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Constructing and measuring of the critical success factors of college students' international mobility: Application of Analytic Hierarchy Process (AHP) method

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With the increasing popularity and importance of globalization issues, "global mobility" has become one of the important education policies of Taiwan's higher education. Many universities have actively applied "Shuei-Hai-Fei-Yan" and "Shuei-Hai-Shi-Jhu" programs to follow the trend of globalization and arrange outstanding students to participate in overseas training or internships in order to strengthen the cultivation of university students' global mobility. However, under the impact of the trends of "globalization", "lower birth rate" and "digitalization", it is necessary to explore the critical success factors of global mobility of college students. This study takes a teacher and Student University in southern Taiwan as the research object, and applies Analytic Hierarchy Process (AHP) and questionnaires on 11 experts and 174 students. The results of the study found that: (1) the major aspects of factors for teachers using AHP to recognize the critical success factors of university students' international mobility are "environmental adaptability", "international language skills", "challenges and adventures", and "global vision"; the perspectives of college students are "challenging and adventurous", "global vision", "environmental adaptability", and "international language ability"; (2) AHP experts recognize that among the 13 key elements of the secondary aspect of the key success factors for international mobility of college students, their weights are ranked in the top five in sequence: "fluent international language or oral expression ability", "oversea life adaptability", "clear message conveyed in international languages", "overseas psychology adaptability", "adaptability for overseas work/study abroad"; and the perspective of university students is "multicultural tolerance or acceptance", "try or experience new things", "dare to challenge difficult tasks", "cross-cultural thinking perspective", and "without the fear of risks or failure".

Key words: College students, international mobility, T-type talent, critical success factors.

INTRODUCTION

For the past years, under the trend of globalization, Taiwan's contacts with countries around the world have become closer. It is not only limited to the aspect of trade and diplomacy, but more frequent exchanges in education, culture and tourism, such as international sister university schools, regular students' exchanges

and government-provided policies on talent cultivation, according to the Education Statistics Bulletin No. 105 written by the Statistics Office of the Ministry of Education in 2019. The number of foreign students in colleges and universities are 126,997, an increase of 4.6% each year due to the sharp increase in overseas students from New South countries; the largest increase was in overseas students from Vietnam and Indonesia. In 2018, there were 51,970 students from the new southbound countries, accounting for 41% of the total number of overseas students, which has been increasing year by year. The primary three countries of origin are Malaysia, Vietnam and Indonesia, accounting for 80% of the total number of students from the new southbound. The new southbound countries include the ten ASEAN countries (Indonesia, Malaysia, Philippines, Thailand, Singapore, Brunei, Cambodia, Laos, Myanmar and Vietnam), and six countries in South Asia (India, Pakistan, Bangladesh, Sri Lanka, Nepal and Bhutan), New Zealand and Australia.

According to the “Statistics on the number of international students of Taiwan in the world's major countries in 2019” from the International and Cross-strait Education Division of the Ministry of Education on December 4, 2019, 9,957 students studied in Europe; 20,681 students in Oceania; 27,771 students in America; and 12,812 students in Asia, making a total of 71,221 people. On 2 June, 2020, the research collected the “statistics of the number of Taiwan students studying in major countries from 2009 to 2019”. Using 2009 as a basis, the ratio of Taiwan students who went to major countries in 2019 will be analyzed as follows: United States (-33.00%), United Kingdom (-37.37%), Australia (+172.32%), Japan (+111.87%), Canada (-2.94%), France (+27.16%), Germany (+190.32%), New Zealand Zeeland (-19.46%) and other countries (+177.88%) in 2018. Therefore, we can find that the ratio of our students studying in Germany in the past ten years shows the highest trend, followed by other countries and Australia; 2,718 in the U.S. (-18.44%), 3,805 in the United Kingdom (-2.31%), 6,056 in Australia (+45.02%), 5,603 in Japan (+78.27%), 3,480 in Canada (+50.00%), 1,200 in France (+36.05%), 1,645 people in Germany (+154.64%), 491 in New Zealand (+4.69%), and 6,561 in other countries (+162.02%). These can be found in the growth of Chinese students studying abroad in other countries in the past ten years. In addition to the highest ratio, Germany is also the country with the second highest growth rate of students studying abroad. The other countries use the number of countries and visas for studying in 2019 as statistics; they include the Americas (38 in Mexico; 52 in Brazil; 8 in Chile), Europe (68 in Hungary; 295 in Switzerland; 623 in the Netherlands; 373 in Italy; 483 in Poland; 166 in Austria; 274 in Czech; 167 in Belgium; 67 in Denmark; 630 in Spain; 291 in Sweden; 122 in Finland; 270 in Russia), Asia (2,055 in South Korea; 55 in India; 305 in Indonesia; 152 in Malaysia; 48 in Turkey) and Africa (19 in South Africa).

In order to enhance the international mobility of young people and expand their international perspectives, the Ministry of Education began to launch the “Learning Overseas Project”, “Cherish talents overseas”, “Study overseas by dreams” and “New Southbound of Studying overseas by dreams” 2007, allowing schools to apply for scholarships to study abroad or internships in foreign companies to the Ministry of Education. Learning Overseas Project includes four categories: “Study overseas by dreams”, “Cherish talents overseas”, and “New Southbound of Studying overseas by dreams”, of which the Department encourages outstanding college students to go to overseas’ colleges and universities. According to Luxu (2019), the main purpose of “Study overseas by dreams” and “New Southbound of Studying overseas by dreams” is to arrange students’ internships in overseas’ companies and institutions and to send 30,689 students abroad, giving domestic students the opportunity to enhance their international outlook and international mobility. The Ministry of Education also proposed a “Plan for Enhancing Young Students Global Mobility” in 2016, in order to increase the “Global Mobility” of young students, so as to improve students’ “communicative ability” , “adaptability”, “professional ability” and “practical power ”are the core to cultivate young students with an open mindset of an international outlook, an identity that recognizes multiple cultures, and retains implicit capabilities such as resilience (Ministry of Education 2016, Global Mobility Improvement Program for Young Students).

In summary, the major education policies promoted by the Ministry of Education in Taiwan, such as the improvement of foreign language communication skills, international exchange students and short-term study abroad programs, international academic exchanges and internship programs, etc., are all aimed at training students to have “international mobility”. In view of the impact of trends such as “globalization”, "lower birth rate", and “digitalization”, it is a common issue facing countries around the world, and the cultivation of “international mobility” in a goal that countries focus on. However, papers on related topics in Taiwan are very rare, which aroused the interest in this research. The objective is to construct and measure the critical success factors (CSF) of the international mobility of college students through the perspectives of experts and college students. This research aims to achieve the

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following main research goals:

(1) Explore the key success factors and relative weights that university students need for international mobility based on the opinions of teachers and experts from a university in Southern Taiwan.
(2) From the perspective of a university student in southern Taiwan, explore the importance of college students to the key success factors required for international mobility.
(3) Suggestions on how to improve the international mobility of college students based on the findings of the study, for the reference of future policy makers and researchers.

LITERATURE REVIEW

International mobility

“International mobility” is a new topic that countries have paid much attention to in recent years. It is also a novel concept. Policy makers and educators have realized that internationalization and globalization cannot be promoted through arranging students abroad for exchange and further studies. However, students’ international mobility is the critical point. Global Education Association in Taiwan (GEAT) (Huang, 2017) proposed that “International mobility” is no longer just a noun, a verb, but a “dedicated label” that must be and shall be closely attached on the body.

Chen (2013) believes that the cultivation of international mobility is a process of education. It must be accumulated from the construction of knowledge, the cultivation of attitudes and the experience of participating in interactions to meet people and things in the world. Lin (2016) considers that the historical spectrum of international mobility has changed from the motive of survival in the last century to this century due to the change in life style, so the future international mobility includes survival and life, competition and cooperation, response and foresight, individual and collective action, understanding of care and responsibility, international understanding and national identity.

He Guo-Xu (2016) explained that the cultivation of international mobility emphasizes that students shall establish multicultural thinking, learn to understand, appreciate and respect different cultures and traditions, and avoid creating “cultural blindness”. Expanding cultural horizons with international empathy promotes international understanding by respecting international multiculturalism and ethnic groups, and move towards the goal of a harmonious, inclusive, cooperative, and common world village. Scholars' explanations of international mobility let us understand that international mobility is not a slogan of a policy or system, but a process of truly implementing multicultural identity and strengthening international understanding. In the era of globalization and the rise of global village outlook, those talented in the future should have the ability to respect and appreciate the beauty of different cultures, actively care about global issues and international situations, have multi-cultural values and the mind of world peace, so as to truly implement the core concepts and values of the essence of international mobility.

Wen (2019) mentioned that fostering international mobility also needs to highlight the uniqueness, individual and culture of each place. Cultural exchanges created through international mobility are more meaningful. Guo (2019) mentioned that international mobility, or global mobility, was proposed in response to the era of globalization to measure the survival of mankind in the new century to adapt international changes and high competition. New indicator of survival of the fittest, according to Tang-Yao and Li (2019), talks about global mobility as an integration of multiple abilities. It is necessary for college students to strengthen their global mobility by adopting systematic, comprehensive and holistic training strategies on campus. Demonstration of global mobility can strengthen an individual's ability to grow in cognition, emotion, action, interpersonal, life and environment.

“International mobility” is also a global mobility. It is a concept of integration of multiple abilities and multicultural thinking, which can become an important indicator of international competitiveness and survival ability.

Overview of global international mobility

In response to globalization and international competitiveness, governments of all countries have facilitated the cultivation of international students and focused on the importance of implementation of international education in recent years. Therefore, international mobility has become another type of competition and cooperation among countries in the new century (Guo, 2019). The following is a detailed description of the plans and strategies that countries take to implement global international mobility (Table 1).

International mobile capabilities and indicators

In view of the fact that international mobility is an international policy that countries have emphasized the importance today, it is also an important indicator for cultivating young students with transnational capabilities and international perspectives. Coupled with the indicators and capabilities of the concept of international mobility, there is still no clear definition. This study summarizes the views of scholars in domestic and abroad, and sorts out the important indicators and

Table 1. List of countries' plans and strategies for promoting international mobility from 2010 to 2019.

Country (Time)	Project/Strategy Name	Project/Strategy Name
European Union (2020)	2020 European Union strategy	It is a European Union's economic development plan for the next ten years. The purpose is to strengthen the coordination of economic policies among member states, promote economic growth, expand employment, improve education and training, encourage knowledge innovation, and improve the efficiency of energy resources and sustainable development trend (quoted from MBA Think Tank Encyclopedia, 2020).
Korea (2012)	Korean Move, K-Move	Based on the “Korean Mobile Center” (K-Move for short), establish an overseas support system to cultivate young people to become internationally competitive talents through customized training courses and dedicated mentors, and provide better overseas employment opportunities (Collected by Huang, 2018).
Japan (2013)	“Fly! Study abroad in Japan”	The goal is to cultivate Japanese talents that are “business-oriented and meet the needs of society” and “active the world” to enhance Japanese students’ international outlook and national competitiveness. The target is to reach 120,000 international college students or more in Japan and 60,000 high school students by 2020 (quoted from Yang, 2016).
European Union (2014)	(Erasmus+) Plan	A global higher education project for the European Union, a global transnational academic research and education integration project focusing on EU countries. The content mainly includes: Learning Mobility of Individuals, Cooperation for Innovation and the Exchange of Good Practices, Support for Policy Reform (Jean Monnet Activities) and Sport.
USA (2015)	New Generation Study Abroad Plan	Encourage more U.S. college students to study abroad in other countries. The number of international students can reach 600,000 after five years, and offer the priority opportunities to students who haven’t studied abroad and disadvantaged students, so as to improve the global competitiveness of American youth (organized by Zhang, 2016).
Australia (2015)	New Colombo Plan, NCP	It is a large-scale international Asian youth study and exchange program for Australia. The purpose is to encourage Australian college students to conduct short-term studies or internships in countries of the Asia-Pacific regions such as the Indian Pacific and social cultures (quoted from Bi, 2016).
Taiwan (2016-2019)	Enhance Young Students' Global Mobility Program	The goal is to train young students that have cross-cultural communication, adaptability, professionalism and practical ability in order to achieve the goal of “global citizens and talents in the world” or freedom to move around the world and global arrangement (Enhance young students’ global mobility plan 2016).
Taiwan (2007-2018)	Study Abroad Plan	The purpose is to enhance the international mobility and international vision of young people. The main contents include “learn overseas” that selects outstanding university students to study abroad, “study overseas by dreams” for professional internships, and “cherish talents overseas” that are exclusive to the outstanding students of three projects, and added the “New Southbound Learning Sea Dreaming Project” in 2017, arranging students to New Southbound for workplace internships, and helping students build dreams through overseas study internships (Global Information from The Ministry of Education Online (2019).

Source: Collection of this study.

capabilities of international mobility. Table 2 provides details, as a reference for the design of the AHP expert questionnaire for the key success factors of international mobility in this research.

Table 2. List of important indicators and capabilities of international mobile forces for domestic and foreign scholars from 2013 to 2019.

Author	Time	Important indicators and capabilities of international mobility
Kumpikait and Duoba	2013	Three core competencies are cultural power (cultural awareness and expression), civic power (social and civic abilities), and professional power (professional knowledge and skills).
Zhuang	2014	Professional ability, language ability, and adaptability.
Chen	2014	Professional ability with international vision, international communication, as English the core (including foreign language fluency), cross-cultural thinking and integration ability, life adaptability, wandering.
Chen	2015	Children ability in 21st Century: Critical thinking, problem solving, innovation and creativity, interpersonal communication, communication expression, career, leadership responsibility, global awareness, financial entrepreneurship, digital ability, citizenship, health and environmental protection (Global Views Monthly, issue 350).
Xiao	2015	T-shaped skills were first proposed by Dorothy Barton, a professor at Harvard Business School, in 1995. In a rapid changing business environment, what companies really need is T-shaped with both professional and cross-disciplinary knowledge talent. This coincides with the Finnish National Board of Education (FNBE) defining seven "transversal competences" for future needs, including: 1. Ability to think and learn; 2. Ability to interact and express; 3. Self-care, daily living skills and the ability to protect their own security; 4. Multi-literacy; 5. Digital application ability. 6. Ability to work, live and entrepreneurship. 7. Participation, influence, and responsibility for a sustainable future (World Magazine, Issue 586).
Liang	2015	The US Department of Education has formulated the “International Education Policy 2012-2016”to strengthen American students’ global capabilities. Among the 21st century world citizens, it is mentioned that they shall have four important abilities: 1. Investigate the world; 2. Recognize perspectives; 3. Communicate ideas; 4. Take action.
Børing et al.	2015	Analysis of comprehensive survey data from the mobile experience of researchers from EU universities and non-university research institutes found that research visits are the most common form of international mobility, but employment migration (transnational changes in employers) is unexpectedly widespread. International student mobility and corporate internship experience seem to be good predictors of subsequent mobility in a research career.
Lee	2017	According to the Global Mobility Plan of the Ministry of Education through empirical analysis, the pre-factors affecting the global mobility of college students were found to be professional competency, language communication, international adaptability, and innovative solutions.
Li and Tang-Yao	2019	Global mobility: GLOBAL (G: global citizenship), language (L: language ability), occupation (O: occupation), befriend (B: befriend), acculturation (A: acculturation), lifestyle (L: lifestyle).
Wen	2019	Summarize the contents of international mobility, including global citizenship, language ability, professional ability, life adaptability, interpersonal social ability, multicultural understanding and tolerance, teamwork, innovation and problem solving, critical thinking ability, lifelong learning ability, interdisciplinary learning ability, autonomous learning ability, etc.

Source: Collected by Guo (2019) Li and Tang-Yao (2019).

Table 3. List of key indicators of key success factors for international mobility in this research.

Indicator of competency	Scholars reference (Time)
Verbal communication	Zhuang (2014); Chen (2014); Chen (2015); Xiao (2015); Liang (2015); Lee (2017); Lee and Tang-Yao (2019); Wen (2019)
Environmental adaptability	Zhuang (2014); Chen (2014); Chen (2015); Xiao (2015); Liang (2015); Lee (2017); Lee and Tang-Yao (2019); Wen (2019)
Global perspective	Kumpikait and Duoba (2013); Chen (2014); Chen (2015); Lee and Tang-Yao (2019)
Challenge and adventure	Chen (2015); Liang (2015); Lee (2017); Wen (2019)

This study found that scholars have identified “professional competence” as a necessary and important capacity in the identification of international mobility indicators or abilities by scholars (Kumpikaitė and Duoba, 2013; Zhuang, 2014; Chen, 2014; Lee, 2017; Wen, 2019). The opinions of scholars, including the index capabilities of the four major items, are detailed in Table 3.

This study applies the aforementioned four abilities as the main facet indicators for college students to enhance their international mobility. The ability to communicate, express language and adapt to the environment have been mentioned by many scholars, and the global vision is to combine cross-cultural and interdisciplinary thinking, and to empathize with cross-cultural people and matters. The basic concept is international movement necessary. Challenges and adventures are formulated in response to current trends, encouraging young college students in Taiwan to step beyond their own comfort zone of limitations, explore more and experience new things, and actively seek exchange or study abroad in order to increase their international mobility.

Critical success factors (CSF)

CSF first started with the theory of organizational economics, and to be applied in the field of management decision-making, focusing on the analysis of management strategies such as core competitiveness, value chain analysis, and enterprise management processes. Now it has become strategic management and business management, so the important concepts in this paper are widely used. The following are the definitions of key success factors in domestic and foreign countries.

Rockart (1979) proposed critical success factors for improving the success of business competition and operational performances; operators must meet the critical success factors. Leidecker and Bruno (1984) believed that the critical success factors are certain characteristic conditions and variables. If they could be supported, maintained, or managed properly, they may have a significant impact on the success of companies in certain industries. Kenichi and Huang (1985) considered the critical success factors are one of the ways for strategists to find strategic advantages. The critical success factors were analyzed by using the industrial structure, and resources that were concentrated in specific areas to obtain industrial competitive advantages. Lee (2019) mentioned that the key success factors are important factors that must be obtained for the success of an enterprise's business operations, and that certain conditions or other relevant fields must be mastered in order to achieve success and competitive advantage, and gain an advantageous position. Besides, Hofer and Schendal (1978) pointed out that the search for key success factors can be carried out in the following five steps: First, confirm the factors related to the competitive environment of the industry; Second, each factor gives different weights according to their relative importance; third, give different weights according to the relative importance of the industry; fourth, calculate the weighted score of each factor; fifth, each factor should be prioritized in the actual comparison.

According to the definitions of the above key success factors, as the key success factors (KSF) for international mobility of college students are defined in this research, college students possess a certain ability and professional; they can master several of them to create an advantage in the world and stand out from talents around the world.

Analytic hierarchy process and expert choice system

The Analytic Hierarchy Process (AHP) was developed by Thomas L. Saaty (Professor of the University of Pittsburgh) in 1971. It is mainly applied in uncertain situations and decision problems with a majority of evaluation criteria. In terms of the experience of Saaty (1980), Analytic Hierarchy Process method can be applied to the decision-making problem, including setting priorities, generating a set of alternatives, choosing the

Table 4. AHP pairwise comparison matrix.

Evaluation scale	Definition	Description
1	Equal Importance	Contributions of pairwise comparisons are equally importance (equal)
3	Weak Importance	Experience and judgment are slightly inclined to a certain scheme favorite (somewhat stronger)
5	Essential Importance	Experience and judgment are strongly inclined to a certain scheme favorite (very strong)
7	Very Strong Importance	Actually shows very strong incline to a certain scheme favorite (absolute strong)
9	Absolute Importance	There is enough evidence to definitely prefer a certain scheme (extremely strong)
2,4,6,8	Intermediate values	As a compromise is needed

Source: Saaty (1990).

best policy alternative, determining requirements, making decision using benefits and costs, allocating resources, predicting outcomes-risk assessment, measuring performance), designing a system, ensuring system stability, optimizing, planning, and conflict resolution.

Tzeng (2019) summarized Chu's (2009) AHP theory and implementation paper, and proposed that the implementation steps of the hierarchical procedure method can be included in 9 steps:

(1) Determining problem assessment: Expand the problem as much as possible and include the possible causes of the problem, establish a planning group, and define the scope of the problems.
(2) List the evaluation elements: List the factors that affect the evaluation individually. At this time, the order and relevance are not considered.
(3) Establishing the hierarchy: The assessment elements are divided into levels according to the degree of interrelationship and independence. According to the suggestion of Saaty (1980), each element shall not exceed 7.
(4) Questionnaire design and survey: Each level of elements is evaluated in pairs under a certain element of the previous level as an evaluation benchmark. Design a 1-9 scale of questionnaire for each pair of elements. According to the suggestion of Saaty (1990), the scale of item can be divided into 9 scales, as shown in Table 4.
(5) Establishing a pairwise comparison matrix: Based on the results obtained from the questionnaire survey, a pairwise comparison matrix is established. There are N (N-1) / 2 combinations in the form of pairwise.
(6) Calculate the advantage vector and the maximum eigenvalue: Use the eigenvalue solution in numerical analysis to obtain the eigenvector, and then calculate the maximum eigenvalue based on it.
(7) Consistency check: The values in the comparison matrix are compared in pairs, which is the judgment value made by the decision maker based on subjectivity. Therefore, the values need to be checked for consistency and referred as a consistency index (CI) to be prepared to check the decision maker answers whether the pairwise matrix formed is a consistency matrix. If the result of the assessment fails, the questionnaire is considered invalid. When C.I.=0, the judgment is completely consistent, C.I.> 0 is inconsistent, and C.I.≤0.1 is tolerable bias.
(8) Selection of alternatives: If the entire hierarchy passed the consistency check, the priority vector of the alternatives can be obtained. Finally, the weighted average method is used to obtain the weighted comprehensive evaluation points to determine the priority of the alternatives.
(9) Analysis and review: Make comprehensive judgments and recommendations based on the priority obtained.

Mao and Chen (2010) mentioned that some inconveniences and limitations will arise in the practical application of the analytic hierarchy process (such as the increase of related factors in more complex decision-making problems, the increase of the hierarchical structure, etc.). It makes the calculation process of AHP quite cumbersome, so Professor Satty and Professor Forman of George Washington University and others developed the first expert decision-making system, named Expert Choice, with Decision Support Software (DSS) in the United States. It was published on E.C. l984, 1985, 1986, 2000, and in other versions. The development and application of AHP's Expert Choice System improves the ease of use of AHP operations and effectively promotes the promotion and application of AHP. Li (2018) and Zhang and Ding (2016) mentioned that the Expert Choice software has a built-in consistency verification function, and its consistency verification is based on inconsistency ration index and overall inconsistency ration index; it cannot be greater than 0.1 to meet the requirements of logical consistency.

RESEARCH METHODS

Research Framework

The detailed structure of this research is as shown in Figure 1. There are four major factors in the main facet and 13 factors in the secondary facet.

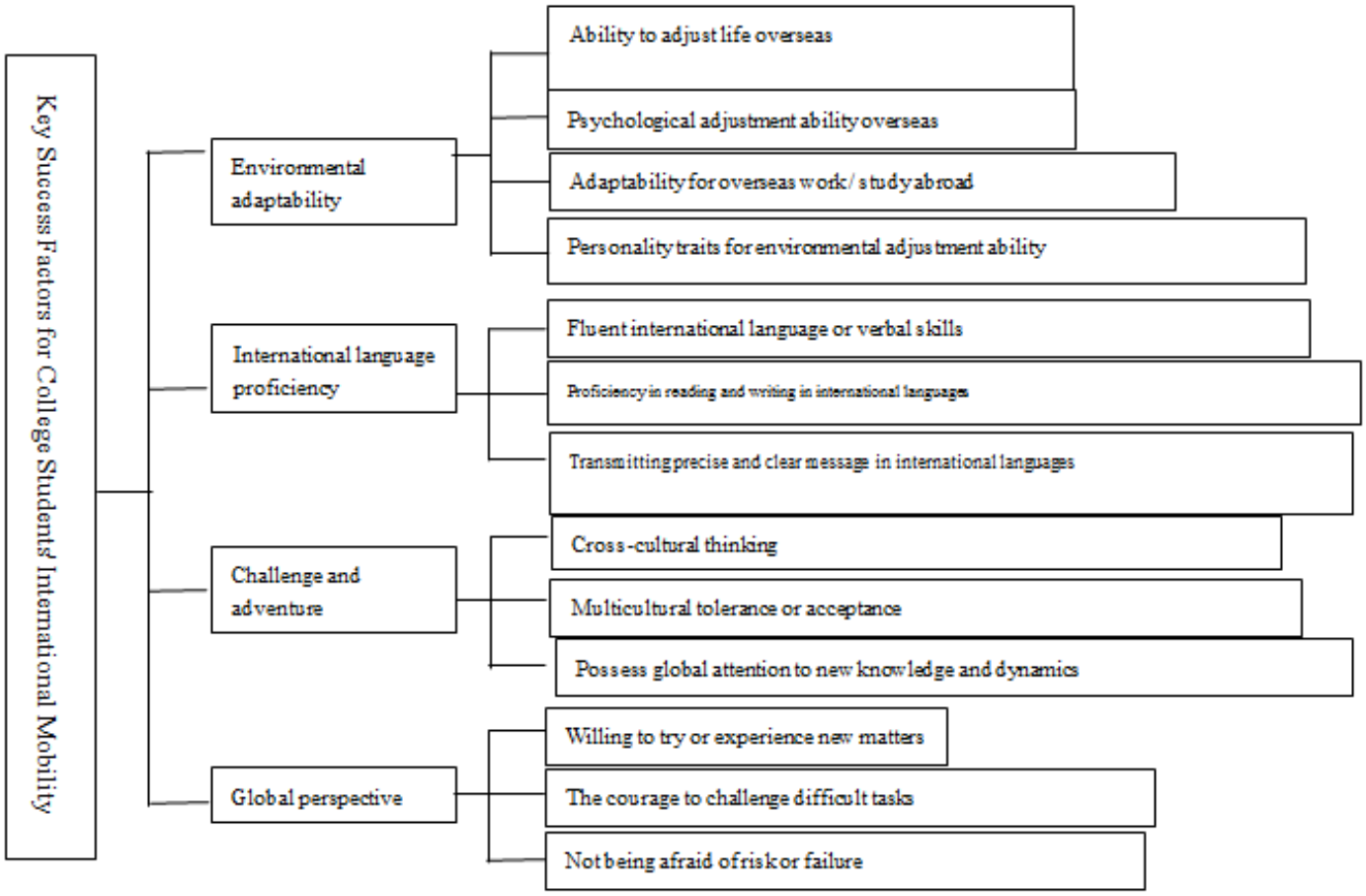

Figure 1. Hierarchical architecture of key success factors for international mobility of college students.

Research objects and questionnaire distribution

Teachers and students of a university in southern Taiwan were the research participants; analytic hierarchy process (AHP) expert questionnaires were given to teachers who have good understanding of international mobility. A total of 17 questionnaires were distributed and 11 were actually recovered. The detailed information of AHP expert is shown in Table 5. For the students, intentional sampling was used to design a questionnaire on a Likert six-point scale. A total of 200 questionnaires were distributed. After deducting incomplete questionnaires, the actual number of questionnaires was 174. The rate of recovery was 87%.

Research data processing and analysis

This study uses Expert Choice 2000 expert decision-making software to perform expert AHP questionnaire data processing and analysis to establish relative weights between indicators. After the questionnaire is recovered, the assessment results of experts and scholars were entered in sequence, and the software system was used to test the consistency of the built-in functions. We checked whether the inconsistency ration index and overall inconsistency ration index meet less than 0.1 to meet the requirements of logical consistency. After the consistency test, according to the assessment of experts and scholars, the weight distribution of the overall indicators, the weight distribution and ranking of the indicators at each level were determined. In this study, SPSS version 22.0 was used for descriptive statistics in the processing and analysis of college student questionnaire data. Finally, the importance of the weight value of the key success factors of the international mobility of college students in the expert AHP questionnaire is compared with the average number of college students' knowledge of each factor to understand their differences.

RESULTS AND DISCUSSION

AHP questionnaire analysis

This study uses the built-in function of Expert Choice 2000 to test the consistency. The inconsistency ration index of each level is less than 0.1, and the overall inconsistency ration index=0.05 is also less than 0.1. Through the consistency test, we further analyze the weight values between factors at all levels.

AHP analysis of main facets

As shown in Table 6, the research results show that the

Table 5. List of AHP experts in this research.

Expert Name	Service Unit	Expert Name	Service Unit
Wang, Zheng-Hua	Associate Professor, Department of Business Management, University of Southern Taiwan	Zhang, Rui-Qi	Assistant Professor, Department of International Business, University of Southern Taiwan
Wang, Qiong-Yao	Assistant Professor, Foreign Language Center, a university in southern Taiwan (Current position: Assistant Professor, Foreign Language Center, Zhongtai University of Science and Technology)	Tzeng, Yan-Juan	Associate Professor, Department of Tourism and Catering Management, University of Southern Taiwan
Lee, Min-Yu	Assistant Professor, Department of International Business, University of Southern Taiwan	Zheng, Sheng-Shi	Associate Professor, Department of Business Management, University of Southern Taiwan
Lee, Hui-Zhu	Assistant Professor, Department of Shipping Management, University of Southern Taiwan	Lai, Xiu-Qing	Professor, Department of Accounting and Information Science, Southern Taiwan University
Lin, Xiu-Juan	Associate Professor, Department of Business Management, University of Southern Taiwan	Lan, Yue-Su	Associate Professor, Department of Translation Studies, Southern Taiwan University
Xu, Yan-Ping	Associate Professor, Department of Tourism and Catering Management, University of Southern Taiwan		

Table 6. Weight distribution of key success factors for international mobility of college students.

Parameter	Four major facets	Weight	Sequence
Key success factors for college students' international mobility	Environmental adaptability	0.374	1
	International language skills	0.340	2
	Challenges and adventures	0.144	3
	Global perspective	0.142	4

four major facets of “Key Success Factors for International Mobility” are sorted in order according to the weights identified by experts respectively: (1) Environmental adaptability (0.374); (2) International language skills (0.34); (3) Challenges and adventures (0.144); (4) Global perspective (0.142).

The weight of “environmental adaptability” of the main facet is 0.374, which is slightly higher than the other main facets. This indicates that the experts believe the “environmental adaptability” is the most significant key success factor for international mobility of college students. In the era of globalization, there are more and more opportunities for cross-border exchanges, coupled with the development of science and technology, and the frequent flow of talents between countries. In the future, the youth employment market will not be confined in Taiwan, but will aim at global development. If you can integrate into the foreign environment earlier and adapt well, you will have a better competitive advantage.

AHP analysis of the minor facet

Under the four major facets, this study develops three to four factors of the minor facet, and a total of thirteen factor indicators are used for further analysis. In the analysis, their respective weights compared to the facet (1) the weights of key success factors related to international mobility of college students (2) are presented.

Environmental adaptability

It is found in Table 7 that the environmental adaptation

Table 7. Table of weight allocation for environmental adaptation capabilities.

Minor facets	Title	Weight(1)/Facets sequence	Weight(2)/Overall sequence
Environmental adaptability	Ability to adjust life overseas	0.347 / 1	0.130 / 2
	Psychological adjustment ability overseas	0.257 / 2	0.096 / 4
	Adaptability for overseas work / study abroad	0.21 / 3	0.079 / 5
	Personality traits for environmental adjustment ability	0.186 / 4	0.69 / 7

Table 8. International Language Proficiency Weighting table.

Minor facets	Title	Weight(1)/Facets sequence	Weight(2)/Overall sequence
International language proficiency	Fluent international language or verbal skills	0.523 / 1	0.178 / 1
	Proficiency in reading and writing in international languages	0.123 / 3	0.042 / 10
	Precise and clear message in international languages	0.355 / 2	0.121 / 3

capabilities experts believe the “overseas life adjustment capability” occupies a larger proportion compared to the key success factors for international mobility of college students, it ranks second. It is inferred that the main reason may be as college students conduct international communication or exchange, the first is that they must be able to adapt to local life issues such as diet or culture. When college students' ability to adapt to overseas life is not good, it may cause them to encounter a lot of trouble in the overall process and also reduce the quality of their work or study.

International language proficiency

It is found from Table 8 international language skills, experts believe that “fluent international language or oral expression ability” occupies most of the proportion compared to the key success factors of international mobility of college students, it is ranked first. There is a small gap between the importance of the former’s ability to adapt to overseas life. It is inferred that the main reason may be that in international communication or exchange, verbal communication and expression skills are indispensable. As college students’ international language ability is not fluent or oral expression ability is not good, it is easy to cause misunderstanding or conflict in various aspects, or it is not easy to cooperate with others. This results in the effectiveness of students' international mobility.

Global perspective

From Table 9, it is found that in the perspective of globalization, experts believe that “possessing a multicultural tolerance or acceptance” is obviously important. It ranks sixth at the weight of the key success factors for international mobility of university students; however, as for international mobility or exchanging, it is a necessary ability. The main reason is that when college students go abroad, they need to adapt life and the pressure of foreign language communication, how to fit in multiculturalism of foreign countries and accept or tolerate and adapt to cultures of another country is regarded as a very important key point. Embedding foreign cultures in life will help to adapt to the cultures of other countries quickly and enhance personal social relationships.

Challenges and adventures

From Table 10, it is found that in the challenge and adventures, “do not be afraid to face risks or failures” occupies a larger proportion. Compared with the weight of the key success factors of international mobility of college students, it ranks at eighth, which is medium importance. However, its importance cannot be ignored. When college students are alone abroad, they may encounter many problems, such as cultural differences or communication barriers. Not each problem can be solved easily. At this time, that the ability of not being afraid to face risks or failures is considered as very important. As a person possesses this ability, it is easier to deal with the various problems that come in with positive and optimistic attitudes, so that it can help college students adapt better abroad.

Questionnaire analysis for college students

This study conducted an average analysis of the

Table 9. Globalization perspective weight allocation table.

Minor facets	Title	Weight(1)/Facets sequence	Weight(2)/Overall sequence
Global perspective	Possess global attention to new knowledge and dynamics	0.225 / 3	0.032 / 12
	Possess cross-cultural thinking	0.239 / 2	0.034 / 11
	Possess Multicultural tolerance or acceptance	0.536 / 1	0.076 / 6

Table 10. Challenges and risky weight allocation table.

Minor facets	Title	Weight(1)/Facets sequence	Weight(2)/Overall sequence
Challenges and risky	Willing to try or experience new things	0.237 / 3	0.034 / 11
	The courage to challenge difficult tasks	0.323 / 2	0.046 / 9
	Not being afraid of risk or failure	0.440 / 1	0.063 / 8

questionnaires for recovering. The results of the study are shown in Table 11. Among the four major facets, college students in southern Taiwan scored the highest in challenging and adventurous (4.55), followed by the global vision (4.50), and the last two are environmental adaptability (4.06) and international language ability (3.37). From the result, it can be found that the perspective of a university student in southern Taiwan, the key to the success of students' recognition of international mobility is the challenge, adventurousness and global vision. International language skills are relatively less important. The reason may be that the undergraduates trained by Taiwan education are weaker in challenge and adventurous spirit than in other countries. If they can be improved in advance, they will stimulate the international mobility of college students and face language expression in foreign environments and will naturally overcome to adapt it.

In the analysis of the average of each item, the average score of the opinion of college students was “possessing multicultural tolerance or acceptance”, followed by the average score of “willing to try or experience new things”, and “transmitting precise and clear messages in international languages” is the lowest average score. It is inferred that the main reason may be that Taiwan college students have been under the over-protection of their parents since childhood, and the lack of internationalization in overall of Taiwan environment has made college students’ vision and intentions weak.

Based on the above research conclusions, this study found that teachers’ AHP expert views on the key success factors of university students’ international mobility are different from those of college students. The key success factors of their cognition are ranked differently, which is worthy of research by future researchers. Besides, the discussions of most scholars and experts can be consistent with the analysis results of the AHP expert questionnaire of this research teacher through the exploration of the literature. As shown in Table 3, more scholars have proposed the “adaptability of the environment” and “international language ability”.

However, Wen (2019) pointed out from different viewpoints that “language is no longer the main key of international mobility, and culture is the priority”. The language indicated in the article is not key to the “critical important” of international mobility, and the thinking is even more critical. It is important to cultivate students’ international mobility in advance and develop students with international awareness and humanistic literacy; students must continue to strengthen their professional knowledge and skills at each stage of learning, and develop unique skills. Finally, it is meant to improve students’ English language skills. This argument and research are verified in the questionnaire analysis of college students, which is in line with the viewpoints of college students.

Conclusion

Trying more or experiencing new things will help college students’ international mobility. Also due to the current popularity of translation software, it is of relatively low importance for college students to know how to transmit precise and clear messages in international languages in terms of international mobility.

(1) According to the results of analysis by AHP experts, the key success factors of international mobility of college students are in the main facets, and their weights are in sequence of “environmental adaptability”, “international language skills”, “challenges and adventures”, and “global vision”.
(2) Based on the recognition of AHP experts, the weight

Table 11. List of the average of key success factors for international mobility of college students.

Parameter	Facets	Title	Average of facets	Average	Sequence
Key success factors for college students' international Mobility	International language proficiency	Fluent international language or verbal skills	3.37	3.45	11
		Proficiency in reading and writing in international languages		3.35	12
		Transmitting precise and clear message in international languages		3.32	13
	Environmental adaptability	Ability to adjust life overseas	4.06	4.02	9
		Psychological adjustment ability overseas		4.07	8
		Adaptability for overseas work / study abroad		3.87	10
		Personality traits for environmental adjustment ability		4.29	6
	Global perspective	Possess global attention to new knowledge and dynamics	4.50	4.18	7
		Cross-cultural thinking		4.43	4
		Multicultural tolerance or acceptance		4.88	1
	Challenge and adventure	Willing to try or experience new matters	4.55	4.73	2
		The courage to challenge difficult tasks		4.54	3
		Not being afraid of risk or failure		4.38	5

score of “adjustment ability for overseas life” is the highest among the main aspects of environmental adaptability, and the weight score of “personality traits with environmental adjustment” is the lowest. As for the main aspects of international language proficiency, the “fluent international language or oral expression ability” has the highest weight score, and the “skilled international language reading and writing ability” has the lowest weight score. In the main aspects of challenge and adventure, the weight score of “possess multicultural tolerance or acceptance” is the highest, and “possess global new knowledge dynamics” is the lowest. In the main aspects of the global vision, the weight score of “not being afraid to face risk or failure” is the highest, and the weight score of “willing to try or experience new matters” is the lowest.

(3) According to the recognition of AHP experts, among the 13 index elements in the minor facets of the key success factors for international mobility of college students, the top five are ranked in sequence of weight, which is “fluent international language or oral expression ability”, “ability to adapt overseas life”, “transmitting precise and clear message in international language”, “ability to adjust overseas”, “ability to work/study abroad”.

(4) According to the recognition of college students, the key success factors of the international mobility of college students are in the main facets, and their importance is in the sequence of “challenge and adventure”, “global vision”, “environmental adaptability” and “international language ability”.

(5) According to the recognition of college students, among the 13 index elements in the minor facets of the key success factors of international mobility of college students, the top five are ranked in the sequence of importance: “multicultural tolerance or acceptance”, “willing to try or experience new matters”, “dare to challenge difficult tasks”, “possess a cross-cultural thinking perspective”, “not being afraid of facing risks or failure”.

To sum up, the practical and theoretical contribution of this study is to construct a hierarchical structure of the key success factors of international mobility for policy makers and researchers through literature analysis and the perspective of teachers and students of Chang JungChristian University. In addition, through the practical analysis results of this study, we know that there is a significant difference between teachers' and students' views on the key success factors of international mobility of college students. This result is thought-provoking. It also makes us understand that there may be recessive relationship among policy makers (government units), facilitators (teachers), and practitioners (college students) of international mobility of college students. This brings new thinking to the management practice, which needs to be further

explored by subsequent researchers.

Suggestions

Government agencies and colleges

(1) Based on the literature analysis, it is known that international mobility is one of the important policies that governments around the world focus on. Therefore, it is suggested that our government shall continue to organize various related plans to enhance the global mobility of young students, so that college students who have not gone abroad to have the opportunity to practice and enhance international mobility.
(2) From the analysis of experts' perspectives and university students' perspectives, it is found that the two factors of "possess multicultural or acceptance" and "no fear of facing risks or failures" are relatively important. Therefore, it is recommended that school units can strengthen international cooperation and exchanges, organize more international exchange visits on the campus or set up international multicultural community activities, and can also apply strategic and challenging methods of cooperation in curriculum design to enable students expand their international perspective and create own world.
(3) The importance of viewpoint "environmental adaptability" and "international language skills" is proposed by experts; therefore, it is suggested that schools can promote overseas internship programs and provide relevant language skills training courses regularly to enhance students' international mobility and increase workplace employment rates.

College students

(1) Plan the four years of college period appropriately and have the experience to be apprenticeships, study abroad or experiment, and implement the practice of international mobility.
(2) Increase the ability of self-internationalization from time to time, such as more participation in international volunteer activities, international community activities, so that they have a multicultural tolerance, acceptance and thinking.
(3) Cultivate yourself to have the ability to challenge, be willing to try or experience new matters, and not to be afraid of failure. You will often learn by yourself and keep your curiosity about things. This will increase your international mobility and improve your competitive advantage.

Follow-up research

Due to the limitation of manpower, material, time and financial strength, this study still has some deficiencies. Therefore, suggestions for the follow-up researchers are as follows:

(1) As far as the research object is concerned: This study only takes the teachers and students of Chang Jung Christian University as the research object, and the inference of the research results may be limited. It is suggested that the follow-up researchers can expand to all universities in Taiwan, and analyze and compare them. They can also include college students from different countries as research objects, make cross-border comparison, or join the perspective of directors of overseas internship enterprises to explore, which will increase the depth and scope of relevant research.
(2) As far as the research topic is concerned, this study mainly focuses on the construction and measurement of the key success factors of college students' international mobility. It is suggested that follow-up researchers can add the dimensions of personality traits or employability to explore their relevance with college students' international mobility, so as to improve their research contribution.
(3) In terms of research methods, this study focuses on quantitative research, and suggests that follow-up researchers can join qualitative interviews to enrich and deepen the research content.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Bi Z (2016). Australia Government "New Colombo Plan, NCP" discussion. Monthly Journal of Educational Research 271:42-52.
Børing P, Flanagan K, Gagliardi D, Kaloudis A, Karakasidou A (2015). International mobility: Findings from a survey of researchers in the EU. Science and Public Policy 42(6): 811-826.
Chen C (2013). The next wave of national competitiveness: International mobility and cross-cultural thinking. Teacher World 183:14-20.
Chen C (2014). The next wave of national competitiveness: International mobility and cross-cultural thinking. English Career 44:22-30.
Chen F (2015). The knowledge you learn will be fun to learn (10 lessons to develop children's 12 future abilities). Vision Magazine, 350 issues. Retrieved Dec. 20, 2019 from https://www.gvm.com.tw/article/20740
Chu Z (2009). Analytic Hierarchy Process Theory (AHP) & Practice. Retrieved June 16, 2020 from ftp://mail.im.tku.edu.tw/Prof_Shyur/AHP/AHP2009.pdf
European Union (2014). Introduction to New Erasmus. Retrieved Feb. 20, 2019 from https://ciae2.kmu.edu.tw/attachments/article/266/%E6%AD%90%E7%9B%9F%E3%80%8C%E6%96%B0%E4%BC%8A%E6%8B%89%E6%96%AF%E8%8E%AB%E6%96%AF%E8%A8%88%E7%95%AB%E3%80%8D(Erasmus+)%E7%B0%A1%E4%BB%8B.pdf Education Group of the European Union and the Representative.
Guo S (2019). International. Move. Education. Taiwan Education Review Monthly 8(6):23-26.
He, Guo-Xu (2016). From the multi-cultural thinking to talk about the cultivation of international mobility. School Administration Bimonthly

102:65-78.
Hofer CW, Schendel D (1978). Strategy formulation: Analytical concepts. West, St. Paul, MN.
Huang K (2017). Take the international mobile force as a body label and take it away! /Three professionals tell you to knock on the door of the international workplace. English Career, 59. Retrieved June 16, 2020 from https://www.englishcareer.com.tw/english-career/59/%e6%8a%8a%e5%9c%8b%e9%9a%9b%e7%a7%bb%e5%8b%95%e5%8a%9b%e7%95%b6%e4%bd%9c%e8%ba%ab%e9%ab%94%e6%a8%99%e7%b1%a4%e5%b8%b6%e8%91%97%e8%b5%b0%ef%bc%81-%e4%b8%89%e4%bd%8d%e5%b0%88%e6%a5%ad%e5%91%8a/
Huang Y (2018). First explore Europe, America, Australia, Japan and South Korea to enhance the global mobility of young people. Taiwan Education Review Monthly 7(8):90-95.
International and Cross-strait Education Division of the Ministry of Education in Taiwan (2009-2019). Annual Number of Chinese students studying abroad in major countries Statistics Business Statistics / Study abroad. Retrieved June.15, 2020 fromhttps://depart.moe.edu.tw/ED2500/News_Content.aspx?n=2D25F01E87D6EE17&sms=4061A6357922F45A&s=A46653AE07C18A2B
International and Cross-strait Education Division of the Ministry of Education. Statistics on the number of international students in China in the world's major countries in (2019). Retrieved June 15, 2020 from https://depart.moe.edu.tw/ED2500/News_Content.aspx?n=2D25F01E87D6EE17&sms=4061A6357922F45A&s=40189E41FE9CF7A4
Kenichi O, Huang H (1985). Strategist's Smart, Long River Press.
Kumpikaitė V, Duoba K (2013).Developing core competencies: Student mobility case. Procedia - Social and Behavioral Sciences 99:828-834.
Lee D (2019). Research on key success factors of Taiwan Investment Corporation (unpublished Master's thesis).Soochow University, Taipei City.
Lee W (2017). The related analysis of the factors affecting the international mobility force of Taiwan university students. Global in Localization and International Mobility: International Symposium on Trends and Challenges in International Talent Cultivation in the 21st Century. Nantou.
Leidecker JK, Bruno A V (1984). Identifying and using critical success factors. Long Range Planning 17(1):23-32.
Li S, Tang Y (2019). Analysis of the global mobile power cultivation strategy of college students - based on the GLOBAL model. Taiwan Education Review Monthly 8(1):143-150.
Liang Y (2015). U.S International Education Policy. National Education Information E-Newsletter，81. Retrieved Dec. 20, 2019 from http://fepaper.naer.edu.tw/index.php?edm_no=81&content_no=4553
Lin M (2016). The spectrum of international mobility: pragmatic and wise international mobility. Monthly Journal of Educational Research 271:4-11.
Education Statistics Bulletin–No. 105 (2019). Overview of foreign students at Colleges and Universities in Taiwan, 2018. Retrieved Dec. 20, 2019 from http://stats.moe.gov.tw/files/brief/107%E5%B9%B4%E5%A4%A7%E5%B0%88%E6%A0%A1%E9%99%A2%E5%A2%83%E5%A4%96%E5%AD%B8%E7%94%9F%E6%A6%82%E6%B3%81.pdf
Luxu K (2019). Study Abroad Plan - More than 30,000 students have gone abroad for 11 years - overseas study internships are no longer out of reach。Retrieved Dec. 20, 2019 from Focus Newshttps://www.wealth.com.tw/home/articles/19281
Mao D, Chen J (2010). Research on Decision Method of Construction Waste Classification and Recycling Scheme Based on AHP. Journal of Engineering Management 4:378-382.
MBA Think Tank Encyclopedia (2020). European Union strategy。Retrieved June 16, 2020 from https://wiki.mbalib.com/zh-tw/%E6%AC%A7%E7%9B%9F2020%E6%88%98%E7%95%A5
Ministry of Education (2016). Global Mobility Initiative for Young Students. Retrieved June 16, 2020 from http://www.mths.tc.edu.tw/files_web/20160528083141.pdf
Rockart JF (1979). Chief executives define their own data needs. Harvard business review 57(2): 81-93.
Saaty TL (1980). The Analytic Hierarchy Process. McGraw-Hill, New York.
Saaty TL (1990). How to make a decision: The Analytic Hierarchy Process. European Journal of Operational Research 48(1): 9-26.
Tang-Yao, Li, Shi-Ming (2019). How to strengthen the global mobility of college students. Taiwan Education Review Monthly 8(6):18-22. Retrieved June 16, 2020 from http://www.ater.org.tw/journal/article/8-6/topic/04.pdf
The Ministry of Education Online (2019). Study Abroad Plan of the Ministry of Education，helping youths build dreams through overseas study internships。Retrieved Feb. 20, 2019 fromhttps://www.edu.tw/News_Content.aspx?n=9E7AC85F1954DDA8&s=3E194B1D7DE01D68
Tzeng M (2019). Research on the key success factors of the supervision efficiency of financial science and technology in China (Unpublished Master's Thesis).National Taipei University of Science and Technology, Taipei City.
Wen M (2019). The key to touching international mobility: Reflection on the experience of studying abroad. Taiwan Education Review Monthly 8(6):1-5.
Xiao F (2015). Are our children strong enough? World Magazine, P. 586. Retrieved Dec. 20, 2019 from https://www.cw.com.tw/article/article.action?id=5072671
Yang W (2016). Japan's Discussion on Global Mobility - with "Fly! The Study abroad in Japan project, for example. Monthly Journal of Educational Research 271:53-69.
Zhang S, Ding Y (2016). Research on the construction of core competence indicators of national elementary school teachers. Journal of Education, Hsinchu University of Education 33(1):1-38.
Zhang X (2016). International Mobility: America New Generation Study Abroad）Plan. Monthly Education and Research 271:32-41.
Zhuang K (2014). Cultivation of International Mobility. English Career P. 45. Retrieved June 16, 2020 from https://www.englishcareer.com.tw/english-career/45/%e5%9c%8b%e9%9a%9b%e7%a7%bb%e5%8b%95%e5%8a%9b%e7%9a%84%e5%9f%b9%e9%a4%8a/