (these three factors have the same rank), then followed by "future job", and finally the weakest influencing factor is "institutional image".

Key words: Study in Taiwan, application intention, conjoin analysis, education.

Introduction

In order to survive and compete in the current world, a business needs to identify the needs of its potential customers and to develop products or services that can meet customers' needs. Harvey and Busher (1996) pointed out that consumers would make rational choices to maximize their own benefits. This is true for the educational business as well, which is essentially a service business with students as its clients (Harvey and Busher 1996; Mazzarol 1998). It should be noted that to study overseas could be the most expensive decision that a student would ever have to make, so research in this field is necessary (Mazzarol 1998).

Taiwan's institutions of higher education have been actively recruiting outstanding international students in the recent years. This could lead Taiwan's competition status to become a Center for Higher Education within Southeast Asia (Higher Education in Taiwan 2012-2013). Currently, Taiwan has 65

higher education institutions. According to the QS (Quacquarelli Symonds) World University Rankings in 2013/2014, nine universities in Taiwan are ranked within the world's top 500 best universities.

Needless to say, Taiwan's relatively low tuition, favorable living condition, and Mandarin Chinese learning environment are some of the reasons that international students select Taiwan as their final study destination. The number of international students in Taiwan has almost doubled in the past four years (from 2006 to 2011). Some of the popular majors among international students are Chinese language, history, tropical agriculture and forestry, genetic engineering, business, and semi-conductors.

Phang (2013) and Chang and Chou (2012) had found the factors of scholarship, desired course, institutional image, international environment, language, and potential future job might affect the application intention of international students studying at Taiwan. However, those previous research did not weigh the importance of those factors. Instead they only surveyed opinions regarding certain factors and considering whether or not the factors were influential.

The purpose of this study is to measure the important weights of scholarship, desired course, institutional image, international environment, language, and future job on the international students' intention to apply for university admissions. In order to investigate the influence of the factors affecting their application intentions, a conjoint analysis method is conducted in this study. This study also analyzes the different inferences of the six factors based on international students' demographics.

Literature Review

Application Intention

Giles and Rea (1999) indicated that the intention is often a more realistic measure than merely consideration. Also, it has been found that there is a difference between the attraction to an organization and the intention to pursue an employment opportunity (Aiman-Smith, Bauer, and Cable 2001). Srikatanyoo and Gnoth (2002) used the **destination intention** as the students' preferential choice of an education destination. Following this frontier, Cubillo et al. (2006) proposed factors that influence the **purchase intention** of international students. They defined the purchase intention as a predictor of students' choices when they consider different elements in their overseas study decisions. The purchase intention of students involved a destination country as provider of the education service. Peng, Lawley and Perry (2000) also used the purchase intention as a predictor for students' preferential choice of the universities to purchase his study.

This study involved international students' decision on selecting universities. We use the term **application intention** to represent the international students' intention to apply for university admissions in Taiwan. Application intention could be affected by some factors, like the factors of country, program, etc. For example, Bourke (2000) found that medical schools students would choose "country" over

"school". Chen and Zimitat (2006) and Pimpa (2003) found that graduate students would choose "program" over "country".

Factors that influence international students' application intention

There are many identified factors that are related to students' choices in higher education in the literature. Nine of them are directly related to the application intention of international students. The nine factors are cheaper tuition and fee, scholarship (Chang and Chou 2012), the commonality of the language and opportunities to learn second language (Bodycott 2009; Chen and Zimitat 2006), institutional image, desired program/course, international environment (Phang 2013), influences and recommendation from family, friends and professors (Phang 2013; Bodycott 2009), career prospects (Chang and Chou 2012; Chen and Zimitat 2006), collaboration program (Cheung, Cheng, Yuen and Yuen 2011).

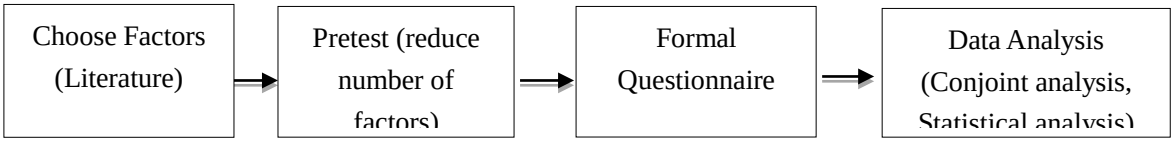
Conjoint Analysis

The method of conjoint analysis allows the respondents to consider certain factors (attributes) involved in a decision. Conjoint analysis is a technique that requires respondents to make a series of judgments (Shepherd 1999). The judgments are based on a set of attributes from which the underlying structure of the respondents' cognitive systems can be investigated.

The conjoint analysis method has been used in the studies of judgment and decision making (Green and Srinivasan, 1990), including job application intention (Aiman-Smith et al. 2001) . Conjoint analysis is effective because it places the few demands on the respondents (Hair, Anderson, Tatham, and Black 1998). By analyzing the results of the respondents' judgments, the weighted percentages (importance) of the attributes can be measured.

Research Design

Study Process



Pretest

In order to make a conjoint analysis approach workable, the number of factors needs to be reduced. A pretest was conducted in order to filter out the most important factors for the design of formal conjoint analysis questionnaires. The pretest was conducted by 50 international students currently studying in Taiwan. The pretest was taken during January 1st to 14th, 2014. A seven-point Likert scale was used in the pretest questionnaires and the results were illustrated in Table 1. The first six highest score factors were selected for our study. The six selected factors are scholarship, desired course, international environment, language, institutional image and future job.

Table 1 *Pretest Results*

	Factors	*Definitions*	*Results*
1	Scholarship	The university provides international students with scholarship or financial assistances.	331
2	Desired program/course	The university provides interesting programs that meet prospective students' needs.	311
3	International environment	The university and its studying environment allows international students to experience new culture and to meet classmates from different countries.	294
4	Language	The university provides courses which are taught in both Chinese and English.	286
5	Institutional image	The ranking, reputation, and equipment of the institution are good or not.	274
6	Future job	The university and its offered degree allows international students to work in Taiwan after graduation.	271
7	Recommendation by others	The students' family, friends, and professors recommend to study at certain universities.	250
8	Collaboration with other universities	The university collaborates with other universities in the world, including international students' home countries, and/or provides the exchange students program	228
9	Low tuition fee	The university's tuition and fee are low.	227

Sample Data

Questionnaires were distributed to 210 international students who were currently studying in Taiwan. Six of the 210 questionnaires were invalid because they are either filled out improperly or not returned. Questionnaire forms were presented in three different languages: English, Chinese, or Vietnamese. The survey was taken from February 15th to March 25th, 2014.

Attributes and Attributes Levels

In order to investigate the influence of scholarship, desired course, institutional image, international environment, language, and future job on students' application intention, students (respondents) were asked to rank a combination of stimuli (attribute-levels) from high to low. To simplify the study process, the characteristics (levels) of the attributes are defined as either 'yes' (present) or 'no' (absent). Table 2 gives a summary of the attributes (factors) and their levels. As an example, the scholarship factor was stated as followed:

Yes (Present): The University provides scholarship for you.
No (Absent): The University doesn't provide scholarship for you.

Table 2 *Attributes and Attribute-Levels*

	Attributes	*Levels*
1	Scholarship	Yes
		No
2	Desired program/course	Yes
		No
3	Institutional image	Yes
		No
4	Language	Yes
		No
5	International environment	Yes
		No
6	Future job	Yes
		No

A conjoint analysis questionnaire has a list of scenarios for the respondents to consider. Each scenario was made up of a different combination of attribute-level that the research would measure. As mentioned above, this study seeks to measure the six attributes with two levels for each. A full factorial design with a complete combinations of all possible attribute-levels would have 64 scenarios (2 x 2 x 2 x 2 x 2 x 2). An 64 scenario survey is apparently too large and complicated for a respondent to evaluate. Therefore, we take a fractional factorial design method to reduce the number of combinations, while still maintaining orthogonally among the levels (Hair et al. 1998). This approach would result in a proper number of combinations of the stimuli to consider, and it naturally prevents the respondents from fatigue. By using the SPSS 16.0 software, 10 scenarios were randomly generated. It is generally accepted that a 20-combination questionnaire can be ranked by a respondent without a degradation in the quality of the response (Johnson and Orme 1996). Therefore, our 10-combination survey is appropriate for the respondents to evaluate.

Application Intention

Similar to the study of the job pursuit intention (Aiman-Smith and Bauer 2001), our study examines the application intention of international students for admissions to universities by using the following statement: *I would apply for the admission to this university.*

Demographic Information of the Respondents

The questionnaire also collected demographic information from the respondents to see if there were any differences between their responses. The demographic information collected are gender, age, marital status, nationality, educational program, and major.

Data Analysis Methods

Statistical Analysis and conjoint analysis were applied in our study.

III.VI.I.Statistical Analysis

III.VI.I.I.Descriptive Statistic

Descriptive statistic allows us to compare summarized data across demographic variable like gender, age, etc. Although it is not a key element to this study, descriptive statistic is useful because it provide us with a comparison of the scenarios directly, rather than merely the individual attribute.

Hypothesis Testing

In applied research there are many problems in which we must decide whether observed differences among sample proportions, or percentages, are significant or whether they can be attributed to chance. We used SPSS 16.0 to test the significances of the sample proportions of the factors.

Conjoint Analysis

Conjoint analysis is a method for deriving the customer preference for different levels of product attributes (Best 2013). This study uses the conjoint analysis method to investigate how the six factors affect the international students' intention of application for university admissions. By examining how the students make trade-off s when choosing various combinations of attribute-levels, we can conclude the percentages (importance) of attributes.

Data Analysis

Descriptive Statistics

The characteristics of the 204 respondents who had filled out the questionnaire properly. The distribution between males and females were 48 % and 52% respectively. The majority of the respondents were 21-30 years old students with a percentage of 82%, and unmarried students takes apportion of 92% out of the total respondents.

Vietnamese is the largest international students group with a total of 57 out of 204 students, or 28% out of the total respondents.

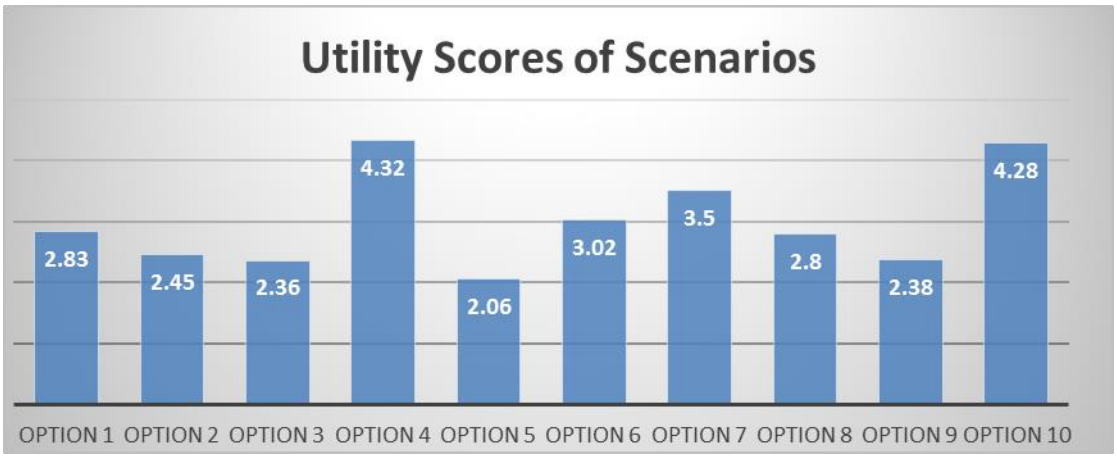
Conjoint Analysis

After the data were collected, we can then calculate the utility score of each attribute-level and the weighted percentage (importance) of each factor attributing to the decision making. Table 3 showed the percentages of attributes and the utility scores of attribute-levels. The utility scores were normalized into a range of value from 1.00 to 0.00 and the weights (percentages) of each attributes were ranked from high to low.

Table 3 *Weighted Percentages of Attributes and Utility Scores of Attribute-Levels*

	Attributes	***Percentages***	***Levels***	***Utility score***
1	Scholarship	35.6%	Yes	1.00
			No	0.00
2	Desired Course	18%	Yes	0.70
			No	0.20
3	Language	17%	Yes	0.74
			No	0.26
4	International Environment	16%	Yes	0.73
			No	0.27
5	Future Job	11.4%	Yes	0.63
			No	0.31
6	Institutional Image	2%	Yes	0.52
			No	0.48

The scholarship attribute has the highest weight (35.6%), followed by the desired course attribute (18%), language (17%), international environment (16%), future job (11.4%), and then, institutional image (2%). Figure 1 shows the utility scores of scenarios.



Scenario 4 (all the 6 factors have 'YES' levels) and Scenario 10 (all factors have 'YES' levels except International Image) are the two most favorite choices, which are mostly likely to meet student needs.

The next section displays a sample comparison of the six different attributes for the demographic data.

Comparison for Demographic Data

Table 4 *Sample Statistics among Demographic Variables*

Demographic	***Characteristics***	***Scholarship***	***Desired Course***	***Institutional Image***	***Language***	***International Environment***	***Future Job***
Total		***35.6%**	**18%**	**2%**	**17%**	**16%**	**11.4%**
Gender	Male	*33%	21%	3%	17%	14%	12%

	Female	*37%	16%	0%	18%	18%	11%
Marital Status	Single	*35%	18%	2%	17%	16%	11%
	Married	*37%	16%	1%	17%	14%	15%
Age	Under 20	*36%	17%	2%	17%	16%	12%
	21 – 30	32%*	21%	0%	20%	17%	10%
	31 – 40	*48%	16%	1%	17%	10%	8%
Nationality	Vietnam	*34%	18%	2%	17%	15%	13%
	Malaysia	*34%	23%	3%	13%	16%	11%
	Indonesia	*40%	17%	1%	15%	14%	13%
	Thailand	*41%	14%	3%	12%	12%	18%
	Philippines	*31%	25%	8%	21%	8%	6%
	Korea	19%	17%	1%	*39%	21%	4%
	Mongolia	*38%	11%	1%	23%	25%	1%
	Hong Kong	*45%	3%	6%	17%	21%	7%
	Russia	*30%	11%	9%	18%	22%	10%
	Haiti	*31%	5%	5%	26%	24%	10%
Educational Program	Undergraduate	***31%**	21%	1%	22%	20%	5%
	Bachelor	*30%	18%	3%	17%	18%	14%
	Master	***41%**	17%	1%	16%	13%	12%
	Doctor	*39%	17%	3%	14%	14%	14%
Major	Management	*39%	16%	0%	17%	16%	13%
	Finance	*27%	20%	2%	15%	20%	15%
	Science and Engineering	*42%	19%	4%	14%	10%	12%
	Literature, Art	*30%	24%	3%	21%	18%	5%
	Other	*35%	14%	0%	20%	20%	11%

The number with "" represents the highest weight in each row.*

Statistical Hypothesis Testing

Testing the difference of two proportions (one population)

As we could see from the above table, the scholarship factor was found to be the most significant out of the six with 35.6%, followed by the desired course with 18%. To find out if the scholarship factor had more influence than the desired course factor, we conducted the one-sided hypothesis testing for one proportions. The null and alternative hypotheses are:

H_0: The influence of scholarship is not more than the influence of desired course ($P_1 \leq P_2$)

H_1: The influence of scholarship is more than the influence of desired course ($P_1 > P_2$)

With $\alpha = 0.05$ (confidence level), we have the result $Z = 6.543 > Z_{0.05} = 1.645$, reject H_0, which means that the influence of the scholarship factor is more than the influence of the desired course factor.

We extended the statistical analysis by conducting the same hypothesis testing for other attributes. The results showed that the importance of desired course (18%) is not more than that of language (17%). Also, the influence of language is not significantly more than the influence of international environment (16%). We then continue choosing international environment and future job (11.4%) to do the similar hypothesis testing. The results showed that international environment has influence more than future job. Also, future job has influence more than institutional image (2%).

Testing the difference of two proportions (two populations)

In order to understand how the factors related to the demographic variables, we conducted an analysis example regarding to "scholarship (factor)" and "educational program (demographics)". The percentage (importance) of the scholarship factor for master was 41%, and the percentage of the scholarship for undergraduate was 31%. The null and alternative hypotheses of the two-sided hypothesis testing for two proportions are:

H_0: The influence of scholarship on master students is the same as the influence on undergraduate students (P_1=P_2)

H_1: The influence of scholarship on master students is not the same as the influence on undergraduate students ($P_1 \neq P_2$)

With $\alpha = 0.05$, we had the result $Z = 1.08629 < Z_{0.05/2} = 1.96$. Therefore, we rejected the alternative hypothesis H_1, in favor of the null H_0. The influence of scholarship on master students is the same as the influence on undergraduate students.

Conclusions

This study measured the six different attributes by combining their levels into various scenarios. This allowed the respondents to consider a more realistically by taking into account of what factors he or she believed to be important. The respondents were international students currently studying in Taiwan. They were asked to consider the factors influencing them to select universities in Taiwan. There were ten scenarios to rank from high to low. The conjoint analysis method was used to calculate the relative strength of the six attributes. The sample percentages (weights) of the six factors were shown below.

1. Scholarship (35.6%)
2. Desired Course (18%)
   Language (17%)
   International Environment (16%)
3. Future Job (11.4%)
4. Institutional Image (2%)

The statistical results showed that the strongest influencing factor is "scholarship", then followed by the factors of "desired course", "language", and "international environment" (these three factors have the

same rank), then followed by "future job", and finally the weakest influencing factor is "institutional image". None of the six factors is a majority (over 50% importance) of decision making.

Educational institutions can take advantage of this study by gaining an understanding of what attributes students are considering. In this study, the amount and complexity of the attributes were simplified. One related further research could be done by analyzing the six factors based the students' personalities and interests. This might provide a better strategy for universities to recruit the students that they really want.

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