The Impact of the Learning Effectiveness on Alumni Employability: A Case Study of a T/I Department in Taiwan

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Abstract

In recent years, the number of translation and interpretation courses offered in Taiwan has increased rapidly, but few studies has looked at the employability of their graduates. This paper is aimed to investigate the direct effects of curriculum on the professional careers of alumni as reflected in their current employment status and level of academic advancement. A questionnaire survey was carried out to evaluate multiple aspects of teaching, including learning effectiveness, core competency, curriculum design and repay the society. Through an analysis of 150 named and 300 anonymous questionnaires, this study analyzed the learning effectiveness as the mediator for the careers of alumni, using the Amos statistical package for Structural Equation Modeling (SEM), along with other related techniques, such as Confirmatory Factor Analysis (CFA). The analyses have produced parameter estimates and goodness-of-fit indices, which could be useful for many purposes, such as examining longitudinal data and comparing groups. It is hoped that this brief study may provide a better understanding and a basis for future studies.

Keywords

employability, Structural Equation Modeling (SEM), learning effectiveness, core competency, course design, contribution to society

1. Introduction

In order to cultivate more professional graduates with abilities of foreign languages, many Translation and Interpreting (T/I) courses have been offered by both Translation/Interpreting departments and language departments in Taiwan. T/I curriculums differ significantly between T/I departments and traditional applied foreign language departments. The Department of Translation and Interpretation Studies (DTIS) of Chang Jung Christian University (CJCU) is the first T/I department established in Taiwan, and has fostered many T/I graduates over the past 20 years. DTIS is keen to know the employability and further academic achievement of its graduates as well as to identify any

improvements in its curriculum that may be helpful for future graduates.

It is known that knowledge-based economy plays an important role in this century. People have various access to receiving higher education, leading more people to have a bachelor degree or even higher degrees. The purpose of higher education is to cultivate students with personal core competency to get better jobs or compete with other applicants in the future career. However, there has been a social phenomenon occurred: the higher education one completes, the higher unemployment chance one faces. Therefore, it is doubted that completing higher education is guaranteed to acquire core competence. There was a survey of university students by Tseng, Hu and Chen (2011), and the results showed that learning of languages and concepts, skill learning, cultivation of thinking and creativity and cultivation of attitude and vision have impact on self-efficacy after analyzing using SEM; further, self-efficacy had direct impact on future job-seeking and salary. In other word, students should equip with these core competence after graduating because these factors would affect graduates' job-seeking opportunities and salary indirectly. Additionally, Yang (2011) also conducted a survey concerning students' core competence, showing that students are aware of the importance of personal core competence in the future, but most of them lack the ability. Thus, researchers consider personal core competency is an important construct for alumni.

Additionally, course design is also a major construct. If school offers appropriate courses for students, their learning-effectiveness and ability will improve, and vice versa. Courses will affect students' ability directly. Yang (2011) mentioned that students' ability and course design have significantly positive relation. Yeh (2011) also said that teaching is one of important elements. With SEM analyses, he mentioned that reliable courses play an important role in pursuing better teaching quality and efficiency except for teachers; furthermore, his study also showed that there was a positive relation between teaching quality and reliable courses. Accordingly, a school should offer courses matching future career needs so as to help students improve their employability.

Lastly, repay to the society is an influential construct. Repaying the society isn't a one-way behavior. The more contribution one makes, the more social resources one receives, representing that the people who are able to make contribution to the society usually have great achievement in their life. People who have great achievement in the society are not only attributing to accumulated working experience, but to teaching results. Yeh (2011) stated that there is a positive relation between repay to the society and teaching results. Additionally, Tseng, Hu and Chen (2011) mentioned that employability and remuneration also have positive influence on the behavior of making contribution to school. Hsiung and Zhan (2007) said competency-based education is initiatives to make more relevant to society, and by extension, to the global economy. Additionally, role models influence significant others in their lives.

Two questionnaires have been designed in this study, one for investigating further academic advancement and current situation of the graduates, and the other for exploring their feedback on curriculum design, self-awareness, repay to the society, as well as other factors. As Chiu, Wang and

587

Tsay (2007) point out, curriculum design has great impact on job seeking, but there are few published works. This is why the researcher chooses to analyze these factors with surveys of alumni.

In the field of social and behavioral science research, statistical analysis of quantitative data is one of the main focuses of the complete research. In accordance with the research questions, this paper outlines the research methods of choosing variables, processing data, and testing hypotheses, in which Structural Equation Modeling (SEM) is used to demonstrate results and findings. The traditional descriptive statistics such as SPSS statistical methods and Amos statistics have also been used to generate different evaluation of the learning effectiveness and to obtain some new results compared to other languages departments.

In the translation and interpretation studies, statistical analysis has been widely used. As shown in Table 1, statistical analysis was not only applied in marketing, medical researches and other social sciences, but applied in translation and interpretation studies even most of them use descriptive analysis; however, there is still few study using SEM in this field.

Table 1. The Application of Statistical Analysis in Translation and Interpretation Studies

| Subject	Content	Authors/Sources
College Students' Attitudes toward short story reading	The study is to explore students' perceptions of the effects of short story. It took the pre-test and post-test of reading fluency and comprehension, and filled out a questionnaire.	Liang and Chen (2012)
Teaching College Interpretation in Taiwan	The study took departments of Applied English and Foreign Language with interpretation course as object. Interviews and questionnaires were used as the research method of this study. Results were conducted through descriptive statistics.	Davis and Liao (2009, pp. 151-178)
A cognitive linguistics approach to quality control of business translation	The paper aims to investigate in depth the cognitive activity of Chinese-English translation. With a thirty-minute retrospective interview with students, then author analyze the result.	Liu (2007)
The Blended Learning Interpretation Course: A Teaching Solution Incorporating MIT Open Course Ware	Participants were graduate students from the Regular M.A. Degree Program and the M.A. Degree Program for On-the-Job students, Department of Translation and Interpretation Studies, CJCU in the study. Questionnaire was used as researching method and the results were conducted though descriptive analysis by T-test.	Tsai (2009, pp. 219-255)
A Corpus Study of Student English Textual Competence in Translation from Chinese into English	The study took native English interpreters and native Chinese translators as researching objects. Database was established by SPSS system with ten characteristics to analyze and examine the variables and the results were conducted through descriptive Statistics.	Dong and Lan (2008, pp. 105-126)
Research Trend and Methods in	The study provides the research methods used by the different	Lan, Dong and Chiu

| Translation Studies: A Comparison between Taiwanese and International Publications	researchers classified as experiment, interview, and questionnaire survey, etc. Using Correspondence Analysis (by SPSS), a content analysis conducted to investigate research areas for contributing to the understanding in translation studies, its teaching, and learning.	(2004, pp. 177-191)

2. Methods

2.1 Research Instruments

As a part of the Amos applications, Confirmatory Factor Analysis (CFA) is a powerful statistical tool for examining the nature of and relations among latent constructs. Brown (2006) and Bandalos (2002) have both mentioned that CFA is a useful application and is often used for developing and refining measurement instruments as it fits the data reasonably well. There are many types of special CFA models. Hierarchical CFA models represent hypotheses about relations between constructs in CFA models through the specification of higher order factors and lower-order factors. The results of a CFA include estimates of factor variances and covariances, loadings of the indicators on their respective factors, and the amount of measurement error for each indicator. If the researcher's model is reasonably correct, then one should see the following patterns in the results: (1) all indicators specified to measure a common factor have relatively high standardized factor loadings on that factor (e.g., > .70); and (2) estimated correlations between the factors are not excessively high (e.g., < .90 in absolute value). The first result indicates convergent validity; and the second, discriminates validity. As a result, researchers should provide initial relevant modeling as shown in Figure1 (Rong, 2007, p. 11).
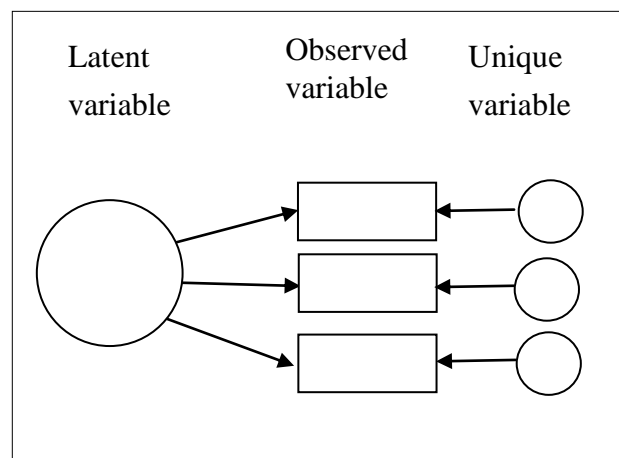
Figure 1. CFA Variables

Structural Equation Modeling (SEM) is an analysis using a numerical method for the simultaneous maximization of several variable functions. The analysis was developed by Jöreskog and Sörbom (1993) from the version of LISREL (Liserel Structural Relation). Both of them consider theories and constructs (or dimension) in social science and behavioral science field are hypothetical constructs.

589

Researchers are incapable of observing and measuring directly, thus, Jöreskog and Sörbom believe that researchers should define the meaning and scope of each construct when exploring the relationship between every hypothetical construct. Hooper, Coughlan and Mullen (2008) have further developed SEM to make it a useful technique for applications in the social sciences and across disciplines. The use of SEM has been growing in psychology and the social sciences (Raykov & Marcoulides, 2006). One reason for this is that these confirmatory methods provide researchers with a comprehensive means for assessing and modifying theoretical models (Bentler, 1983; Browne, 1984; Jöreskog, 1978). For example, Chiu (2006, pp. 13-22) reported that the hypothesis can be satisfied by his SEM model. Kline (1998) also stated that contrasting to traditional method of analysis, the SEM showed the result with more vivid and clear way. Moreover, the immeasurable factors, especially abstract ones, could be included in the SEM so as to expand various analyses to obtain more results. Figure 2 illustrates how SEM works.
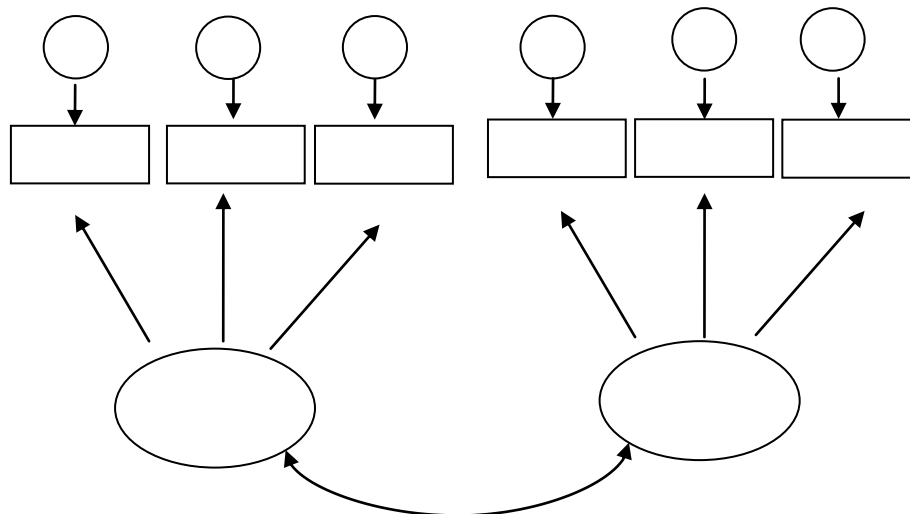
Figure 2. SEM Model

SEM is an analysis technique of large size sample. The ratios of observed variables and sample should be around 1:10-1:15, and the numbers of samples should be from 200 to 400 (Hair et al., 1998). This paper adopted the method provided by MacCallum, Browne and Sugawara (1996), using RMSEA to calculate the samples. The calculation method set the RMSEA of H0 as 0.05 and the power as 0.8. There were 300 samples in this study, which met the requirement of the numbers of samples. According to Hair et al. (2009), there should be at least three variables in every dimension. If the sample was too small, the variables would be invalid. The sample size of 300 in this study yielded valid results.

2.2 Questionnaire

The survey was conducted from October 31 to December 16, 2011, with more than 300 anonymous questionnaire and 150 named questionnaires (2012-2013) which were used to collect the data of alumni. Structural Equation Modeling and Amos 18.0 were used to analyze the data, and Second Order

590

Confirmatory Factor Analysis Model was made to detect differences among factors.

The questionnaire design was modified by the traditional operational definitions and school questionnaires. As the pre-test results did not show particularly significant differences, all questions in the questionnaire were accepted into the survey.

The first part was the basic personal information with the alumni advancement and employment in the Appendices 1 and 2. The second part questionnaire shown in Appendix 3 consisted of three parts (dimensions): (1) core competency, (2) course design, (3) repay the society, including 14 questions in the Appendix 3.

The explanations for the 3 dimensions were:

(1) The core competency is as an important self-efficacy on personal development, as Fornell (1983), Schultz (1961) and Schunk (1981) mentioned the effects from the core competency on employability achievement. Also in the definition of the employability for Commonwealth of Australia (2002), the employability skill framework was divided into eight characteristics including the core competency framework (Bolt-Lee & Foster, 2003). For England researcher, the employability was combined with the attitudes, personal characteristics, self-marketing capabilities with willingness to learn (Harvey et al., 2002).

(2) Course design: Especially the developing professional ability for students, from the ancient documents showed that specific courses (academic achievement) have positive impact for students has been confirmed (Chang & Hsiao, 2000; Su & Lin, 1992), also regarding to the courses evaluation survey from CJCU teaching resource center and by the design of Bagozzi (1983).

(3) Repay the society: According to national surveys of Perry and Wise (1990, 1996, 1997, 2000) focused on the formative role of the public service motivation, Perry's PSM theory presented a good example of the repay society. His Likert-type items are developed for each dimension to create the PSM scale. The measurement theory for the scale was tested using Confirmatory Factor Analysis (CFA). The present study reported initial reliability and validity results. Moynihan and Pandey (2007) also examined the support of the role and found that PSM was strongly and positively related to level of education in professional organizations, especially, when the alumni facing the marketing request (Baumgartner & Homburg, 1996, p. 140).

We took the learning effectiveness as the mediator which was based on an abstract concept and could not be measured directly as Herington and Weaven (2008, pp. 111-129) mentioned. Table 2 lists the operational definitions of the dimensions.

Table 2. Operational Definition of the Dimensions

Variable/Dimension	Operation of definition	Reference scale
Learning Effectiveness	Some evidence show that student learning results are in a more positive learning experience for both students and teachers. Following a survey of learning styles, students were exposed to more student-centric teaching styles within tutorial groups, with a view to encouraging deeper student learning. The learning motivation has un important impact on Learning Effectiveness.	Herington and Weaven (2008); Wu and Cheng (2010, pp. 32-51)
Core	The core competency is as an important self-efficacy on personal development and employability achievement. It was combined with the attitudes, characteristics and capabilities with willingness to learn.	Fornell (1983); Schultz (1961); Schunk (1981); Commonwealth of Australia (2002); Bolt-Lee and Foster (2003); Harvey et al. (2002)
Course	The course design applies to social sciences as Van Doren, Corrigan and Bober (2008, pp. 189-206) mentioned, Students gain greater insight into a career in marketing from this type of course. It will affect the possibility of getting a good job in the future. It has positive impact for students, undergraduate students learn about careers in marketing early in their college education and graduate students realize new career opportunities.	Yang(2011); Yeh (2011); Tseng, Hu and Chen (2011); Van Doren, Corrigan and Bober (2008); Chang and Hsiao (2000); Su and Lin (1992)
Repay Society	Public Service Motivation (PSM) represents an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions. The findings support that public service motivation is strongly and positively related to level of education and membership in professional organizations.	Perry and Wise (1990, 1996, 1997, 2000); Moynihan and Pandey (2007)

All of the three dimensions used a Five Point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agree). After using CFA to verify the questions about being recognized by employers (Customer Satisfaction), question CCP10 was deleted because of the high homogeneity of question CCP9 and CCP10 in the core competency part. However, other variables were all qualified after being verified under the factor of learning effectiveness.

2.3 Hypothesis

This study investigated the effects of learning effectiveness on core competency, course design and repaying the society. However, little literature has been published on learning effectiveness. Only one of the studies used hierarchical linear model analysis to explore the impact of teaching behaviors and learning motivation on learning effectiveness (Wu & Cheng, 2010, pp. 32-51). A dissertation about learning effectiveness by Yeh (2011) used SEM and CFA to analyze teaching quality, including course design, learning effectiveness, in order to improve students' competitiveness at workplace. Based on the above study, hypothesis 1 and hypothesis 2 were constructed as follows:

Hypothesis 1: Learning effectiveness is significantly related to course design and core competency.

Hypothesis 2: Repay to the society is significantly related to learning effectiveness.

2.4 Structural Equation Modeling (SEM)

Confirmatory Factor Analysis (CFA) is the basis of the measurement model in full SEM and can be established using SEM software (Albright & Park, 2009, pp. 2-86). The CFA measurement model of this study is accurately analyzed according to the modification of second order factor from Kline (2005). When conducting SEM, researchers often first evaluate the measurement model with established Goodness of Fit Index (GFI) before assessing the structural model. The measurement model of this study is the second order factor with three dimensions: Core Competency (CCP), Course Design (CDS) and Repay the Society (RS). Only RS has three variables, however, Fornell indicated that the measurement model can be established with three variables.

The analysis is based on two important constructs validity in the measurement model test mode: convergent validity and discriminant validity. This study is based on Hair (1998)'s three suggestion indicators to evaluate measurement mode. The indicators are as following: Factor Loadings: is to assess if each load is statistically significant and greater than 0.7; Composite reliability of latent variables: CR value means the internal consistency of the construct indicators, and the higher the reliability, the higher is the indicator function. The consistency of reliability between 0.6 and 0.7 is acceptable, and the general requirements for the reliability ~~is~~ are preferably over 0.7, which shows the research model has good internal consistency. When the measurement error is 1, it means the square of the normalized load indicators.

AVE value calculated each measurement variation's explanatory power of the latent variables. A higher AVE value indicates potential variables with higher reliability and convergent validity, and its standard value is recommended to be greater than 0.5.

Byrne (2010) noted that when conducting SEM, an adequate GFI is essential for examining the theoretical model. If the value of GFI is significant, it means that the measurement model is closer to the sample model. The standard of GFI value in this paper is based on that proposed by Schreiber (2008), McDonald and Ho (2002), Boomsma (2000), Gillaspy and Stephenson (2009), and Schreiber, Nora, Stage, Barlow and King (2006): χ^2, the ratio of χ^2 and the degree of freedom, GFI, AGFI, Root Mean Square Error of Approximation (RMSEA).

The values of this study meet the standard of Hair et al. (1998) and Fornell and Larcker (1981): a. the factor loading is greater than 0.5; b. composite reliability is greater than 0.6; c. the average variance extracted is greater than 0.5; d. the Square of Multiple Correlation Coefficient (SMC) is greater than 0.5.

After the first-order CFA , the authentication of second-order CFA, Joreskog Sorborn (1992) and Doll, Xia, and Torkzaden (1994) gave the recommendations, this second-order model hopes to find out the latent moderator factors (Chin, 1998), whether there is an existing generalizations of factors that can explain all covariation between first-order factors and second-order validation, and this is the

593

standardized factor loading that must be greater than 0.7 (This article presents 0.9), which is called the model fit.

The Second Order Confirmatory Factor Analysis Model (Structural Regression Model) was the combination of Confirmatory Factor Analysis. Thomopson (2004) noted that before analyzing Structural Equation Modeling, measurement model should be analyzed first. This method could significantly show the relevant dimensions and factors and explain the relations among dimensions. It could also help us to identify the factors that will affect dimensions and the relations among dimensions, serving as the basis for this paper.
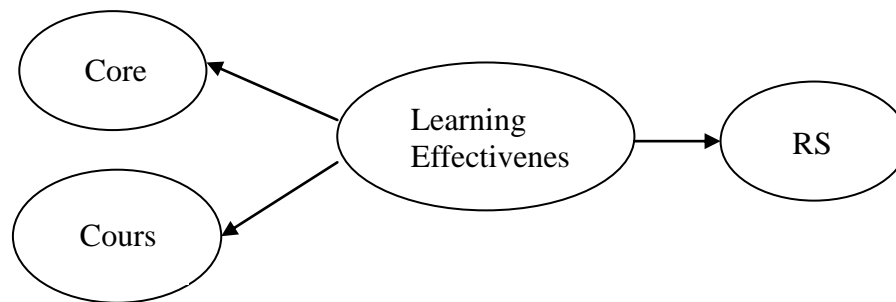
Figure 3. Second Order Confirmatory Factor Analysis Model (Structural Equation Modeling)

3. Measurement and Analysis of Structural Equation Modeling

3.1 The Analysis of Personal Information

The participants of this paper were alumni of Department of Translation & Interpretation Studies, CJCU. The sample was from the internet questionnaire and paper questionnaire. The website of the questionnaire was sent to all of the alumni by e-mail, and the paper questionnaires were given to alumni or sent to alumni who could not be able to use the internet. The survey started from October 31, 2011 to December 16, 2011. A total of 300 questionnaires were collected.

In this survey of anonymous samples, alumni perceptions of core competency, course design and repaying the society were investigated. The samples came from paper questionnaires and the internet questionnaires. To prevent incorrect deduction, the data has been tested for homogeneity by Chi-square test, analyzed in Amos 18.0. In addition to the above questions, personal information, advancement and employment of alumni were also surveyed. These were categorical variables, so the result would be described in the following terms. There were 10 questions on personal information and 19 questions on advancement and employment. Females accounted for 76% of the participants. Most participants were 20-39 years old: 59 participants were aged 20-24, 76 participants aged 25-29, 108 participants aged 30-34, 40 participants aged 35-39, 9 participants aged 40-44, 6 participants aged 45-49 and 2 participants aged above 60. The graduation years of the participants were from 1998 to 2011. Most participants who filled out this questionnaire graduated in 2011 (38 people). Participants who graduated in 2003 and 2004 were the second and the third largest groups in questionnaire response. In the

594

academic program part, 163 participants entered the 4-year bachelors program, and the remaining participants were from two-year bachelors programs (49), two-year evening bachelors programs (67), Day-time master programs (9) and Evening master programs (12), respectively. 66 participants studied Translation/Interpretation, 93 participants studied Interpretation, 137 participants studied Translation, 32 participants studied Commerce, 25 participants studied News, and 23 participants studied Science & Technology.

73% of participants were single, and only 55 participants had children. 90 participants' spouses were Taiwanese, 3 participants' spouses were European or American, 1 participant's spouse was an Australian and one Chinese. Spouses' occupations were: Education/Government/Organization (26), Traditional industry/Manufacture (15), Information technology (14), Service (9), Business (7), Trades (5), and Agriculture/forestry/fishery (0).

3.2 The Analysis of Advancement and Employment

About 73% participants got Bachelor's degrees, 27% participants received a Master's degree, and 1% of the participants earned a Doctor's degree. Of the approximately 30% of alumni who earned a Master's degree, 33% of them studied translation or languages. In the current status part, 24 participants were students, 5 participants were students with part-time jobs, 24 participants were unemployed, 49 participants were taking on-the-job training, 2 participants were serving in the military, leaving 196 participants in full time employment. Monthly salary: 30,000-40,000 (64 participants), 20,000-30,000 (48 participants), 40,000-50,000 (29 participants), 50,000-60,000(17 participants), 60,000-100,000 (17 participants), below 20,000 (116 participants), over 100,000 (3 participants), over 500,000 (1 participant). More than 30% of our alumni's reach the average salary, and alumni with above-the-average-alary also account for over 30%.

The alumni participants worked as professional translators or interpreters and had part-time jobs in translation and interpretation accounted for 34.62%. The percentage of translators was 44.3%; interpreters 30.7%, and both of them were 25%. We can discover that the part-time jobs in translation is 10% more than in professional translators.

The participants who worked as professional translators or interpreters totaled: 12.8%, see Figure 4.
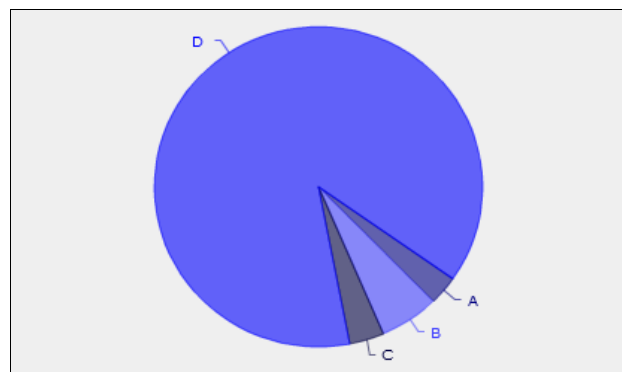
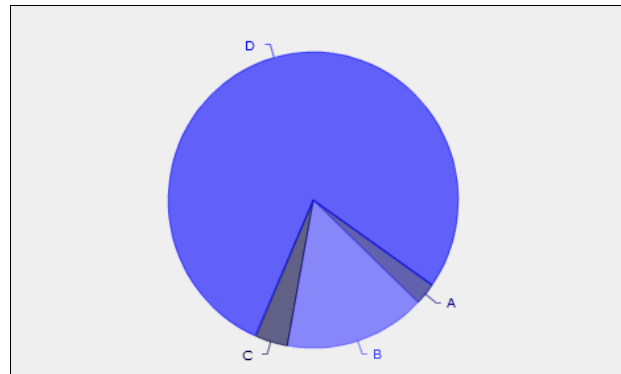**Figure 4. Alumni Full-Time Occupation**

595

Note. A). Interpretation 2.93%   B). Translation 5.85%

     C). Translation & Interpretation 3.41%   D). No 87.8%

The participants worked as part-time jobs in translation and interpretation accounted for 21.82%, see Figure 5.

Figure 5. Alumni Part-Time Occupation

Note. A). Interpretation 78.18%   B). Translation 15.76%

     C). Translation & Interpretation 3.64%   D). No 78.18%

The numbers of participants whose work related to languages were second highest among all of the groups. Participants who were language teachers also accounted for about 80%. In addition, participants who would need to use English translation ability accounted for 67%. All of above data showed that alumni would still constantly use translation and language ability.

The question of working places was a multiple selection question, but it was obvious that most alumni had worked in Southern Taiwan (121) and Northern Taiwan (106). The remaining participants had worked in Central Taiwan (43), Eastern Taiwan (5), Off-Islands (1), Mainland China (19), Northern America (15), Asian countries (13), Europe (11), Australia (5), Southern America (2), and Africa (1).

Appendixes 4 and 5 were for the part of the descriptive statistics scale of personal data questionnaire containing a number, mean, standard deviation, minimum, and maximum. Appendix 4 is the Frequency Table about the translation groups. Appendix 5 is the Frequency Table for all groups.

As the alumni had different kind of working categories, the results of the Appendix 6 and Figure 6 were divided by the DTIS 3 professional programs (Economics & Trade program/Science & Technology program/News & Media program), and the Language & Humanities related fields:
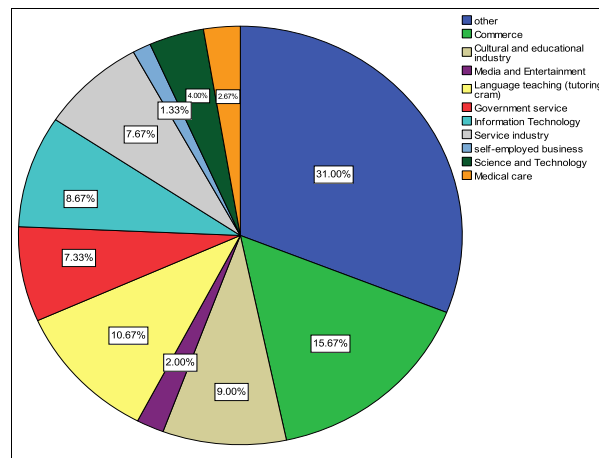
Figure 6. Industries and Fields

It has conducted 24.67% of participants who were engaged in the commercial group, and used the technology ability in the workplace accounted for 15.34%. The participants working in mass media as government officer accounted for about 9.33%. 10.67% and 9% of the participants worked in the language and cultural industry. It was the second highest group among all of other groups.

3.3 Analysis of Results

When testing the research hypothesis, we found that two dimensions CCP and CDS have unexpectedly high covariant values, which means that both are highly correlated with a common factor which affects them directly. It can be inferred from the result that our assumption that the common factor is learning effectiveness is right.

All three dimensions of this measurement model have significant values of convergent validity, that is, the results meet the standard. Kline (2005) asserts that if the factor loading is less than 0.45, it means that the questionnaire is not well-designed and that should be removed. In other words, if the factor loading is good, i.e., larger than 0.7, and the goodness of fit index is not significant, this means that the residual, and hence the variables are not independent, and they should be removed.

As noted by Brown (2006), "In many studies, problems with SEM models are due to measurement model issues that can be identified with the application of CFA". Especially in the cases of social and behavioral sciences, initial analysis by CFA is more accurate than simply conducting SEM alone. Thus, in order to provide more effective and accurate results, there is a need to use CFA, in this study.

3.3.1 CFA for Core Dimension

Considering the factors in Appendix 7, core dimension indicator questions CCP3, CCP4 and CCP8 are especially designed for DTIS alumni. Their values of standardized loading factor are slightly lower than other values. CCP2 "The DTIS diploma gives me a wide range of job opportunities" meets the required CFA factor standard, but its GFI is not significant in the SEM second factor model, suggesting that this item is not independent. It means whether the diploma of DTIS provides a wide range of job opportunities depends on individuals of the alumni, therefore, under the influence of other indicators.

597

Since its validity and reliability are lower than other indicators, it should be removed from the model (Kline, 2005).

In other words, the question CCP3 "the training courses of the DTIS made me possess active learning ability" got the highest value of convergent validity 0.847, which suggests that due to the professional course training, the alumni's perception of their learning ability and core competency, has been enhanced. Question CCP4 "The training courses of the DTIS made me possess good concentration, reaction and memory" is 0.873 which is close to CCP3's. As a result, the above two questions (CCP3, CCP4) are the most obvious indicators for the learning effectiveness. The RMSEA reaches to 0.092 is a good fitness which is larger than the required value of 0.055.

Fornell and Larker (1981) suggest that the value of the Core dimension should be larger than 0.6, so these questions have high degree of reliability. The AVE value also exceeds Fornell and Larker's standard criterion of 0.5. Since the values of CCP9 and CCP10 are almost the same, one of them should be removed. The convergent validity of CCP7 "Learning in the DTIS made me possess professional knowledge and skills" is 0.793, which reflects the positive response of our alumni. The composite reliability of core dimension reaches to 0.913 which is closer to 1 than that of the SEM model, that is, our alumni think that effective teaching has helped them to enhance their core competency and to be confident.
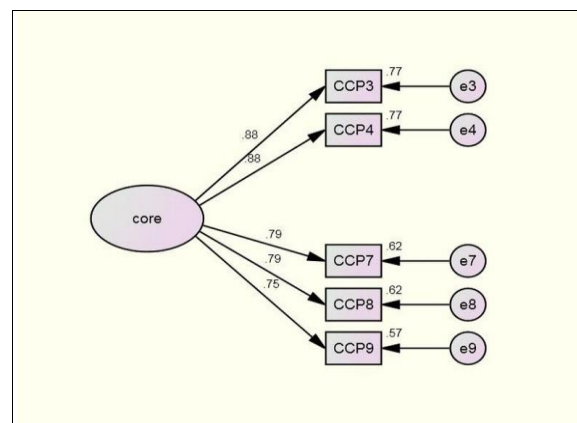
Figure 7. CFA for Core Standardized Estimates

3.3.2 CFA for Course Dimension

The indicator of Course dimension as shown in Appendix 8, also meets the validity criteria. The value of composite reliability is 0.902 which is close to 1, second only to that of core competency. AVE is 0.606, which also meets the standard. The GFI (0.98) and AGFI (0.935) of this dimension also meet the standard criteria, and its RMSEA (0.087) is larger than the required value of 0.055.

Considering individual questions, the standardized factor loading of CDS5 "I think that the course designed by the DTIS made me feel fulfilled in my current job" is 0.834, the highest, suggesting the course training can help our alumni do a good job and gain confidence. The second highest value

598

(0.826) is CDS3 "I think that the course materials arranged by the DTIS meet the job requirements", which means that the teaching is perceived as effective in helping our alumni meet the employers' demands.
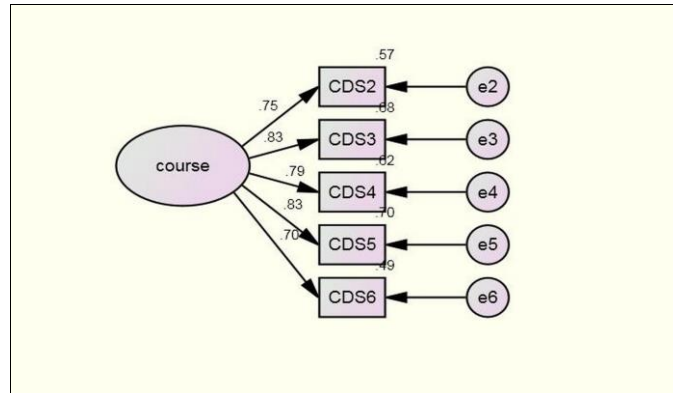
Figure 8. CFA for Course Standardized Estimates

3.3.3 CFA for Repay Society Dimension

According to the SEM practices proposed by Bollen (1989), considering the indicators of the Repay Society dimension, CFA measurement model questions should have at least three questions, so we are required to provide three questions in this part. The composite reliability is 0.763 which meets Hair et al's (1998), larger than 0.7 criterion. Its AVE is 0.526, larger than the 0.5 criterion of Fornell and Loacker (1981). Since 2003, DTIS has held "Welcome back to DTIS, CJCU" activities each year, where the job experience of our alumni is shared with current students. These have received a positive response from current students and visiting alumni sessions, the highest value (0.864) is RS2 "I'd like to share my job experience with my junior brothers/sisters in the school", which reflects that our alumni are highly willing to share job experience with junior brothers/sisters in school.
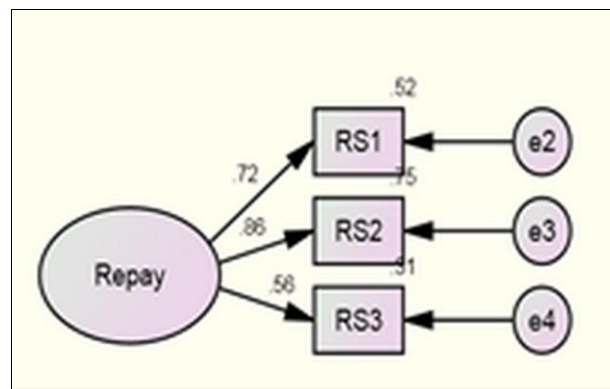
**Figure 9. CFA for Repay Society Standardized Estimates**

599

3.3.4 CFA Compiled Chart

In our study, the composite reliability is closer to 1, which means that with the direct effect of teaching efficacy, our alumni gave generally positive responses to core competency. With good values, the result is valid and reliable. The SEM to analysis of the multiple regression and its founding is demonstrated on the Table 3 below which shows the values of non-standardized factor loading and standard deviation. Factor loading of convergent validity is 0.975 which is larger than the scholarly standard of 0.5, and therefore, this result is reliable.

The GFI value of X^2 is 118.118, the degree of freedom is 62 and X^2/DF is 1.905 which falls between 1 to 3. AGFI is 0.917, larger than 0.8, and RESEA is 0.055. The above values all fit the GFI standard as can be seeen from Appendix 5. The results indicate that the teaching efficacy is the key factor which directly affects the satisfaction of alumni with core competency and course design. We collected 300 samples. The number of samples is far beyond the required by the parametric regression of the degree of freedom. The P value is 0, which means that the number of samples is unquestionably valid. In addition, considering the factors in Appendix 10, the value of the Core dimension achieves the minimum required, at X^2 of 32.016 with 9 degrees of freedom.

Table 3. Confirmatory Factor Analysis (CFA) Compiled Chart

CFA Compiled chart

		Estimated values of parameters				Convergent Validity				Model fit indicator					
Dimension	Indic	UNSC	(S.E.)	C.R (t)	P	SC	SMC	C.R.	AVE	x2	DF	x2/DF	GFI	AGFI	RMSEA
Core	T E	1				**0.975**	0.951	0.849	0.666	118.1	62	1.905	0.94	0.917	0.055
Course	T E	0.768	0.083	9.269	***	0.888	0.789								
RS	T E	0.442	0.069	6.386	***	0.509	0.259								
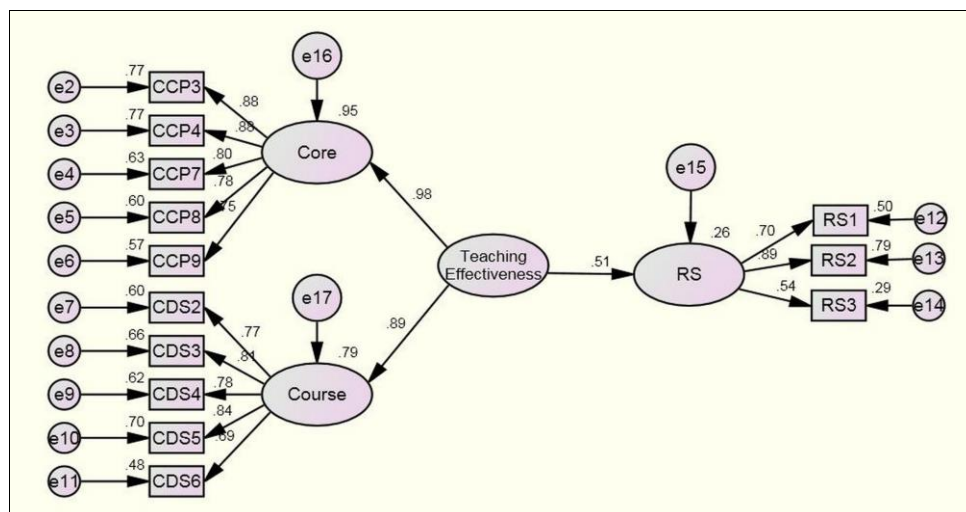
**Figure 10. The Statistical Analysis of SEM Standardized Estimates**

4. Discussion and Conclusion

4.1 Hypothesis and Research Result

The results of analysis show that among three dimensions, the learning effectiveness affects the Core dimension the most with the standardized factor loading of 0.975 followed by Course dimension and then the RS dimension. The SEM measurement model, with analyses of CFA and GFI, support the learning effectiveness of DTIS and our hypotheses. All values in this study are statistically significant, suggesting that this research possesses validity and reliability.

As the research questions were especially designed for DTIS alumni, these initial results should provide a relevant reference frame for any future related studies. Some problems were inevitably encountered with the questionnaire design. For example, some questions are not clear enough and were misunderstood by participants. However, we believe the majority of the questions are innovative and well-designed, such as questions in Course Design, Core Competency and Repay the Society.

Collecting not only 300 anonymous but also 150 named questionnaires, the study shows that the perception on repay to the society is fairly positive. As shown in Appendix 10, about 20% of our alumni are willing to provide scholarships and financial aids for minority students, up to 35% are willing to provide internship and company visiting opportunities, and almost 40% are willing to go back to school to share their job experiences. From this point, our alumni are highly willing to repay to the school and further to the society, consistent with Schfer and Mayer (2005), who find that the education from school will influence students and the society.
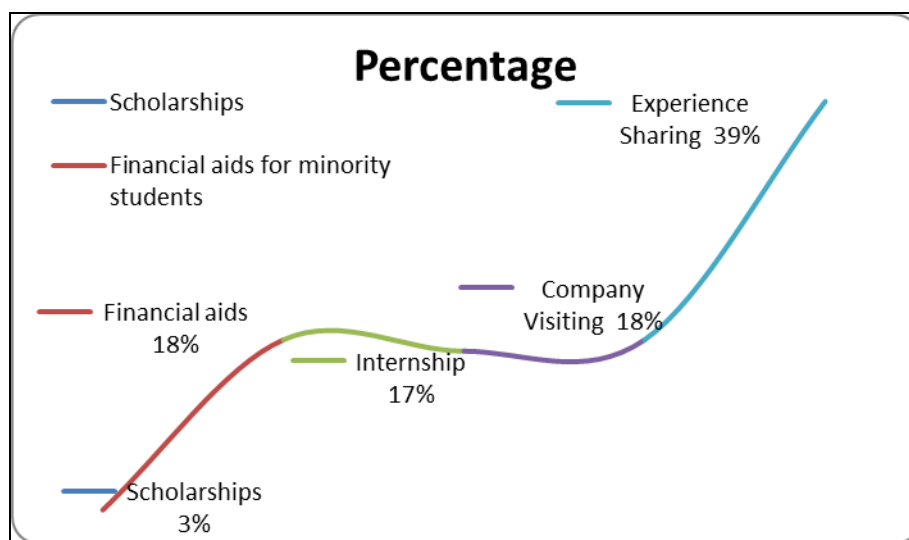
Figure 11. The Result of Payback the Society (2012-2013)

From the results of SEM and Amos analysis, we have a better understanding about the status quo of DTIS alumni and also their positive attitude to repay to the society. Good learning effectiveness in DTIS is reflected in the high satisfaction of our alumni with course design, which enhances their core

601

competency, as well as their repayment. Finally, special thanks are owed to our alumni for the high questionnaire response rate, which has made this study more objective and effective.

4.2 Academic Contribution

In the past three decades, Structural Equation Modeling (SEM) has been used extensively in behavior or social sciences. Many researchers use SEM to build models in order to investigate measurement issues and examine structural relationships among sets of variables. The Analysis of Moment Structure (Amos) package is a useful tool for analyzing SEM. This tool has a wide application within areas of marketing research, educational research and psychology. The present paper uses Amos analysis to reveal the latent relationship among variables.

This study is a novel application of SEM to examine the experience and perception of DTIS alumni. Through an analysis of 150 named and 300 anonymous questionnaires, we have explored the overall learning effectiveness on their job-seeking, academic advancement and their repay to the society. New questions specially developed for this study CDS5 "I think that the course designed by the DTIS made me feel fulfilled on current job", CCP3 "The training courses of the DTIS made me possess active learning ability". and CCP4 "The training courses of the DTIS made me possess good concentration, reaction and memory", as well as CCP8 "My foreign language proficiency has improved during the time in school", have significant values of GFI by using CFA statistical analysis, suggesting that these questions are useful for future related research. Conversely, problematic questions in this research can also be effective references for pitfalls to avoid in the future. For instance, questions CCP10 and CCP9 are too similar to have good GFI values, and were eliminated from the analysis. Iterative adjustment is a feature of the research instrument development process.

The descriptive analysis of advancement and employment reveals the status quo of our alumni: the numbers of participants whose work is related to languages are second highest among all of the groups, participants who work as language teachers also account for about 80% and participants who would need to use English translation ability account for 67%. Participants who work as professional translators or interpreters or have part-time jobs of translation and interpretation account for more than 30%. Moreover, it can be inferred from the above analysis that the teaching in DTIS is effective. Concerning salaries, more than 60% of our alumni's reach the average salary. It can also be demonstrated that our alumni have positive attitude toward social repayment.

As the DTIS course programs were divided to 3 categories, there were more than 50% types of jobs related with the school learning effectiveness, as the language & culture group are supposed to be connected with the translation group which belong to an important program too. So, the employability was connected with different kind of professional programs and language and humanities related fields of DTIS.

To conclude, it is hoped that this brief study may contribute to a better understanding of alumni status and satisfaction, as well as to provide effective guidance for future research especially in questionnaire design and statistical analysis.

602

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604

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Appendix 1

Personal Information Questionnaire

	Questions
Personal Information	PI1 Gender
	PI2 Age
	PI3 Graduation year
	PI4 Academic program
	PI5 Group
	PI6 License
	PI7 Marital Status
	PI8 Children
	PI9 Spouse
	PI10 Spouse's occupation

Appendix 2

Advancement and Employment Questionnaire

	Questions
Advancement and Employment	AE1 Degree
	AE2 Current Status
	AE3 Monthly salary
	AE4 Further advancement: Master's program
	AE5 Major of Master Degree
	AE6 Would you like to attend a doctoral program?
	AE7 Further advancement: Doctoral program
	AE8 Major of Doctoral Degree

AE9 After graduated from DTIS of CJCU, does your work related to translation or interpretation?

AE10 After graduated from DTIS of CJCU, which field does your work related?

AE11 After graduated from DTIS of CJCU, do you have a part-time job related to translation?

AE12 Are you a language teaching teacher?

AE13 How many years do you work as a free-lancer, SOHO or tutor?

AE14 Which one is your current job position/rank?

AE15 How many years do you work in your company?

AE16 How many languages do you use in workplace (Multiple selection question)?

AE17 How many languages do you translate in workplace (Multiple selection question)?

AE18 How many jobs do you change since graduation?

AE19 Where have you worked (Multiple selection question)?

Appendix 3

The Second Part Questionnaire

Dimensions	Questions (Indicator)
Core competency	CCP2 The diploma of the DTIS gives me a wide range of job opportunities.
	CCP3 The training courses of the DTIS made me possess active learning ability.
	CCP4 The training courses of the DTIS made me possess good concentration, reaction and memory.
	CCP7 Learning of the DTIS made me possess professional knowledge and skills.
	CCP8 My foreign language proficiency has improved during the time in school.
	CCP9 At my current job, I think that my job performance was recognized by my supervisor or employer.
	CCP10 As my current job ability, I think that I can accomplish my job tasks.
Course design	CDS2 I am satisfied with the faculty members provided by the DTIS.
	CDS3 I think that the course materials arranged by the DTIS meet the job requirements.
	CDS4 I think that the course designed by the DTIS helped me acquire interdisciplinary skills.

	CDS5 I think that the course designed by the DTIS made me feel fulfilled in my current job.
	CDS6 I think that the professional image and reputation of the DTIS are increasingly recognized by society.
Repay the society	RS1 I'd like to offer the internship opportunities for junior brothers/sisters in the school.
	RS2 I'd like to share my job experience with my junior brothers/sisters in the school.
	RS3 I'd like to offer scholarships for my junior brothers/sisters in the school.

Appendix 4

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	300	.000	1.000	.24000	.427797
License	300	.000	1.000	.26000	.439367
Marital Status	300	.000	2.000	.27333	.453845
Monthly salary	300	1.000	8.000	2.82000	1.331733
Further advancement: Master's program	300	.000	4.000	.62667	1.283008
How many years do you work in your company?	300	.000	6.000	1.39000	1.620696
Valid N (list wise)	300				

Appendix 5

Frequency Table: Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	translation & interpretation	75	25.0	25.0	25.0
	interpretation	92	30.7	30.7	55.7
	translation	133	44.3	44.3	100.0
	Total	300	100.0	100.0	

Appendix 6

After Graduating from DTIS of CJCU, which Field was Your Work Related to?

Economics & Trade program	Commerce 15.67%	Service 7.67%	Self 1.33%	Total 24.67%
Science & Technology program	Information 67%	Science 4.0%	Medical 2.67%	15.34%
News & Media program	Gov. 7.33%	Media 2.0%		9.33%
Language & Humanities related fields	Language 10.67%	Culture 9%		19.67%

Appendix 7

CORE-Confirmatory Factor Analysis (CFA) Chart: Results of Two Factor Model by Using CFA (Latent Dimension Reliability, Convergent Validity, Composite Reliability)

CORE-CFA chart

Dimension	Indic	Estimated values of parameters				Convergent Validity		Model fit indicator							
		UNSC	(S.E.)	C.R. (t-Value)	P	SC	SMC	C.R.	AVE	x2	DF	x2/DF	GFI	AGFI	RMSEA
core	CCP2	1				0.687	0.472	**0.913**	0.637	32.02	9	3.557	0.97	0.918	0.092
core	CCP3	1.233	0.09	13.719	***	0.874	0.764								
core	CCP4	1.278	0.093	13.711	***	0.873	0.762								
core	CCP7	1.119	0.089	12.599	***	0.793	0.629								
core	CCP8	1.077	0.086	12.46	***	0.783	0.613								
core	CCP9	1.063	0.088	12.127	***	0.761	0.579								

Appendix 8

COURSE-Confirmatory Factor Analysis (CFA) Chart: Results of Two Factor Model by Using CFA (Latent Dimension Reliability, Convergent Validity, Composite Reliability)

COURSE-CFA chart

Dimension	Indic	Estimated values of parameters				Convergent Validity		Model fit indicator							
		UNSC	(S.E.)	C.R.(t-Value)	P	SC	SMC	C.R.	AVE	x2	DF	x2/DF	GFI	AGFI	RMSEA
course	CDS2	1				0.754	0.569	0.902	0.606	16.32	5	3.264	0.98	0.935	0.087
course	CDS3	1.143	0.08	14.243	***	0.826	0.682								
course	CDS4	1.228	0.091	13.53	***	0.786	0.618								
course	CDS5	1.247	0.087	14.384	***	0.834	0.696								
course	CDS6	1.082	0.09	11.977	***	0.702	0.493								

Appendix 9

RS-Confirmatory Factor Analysis (CFA) Chart: Results of Two Factor Model by Using CFA (Latent Dimension Reliability, Convergent Validity, Composite Reliability)

RS-CFA chart

Dimension	Indic	Estimated values of parameters				Convergent Validity		Model fit indicator							
		UNSC	(S.E.)	C.R. (t-Value)	P	SC	SMC	C.R.	AVE	x2	DF	x2/DF	GFI	AGFI	RMSEA
Repay	RS1	1				0.720	0.518	0.763	0.526	0					
Repay	RS2	1.21	0.141	8.581	***	0.864	0.746								
Repay	RS3	0.664	0.079	8.447	***	0.559	0.312								

Appendix 10

The Result of Repay the Society

Items N/P	Scholarships	Financial aids for minority students	Internship	Company Visiting	Experience Sharing
Number	5	27	25	27	56
Percentage	3%	18%	17%	18%	39%