A Study on Re-enroll Intention Toward Advanced Level of Higher Education for International Students in Taiwan

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Abstract

This study developed a re-enroll intention model of higher education using international students studying Taiwan universities as a case. The relationships between proposed factors and re-enroll intention were investigated. The model was developed with five constructs, namely, service quality, perceived value, satisfaction, image, and re-enroll intention. The questionnaire survey was conducted with 418 international students studying at private and public universities located in northern, central, and southern Taiwan. The analyses of descriptive statistics and Structural Equation Model (SEM) were carried out in this study. The results revealed that satisfaction has the greatest positive effect on students' re-enroll intention, followed by perceived value. In addition, the results also indicated that service quality, image, and perceived value have positive influence on satisfaction. These findings of this study can provide valuable information for management of higher education institutions when formulating competitive strategies to enhance re-enroll intention.

Keywords: service quality, perceived value, image, satisfaction, re-enroll intention, SEM

1. Introduction

The internationalization of higher education is a manifestation of globalization, a phenomenon influencing almost every industry in the contemporary world economy (Wang and Tseng, 2011). It is the process of integrating an international/ and inter-cultural dimensions into the teaching, research and service of the university (Arum, 1992). Over the past 30 years, the internationalization of higher education has been a major growth industry worldwide, which the international education market has become fiercely competitive with different marketing strategies being implemented by service providers in order to attract students who are seeking for higher education (Oya, 2012). This process will continue to have an impact on the management of universities and the service quality received by students, resulting in transformation and reform within universities to maintain competitive positioning in the international higher education market.

In response to cope with globalization, attracting international students becomes a key issue for higher education policies and an important part of national development plans for many countries. According to Arambewela and Hall (2009), they declared that there are 3.7 million students studying worldwide outside of their home countries, and this number may increase to 7.2 million by 2025. This is a good opportunity to countries that have high quality higher education systems to attract international students around the world. However, the brisk increase in the number of institutions in higher education from many countries has led to an intense competition. Therefore, only institutions which delivering high quality service to meet students' needs and expectations are ensured to gain advantages in this competitive market (Arambewela and Hall, 2009).

Recently, some of Asia countries have promoted their education service with higher quality and reasonable tuition fee such as Hongkong, Singapore, Japan, Malaysia, and Thailand etc. To become a country of the education hub in the Asia region, Taiwan government has implemented many policies to attract 130.000 international students studying at Taiwan universities until 2020. Since Taiwan higher education institutions are considered as one of the ideal destinations in Asia for international students.

Moreover, the growth of international students and the intense competition among universities in Taiwan to attract and retain students, increasing the re-enroll intention levels of students has become a critical success factor (Wang and Tseng, 2011; Alves and Raposo, 2010; Navarro et al., 2005). Therefore, there has been the increasing number of studies on re-enroll intention in higher education. Re-enroll intention is considered to be one among several marketing approaches that can be used to improve performance of higher education. It has been accepted that, retaining current students is more cost effect than attracting new ones. It is necessary to analyze and study levels of student re-enroll intention in higher education, as institutions of higher education could benefit greatly from being able to establish long-term relationships with their students through student loyalty (Alves and Raposo, 2007; Gruber et al., 2010).

In Taiwan, nowadays there is greater opportunity for international students to attend colleges and universities. Moreover, international students are able to choose from a large pool of universities and colleges regardless whether they are public or private universities. As a result, the competition for Taiwan universities to recruit more international students and retain them has become fiercer than ever before (Chou et al., 2012). Facing

a growing competitive environment, Taiwan universities have dramatically increased their competitiveness for recruiting and retaining international students by providing the high quality service as a solution to satisfy students in the market. Thus, it is very important for university administration to identify the attributes of service and other factors that influence student re-enroll intention and to understand the nature of the relationships among them. Furthermore, although previous studies have identified many factors that influence students' re-enroll intention, only a few studies that have focused on the international student re-enroll intention in Taiwan.

Therefore, the overall objective of this study is to development a re-enroll intention model by examining the relationships among service quality, perceived value, satisfaction, image on re-enroll intention. In addition, this study would fill up the gap by using many universities in Taiwan as a case study to better understand international student re-enroll intention. It can sever as the principle information to develop appropriate education planning and effective strategies implementation. This research will provide a conceptual foundation for future student re-enroll intention in education industry.

2. Literature review and hypotheses development
2.1. Student Re-enroll Intention
Behavioral intention is described as stated likelihood to engage in a particular behavior (Oliver, 1997). In higher education, behavioral intention referred to the intention to revisit and recommend university to others (Arambewela *et al.,* 2005; Alves and Raposo, 2007; Sheu, 2011). Re-enroll intention refers to the likelihood of student to continuously use education (Alves and Raposo, 2010). In addition, it is comprised of the intention to revisit and the intention to recommend (Navarro *et al.,* 2005). Nowadays, the importance of gaining insight into students' re-enroll intention lies in their direct link to retaining and attracting prospective students and ultimately ensuring survival in an increasingly competitive market place (Navarro *et al.,* 2005). In the specific case of university, positive word-of-mouth, recommendation intention, and repeat purchase are good indicators to measure re-enroll intention of student forward a university (Navarro *et al.,* 2005; Alves and Raposo, 2007; Helgesen and Nesset, 2007; Alves and Raposo, 2010).

2.2. Antecedents of Re-enroll Intention
2.2.1. Service Quality
Service quality in the education context refers to the difference between what a student expects to receive and his/her perceptions of actual delivery in higher education (Gruber *et al.,* 2010). The service quality of an education institution can be considered as an important indicator of educational excellence which promotes its image and awareness (Angell *et al.,* 2008; Gamage *et al.,* 2008; Jalal *et al.,* 2012). Alves and Raposo (2010) found that positive perceptions of service quality has a significant influence on student satisfaction and in turn the satisfied students would attract more students through word-of-mouth communications. The students can be motivated or inspired from both academic performance as well as the administrative efficiency of their institutions. Jalal *et al.* (2012) proposed that service quality is also considered as a key performance measure in educational excellence and is a main strategic variable for universities to create a strong perception in consumer's mind. Based on this concept, a wide variety of service quality's dimensions in university has been found widely in measuring service quality. Those dimensions are:

(1) *Academic service:* It refers to attributes such as teaching methods, learning materials, offered courses, lectures' interaction with students and consultation opportunities provided by a university (Abdullah, 2006). In addition, it is also identified by the attributes related to the quality of academic staff, the quality of programs, and the university's reputation (Gamage *et al.,* 2008). The important contribution of academic service in generating student satisfaction has been confirmed by numerous studies (Abdullah, 2006; Angell *et al.,* 2008; Gamage *et al.,* 2008; Arambewela and Hall, 2009; Sultan and Wong, 2010; Butt and Rehman, 2010; Gruber *et al.,* 2010; Wang and Tseng, 2011).

(2) *Administrative service*: It is defined as the service provided by non-academic staff to students (Abdullah, 2006). It includes attributes such as the attitude of administrative staff towards students, the operating hours of student administration offices, the speed and precision administrative staff responds to student matters, and the treatment students received of different religions and race from administrative staff. Previous studies have demonstrated that administrative services exert a significant influence over student satisfaction (Leblanc and Nguyen, 1997; Abdullah, 2006; Gamage *et al.,* 2008).

(3) *Access:* It refers to the extent to which the services provided by a university are conveniently available to students in terms of time and/or place (Arambewela *et al.,* 2005). Moreover, it is the availability, approachability, and convenience of both academic and non-academic staffs (Huang, 2009). Thus, it includes such attributes as the operating hours of a university library (Arambewela *et al.,* 2005; Petruzzellis *et al.,* 2006) and ease of access to university buildings, facilities, and clubs/activities (Sahney and Karunes, 2004).

(4) *Physical evidence:* it refers to university infrastructure, classroom facilities, up-to-date equipment, library facility, location and physical environment (Angell *et al.,* 2008; Gamage *et al.,* 2008; Petruzzellis *et al.,*

2006; Leblanc and Nguyen, 1997). Physical evidence is important in terms of shaping the attitudes that students ultimately form towards their university (Gamage *et al.,* 2008). It has also been identified as an important determinant of service quality which will influence satisfaction (Arambewela and Hall, 2009; Gamage *et al.,* 2008), particularly in light of the notion that its tangible nature makes it easier for students to evaluate their service experience from their host education institutions.

(5) *Augmented service:* It includes the range of food offered in university cafeterias, the price of dormitory and public transport services available to students (Price *et al.,* 2003). Such services are regarded as having a salient influence over the success and competitiveness of a university (Telford and Masson, 2005; Joseph and Joseph, 1997). In addition, they are also likely to influence student satisfaction (Joseph and Joseph, 1997; Aracil, 2008; Koilias, 2005).

Additionally, service quality is a critical success factors in any service strategy due to its role in attracting new customers and retaining existing ones (Lai *et al.,* 2011). For a long time, a numerous studies of service quality have been conducted on both commercial and higher education sectors. Many previous studies indicated that customers' perceptions of service quality are proposed to positively influence customer perceived value (Cronin *et al.*, 2000; Chen, 2008; Hu *et al.,* 2009; Lai *et al.,* 2009); customer satisfaction (Kuo *et al.,* 2009; Sultan and Wong, 2010; Gruber *et al.,* 2010; Clemes *et al.*, 2007; Wang *et al.*, 2004), and corporate image (Lai *et al.*, 2009; Alves and Raposo, 2010; Brown and Mazzarol, 2008; Nguyen and LeBlanc, 1998). Therefore, the following three hypotheses are formulated in this study:

H1: Service quality positively affects satisfaction.

H2: Service quality positively affects image.

H3: Service quality positively affects perceived value.

2.2.2. Perceived value

Perceived value was defined as consumer's overall assessment of the utility of a product or service based on perceptions of what is received and what is given (Zeithaml, 1988). In other words, perceived value presents the trade-off between perceived benefit and perceived cost (Lai and Chen, 2011). Customer perceived value is an important antecedent to customer satisfaction and behavioral intention (Cronin *et al.,* 2000; Tam, 2004; Lai *et al.,* 2009; Lai and Chen, 2011). These direct positive relationships have been confirmed in a number of different service contexts (Chen, 2008; Kuo *et al.,* 2009; Lai and Chen, 2011; Tam, 2004; Lai *et al.,* 2009). Recent research studies suggest that perceived value may be better predictor of behavioral intention than either satisfaction or service quality (Lai and Chen, 2011; Cronin *et al.*, 2000). In addition, perceived value can be analyzed with either a self-reported unidimensional measure or a muntidimensional scale (Petrick & Backman, 2002; Sheth, Newman, & Gross, 1991). Alvec (2011) conducted the research on the measurement of perceived value in higher education and he concluded that unidimensional approach is the most appropriate to measure perceived value in higher education.

Empirical evidence from several previous studies indicates that customer perceived value is important antecedent of customer satisfaction in different services (Lai and Chen, 2011; Lai *et al.*, 2009; Kuo *et al.*, 2009; Cronin *et al.*, 2000). For example, Cronin *et al.* (2000) found that customer perceived value is a significant predictor of customer satisfaction in different service industries (e.g. health care, fast food, and entertainment). In higher education, the relationship between perceived value and satisfaction has also been addressed in recent studies with findings that student satisfaction levels were influenced by perceived value (Clemes *et al.,* 2007; Brown and Mazzarol, 2008; Sanchez-Fernandez *et al.*, 2010; Alves 2011; Lai *et al.,* 2009; Dlac ˇic *et al.*, 2013). In additional, students' perceived value is also proposed to influence on re-enroll intention (Sanchez-Fernandez *et al.*, 2010; Alves, 2011; Dlac ˇic *et al.*, 2013). Therefore, based on previous evidence of the direct relationships between customer perceived value on customer satisfaction and perceived value on re-enroll intention, this study proposes hypothesis as followed:

H4: Perceived value positively affects satisfaction.

H5: Perceived value positively affects re-enroll intention.

2.2.3. Image

Institutional image is described as the overall impression made on the minds of the public on the organization. It is related to the various physical and behavioral attributes of organization, such as tradition, reputation, business name, ideology, variety of service, and the impression of quality communicated by each person interacting with customers (LeBlanc and Nguyen, 2001). For an educational organization, university image is the sum of all beliefs that an individual has towards a university (Jiewanto *et al.,* 2012), and it is fundamental to impress, attract and maintain students (Helgesen and Nesset, 2007). Thus, university should create a distinctive image in the competitive market (Palacio *et al.,* 2002). Unique image of a university can bring satisfaction of students and consequently loyalty. In this regard, Alves and Raposo (2010) has suggested that higher education institutions should make a concerted effort to evaluate the university image held by its students as well as the general public among those who are potential future students.

The relationship between image and consumer revisit intention has remained a matter of debate. Studies

have shown that corporate image serves as an important factor influencing customer loyalty, and a favorable image can influence repeat patronage (Hu *et al.,* 2009; Lai *et al.,* 2009). In higher education, university image is considered as a key antecedent for satisfaction and loyalty (Alves and Raposo, 2007; Brown and Mazzarol, 2008). Alvec and Raposo (2010) investigated the impact of university image on student behaviors. The results revealed that image has a significantly effect on satisfaction and loyalty of students. Furthermore, the results demonstrated that image is the one of the antecedents which has the most influence in the satisfaction formation process. Therefore, they suggested that if education institutions have to compete through image, the first step is to measure the university image held by its students. Similarly, Jiewanto *et al.* (2012)**,** and Kheiry (2012) investigated the influence of university image on student behavior. They proved that image is a critical factor significantly influencing re-enroll intention of student in future. Therefore, two hypotheses regarding image are proposed:

> *H6: Image positively affects satisfaction.*
> *H7: Image positively affects re-enroll intention.*

2.2.4. Satisfaction

According to Oliver (1980), satisfaction refers to the perceived discrepancy between prior expectation and perceived performance after consumption. When expectations are not fulfilled, the customer is dissatisfied. There are two general conceptualization of satisfaction in the literature, transaction specific satisfaction and overall or cumulative satisfaction (Kuo *et al.,* 2009). Transaction specific satisfaction refers to a customer's satisfaction based on their post-choice evaluation of a service after a specific consumption experience and/or a customer's post-choice evaluation of a service based on its specific service attribute. While based on the overall purchase and consumption experiences with a service over time are evaluated as overall satisfaction (Lai and Chen, 2011). From these descriptions, we can view overall satisfaction as a combination of all previous transaction-specific satisfaction (Johnson&Fornell, 1991. Overall satisfaction has been used more than transaction specific satisfaction in predicting customer behavior and firm performance (Chen, 2008; Kuo *et al.,* 2009; Lai and Chen, 2011).

Studies on the relationship between satisfaction and re-enroll intention showed that satisfaction is a strong driver of revisit intention across a wide variety of service industries (Lai and Chen, 2011; Dado *et al.,* 2011; Sheu, 2011; Lai *et al.,* 2009; Ladhari, 2009; Kuo *et al.,* 2009; Chen, 2008; Clemes *et al.,* 2007; Cronin *et al.,* 2000). This positive relationship have also been confirmed in the specific context of higher education institutions from previous studies by Dado *et al.* (2011), Sheu (2011), Alves and Raposo (2007), Alves and Raposo (2010), Clemes *et al.* (2007). These authors proved that a satisfied student is more willing to show positive re-enroll intention, at least, by word-of-mouth or recommendations to others or may undertake further study in future, than a dissatisfied student. Thus, Hypothesis H8 is proposed as follows:

> *H8: Satisfaction positively affects re-enroll intention.*

Figure 1 shows the conceptual model was proposed in this study based on the above literature review to examine relationships between service quality, image, perceived value, satisfaction, and re-enroll intention.
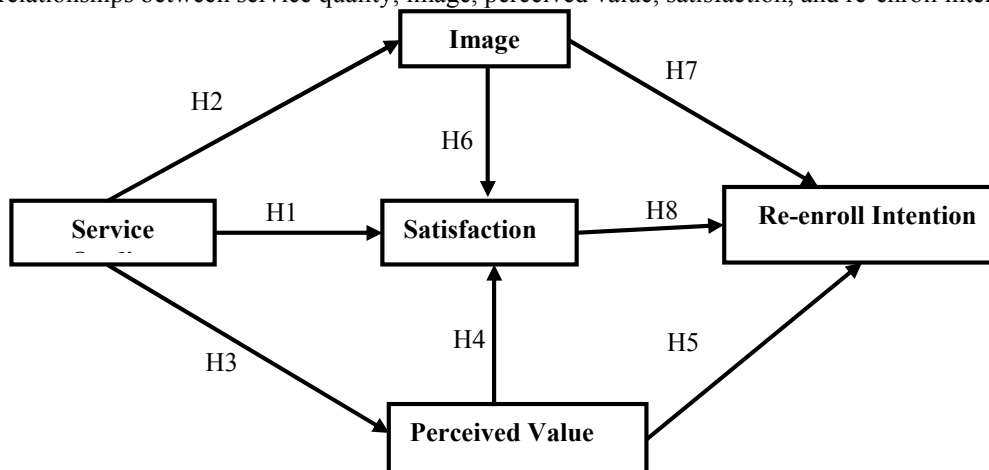

Figure 1. The Hypothesized Conceptual Model

3. Research Methodology

3.1. Questionnaire Design

A self-administered questionnaire was used to gather empirical data from international student in Taiwan. The questions in the questionnaire were based on the literature review and adjusted for the specific research goal of this study. The questionnaire was pretested through a pilot study with 50 international students studying at 3 universities in three deferent locations in Taiwan and revised to ensure content validity. The final questionnaire was discussed follows.

The questionnaire consists of six sections. The first section collects the respondent's demographic data with 13 items such as gender, age, marital status, nationality, degree program source of funding, and location of attending university. The second section will consist of 24 items covering 5 dimensions of service quality in higher education, namely academic services, administrative services, access, augmented services, and physical evidence. The third section deals with the measurement of perceived value with 3 items. The four sections deals with image measurement with 4 items. The five section deals with satisfaction measurement with 3 items. Finally, the sixth section comprised three items to examine students' re-enroll intention. A section from respondent information measured by a categorical scale, all items of the second six section measured by a 7-point Likert-type scale from "Strongly Disagree (=1) to Strongly Agree (=7).

3.2. Sampling and Respondent Profile

According to Taiwan's Ministry of Education (2014), there were 11,554 international student enrollments for degrees in Taiwan universities for 2013. The sample size can be calculated using the following formula (Yamane, 1973):

$$n = \frac{N}{1 + Ne^2}$$

Where:
n = Sample size
N = Population size
e = Error of the sampling

Confidence level of 95% and 5% sampling error was considered. Therefore, the sample sized for this study is 400. Applying the convenience sampling method, a total number of 500 questionnaires were given out international students studying at universities in Taiwan. A total of 418 valid questionnaires were received, resulting in a response rate of 83.6%.

3.3 Data Analysis

The collected data were analyzed using SPSS 19.0 and AMOS 18.0 software. First, Cronbach alpha was used to test the reliability of the items. The result of Cronbach alpha level beyond 0.70 indicates good reliability and internal consistency of the questionnaire. Then, Exploratory Factor Analyses (EFA) using principle component method with Varimax rotation was conducted on service quality to examine their dimensionalities and psychometric properties. In addition, Confirmatory Factor Analysis (CFA) was further conducted to test the convergent and discriminant validity. After that, the measurement model fit was assessed to test the overall fit with the data and ensure the validity and reliability of the model. Finally, the Structural Equation Model (SEM) was used to examine the relationships among study constructs.

4. Results and Discussions
4.1. Sample Characteristic

There were 229 male (54.8%) and 189 female (44.2%). Students' age group of 26-30 accounted for the most (37.8%), followed by the age group of 20-25 (32.3 %), 31-35 (13.4%), under 20 (10.3%), 36-40 (4.5%), and more than 40 (1.7%). These results showed that majority of international students studying in Taiwan are youngsters under 30 years old. In addition, the majority of international students were single (70.5%), followed by married (29%), and divorced (0.5%). With regard to the source of funding, the result shows that 33.7% of the international students are sponsored by Taiwan universities, while 27.8% are granted the scholarship provided by Taiwan governments, followed by their own government (21.1%), and family/self (14%). In addition, the remaining 3.4% of international students were supported by other sources such as employer sponsorship, and professor sponsorship. It is interesting that the scholarship of Taiwan government is more common with students from Latin American, Gambia, while the scholarship of Taiwan universities is mainly sponsored for students from Asia countries.

In summary, the respondent profile indicates that the sample size chosen for the study possesses both uniform and diverse characteristics, making it adequately representative of the total international student population in Taiwan.

4.2. Verification of the Proposed Model and Hypotheses
4.2.1. Measurement Model of Service Quality

Exploratory Factor Analysis (EFA) using Principal Component with Varimax rotation was conducted on 24-item scale of service quality to reduce a large variable set into a smaller set of underlying factors, which become as good inputs to conduct Confirmatory Factor Analysis (CFA). The result showed that there was one item, SQ23 (ideal location of attending university), that had the factor loading smaller than 0.5 and it was therefore removed as suggested by Lai et al. (2009). Then, the remaining 23 items were used to perform the second EFA. The Bartlett's Test of Sphericity showed that a nonezero correlation existed with a value of 3942.223 at 0.001 significance level. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of 0.927 exceeded the necessary threshold of sampling adequacy with the minimum of 0.5.These results indicated that the set of service

quality variables met the necessary threshold of sampling adequacy and it was appropriate to apply exploratory factor analysis (Lai et al., 2009).

The results of the final EFA of service quality are represented Table 1. 23 attributes of service quality were extracted into four factors. All Eigenvalues values are larger than 1, and the percentage of cumulative variance is 68.315 %, meaning that these four factors can explain 68.315% of the variance of observed variables. The extracted factors were named as "academic service", "physical evidence", "administrative service", and "augmented and access service". In addition, a reliability test for each factor of service quality was obtained using calculation of Cronbach alpha coefficient. The Cronbach alpha coefficient of four factors ranged from 0.783 to 0.852 and the cumulative variance explained 68.315%. Therefore, all factors of service quality were reliable and have satisfactory internal consistency.

Table 1. Exploratory Factor Analysis Results of Service Quality

Factor/item	Factor loading	Eigenvalue	Variance explained (%)
Factor 1: Academic service (Cronbachα = 0.828)		**8.355**	**39.327**
SQ1: Lecturers skills in teaching	0.719		
SQ2:Academic background of the lecturers	0.715		
SQ3 Teaching materials	0.712		
SQ4: Time for consultation from lecturers	0.706		
SQ5: Solving student's academic problems	0.695		
SQ7: Practical classroom learning	0.671		
Factor 2: Physical evidence(Cronbach α = 0.852)		**1.775**	**12.63**
SQ20: Library facilities	0.763		
SQ22: Good infrastructure	0.732		
SQ21: Up-to-date equipments	0.713		
SQ19: Classroom facilities	0.678		
SQ24: Friendly and environment	0.641		
Factor3:Administrative service (α = 0.818)		**1.490**	**8.748**
SQ8: Provided services promptly	0.768		
SQ11: Attitude of staff towards students	0.763		
SQ9: Abilities of staffs	0.762		
SQ12: Skills of staffs	0.716		
SQ10: Opening hours of offices	0.715		
Factor 4: Augmented and access(α = 0.783)		**1.170**	**7.70**
SQ14: Opening hours of library	0.695		
SQ13: Easily accessing facilities	0.671		
SQ18: Reasonable price of dormitory	0.570		

Total variance explained = 68.315 %

[1]Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = 0.927.

[2]Bartlett Test of Sphericity = 3942.223

4.2.2. Measurement Model

The measurement model fit was assessed by a Confirmatory Factor Analysis (CFA). Convergent validity, discriminant validity, and overall fit with the data were tested to ensure the validity and reliability of the model (Han *et al.,* 2009). Convergent validity of CFA results should be supported by item reliability, construct reliability (CR), and average variance extracted (AVE). Hair *et al* (1998) proposed that Construct Reliability (CR) estimates being greater than 0.7. The CR values of all constructs exceeded the recommended level and were calculated based on formula given by Fornell and Larcker (1981). The Average Variance Extracted (AVE), which should be above 0.05, measures the amount of variance explained by construct.

As shown in Table 2, t-value for all the standardized factor loadings of items are found to be significant ($p<0.01$). In addition, construct reliability estimates ranging from 0.769 to 0.897, which is exceed the critical value of 0.7, indicating a satisfactory estimation. The average extracted variances (AVE) of all constructs range between 0.527 and 0.686 which are above the suggested value of 0.5. These indicate that the measurement model has good convergent validity. Additionally, the results in this study showed all variance extracted estimates were greater

than the corresponding inter construct squared correlation estimates. This means that the indicators had more in common with the construct they are associated with than they do with other constructs. Therefore, the hypothesized measurement model is reliable and meaningful to test the structural relationships among the constructs.

Table 2. Convergent Validity

Construct[1]	Indicator	Cronbach α	Factor loading	t-value	CR[2]	AVE[3]
SQ	F1	0.828	0.880	(0.000)[**4]	0.897	0.686
	F2	0.818	0.833	10.602[**5]		
	F3	0.783	0.826	9.868[**]		
	F4	0.852	0.770	9.786[**]		
IM	IM1		0.755	(0.000)[**]	0.843	0.575
	IM2	0.823	0.684	10.885[**]		
	IM3		0.675	10.741[**]		
	IM4		0.813	11.79[**]		
PV	PV1		0.692	(0.000)[**]	0.769	0.527
	PV2	0.741	0.767	11.984[**]		
	PV3		0.715	12.263[**]		
SF	SF1		0.725	(0.000)[**]	0.775	0.535
	SF2	0.771	0.717	14.457[**]		
	SF3		0.752	15.230[**]		
RI	RI1		0.804	(0.000)[**]	0.846	0.646
	RI2	0.840	0.805	17.861[**]		
	RI3		0.803	17.794[**]		

[1]*SQ = Service Quality, IM = Image, PV = Perceived Value, SF = Satisfaction, RI = Re-enroll Intention.*
[2]*CR = Construct Reliability*
[3]*AVE = Average Variance Extracted = $\frac{\Sigma(\gamma 2)}{\Sigma(\gamma)2 - \Sigma(\theta)}$; γ = factor loading; θ = measurement error of each measured variable*
[4]*Values were not calculated because loading was set to 1.0 to fix construct variance*
[5]*Significant at the 0.001 significant levels*

4.2.3. Test of Structural Model

A structural Equation Model (SEM) was conducted by AMOS 18.0 using maximum likelihood parameter estimates to test the hypothesized conceptual model of this study (Figure 2). The results of structural equation model (SEM) were shown in Table 3. The overall model achieved significant and showed satisfactory in terms of its goodness-of-fit indices as all suggested values were met: $\chi 2$/d.f. = 1.404, GFI = 0.930, AGFI = 0.918, NFI = 0.926, CFI = 0.964, TLI = 0.961, RMSEA = 0.031, and RMR = 0.016. All indices were greater than the suggesting of criteria that indicated a good acceptable model fit between the data and theoretical model of this study.

Table 3. Goodness of Fit

	Criteria	Results of this study
χ^2/d.f.[1]	< 3.00	1.404
Fit indices[2]		
GFI	> 0.90	0.930
AGFI	> 0.90	0.918
NFI	> 0.90	0.926
TLI	> 0.90	0.961
Alternative indices		
CFI	> 0.90	0.964
RMSEA	< 0.08	0.031
RMR	< 0.05	0.016

[1]*$\chi 2$/d.f. = The ratio of the chi-square value to degree of freedom.*
[2]*GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation, and RMR = root mean square residual*

Given the satisfaction fit of the model, the estimated path coefficients of the structural model were then examined to evaluate the hypotheses. The results of test of hypothesized relationships among constructs are presented in Table 4. Most of the hypotheses were strongly supported (H1, H2, H3, H4, H5, H6, and H8), expected for H7 (p = 0.44) showed no-significant result and can be rejected. The specific research results and discussions are shown as follows.

Hypotheses 1-3 examined the effects of service quality on other constructs. The effects of service quality on satisfaction ($\beta 1$= 0.637, t-value = 5.314), image ($\beta 2$ = 0.655, t-value = 8.693), and perceived value ($\beta 3$ = 0.849,

t-value = 11.288) are significantly positive, indicating that hypotheses H1, H2 and H3 are supported. Consequently, it is confirmed that service quality has significantly positive effect on satisfaction, image and perceived value. These findings are consistent with previous studies (Jalal *et al.,* 2012; Gruber *et al.,* 2010; Arambewela and Hall, 2009; Clemes*et al.,* 2007) that service quality was found to have a significant effect on students' satisfaction in higher education. Moreover, they also confirmed that service quality has a positive effect on perceived students' value (Sanchez-Fernandez *et al.,* 2010, Clemet *et al.,* 2007; Alves, 2011).

Hypotheses H4 and H5 examined the effect of perceived value on satisfaction and re-enroll intention. The effect of perceived value on satisfaction ($\beta4 = 0.232$, t-value = 2.193) is significantly positive, indicating that H4 is supported. In addition, the relationship between perceived value and re-enroll intention is also found to be significant ($\beta5 = 0.394$, t-value = 2.810), therefore H5 is supported. These results revealed that perceived value has a significant role in students' satisfaction and re-enroll intention. These results revealed that perceived value has a significant role in students' satisfaction and re-enroll intention. These results are consistent with the findings of previous studies (Alves, 2011; Sanchez-Fernandez, 2010; Brown and Mazzarol, 2008; Alves and Raposo, 2007) that perceived value has a positive effect on students' satisfaction and loyalty in higher education.

Hypotheses 6-7 examined the effects of image on satisfaction and re-enroll intention. The effects of image on satisfaction ($\beta6 = 0.171$, *t*-value = 2.930) is significantly positive, indicating that H6 is supported. This means that a university with good image would increase students' satisfaction. However, the relationship between image and re-enroll intention is not found to be statistically significant (t-value = -0.766 or p = 0.44), thus H7 is rejected. These results indicated that image has a significant role in students' satisfaction, while it has insignificant effect on students' re-enroll intention. This finding is consistent with previous studies (Alves and Raposo, 2010; Dado *et al.,* 2011) that image has a significantly positive effect on students satisfaction. They suggested that in order to retaining current students and attracting new students, university should measure the university image is formed and how it can be modified for better reflecting the intended image.

Finally, satisfaction was found to have a significantly positive effect on re-enroll intention ($\beta8 = 0.604$, t-value = 3.684), thus H8 is supported. This result is confirmed by the previous studies (Dado *et al.,* 2011; Brown and Mazzarol, 2008; Clemes *et al.,* 2007; Alves and Raposo, 2007; Navarro *et al.,* 2005) that students' satisfaction has a positive effect on student's re-enroll intention; when students have high levels of satisfaction, they are likely to spread positive word of mouth to other people, recommend their university to others and to re-enroll with their current university. Therefore, to effectively attract and retain international students, university should strive to attain high levels of student satisfaction (Navarro *et al.,* 2005).

Table 4. Hypothesis Results of the Structural Model

Path[1]	Standardized path coefficients (β)	*t*-value	Test Result
H1: SQ → SF	0.637	5.314[**][2]	Supported
H2: SQ → IM	0.655	8.693[**]	Supported
H3: SQ → PV	0.849	11.288[**]	Supported
H4: PV → SF	0.232	2.193[*][3]	Supported
H5: PV → RI	0.394	2.810[*]	Supported
H6: IM → SF	0.171	2.930[*]	Supported
H7: IM → RI	-0.054	-0.766	Not supported
H8: SF → RI	0.604	3.684[**]	Supported

[1]*SQ = Service Quality, IM = Image, PV = Perceived Value, SF = Satisfaction, RI = Re-enroll Intention.*
[2]*Significant at the level 0.001 significant levels (**p <0.001)*
[3]*Significant at the level 0.05 significant levels (*p <0.05)*
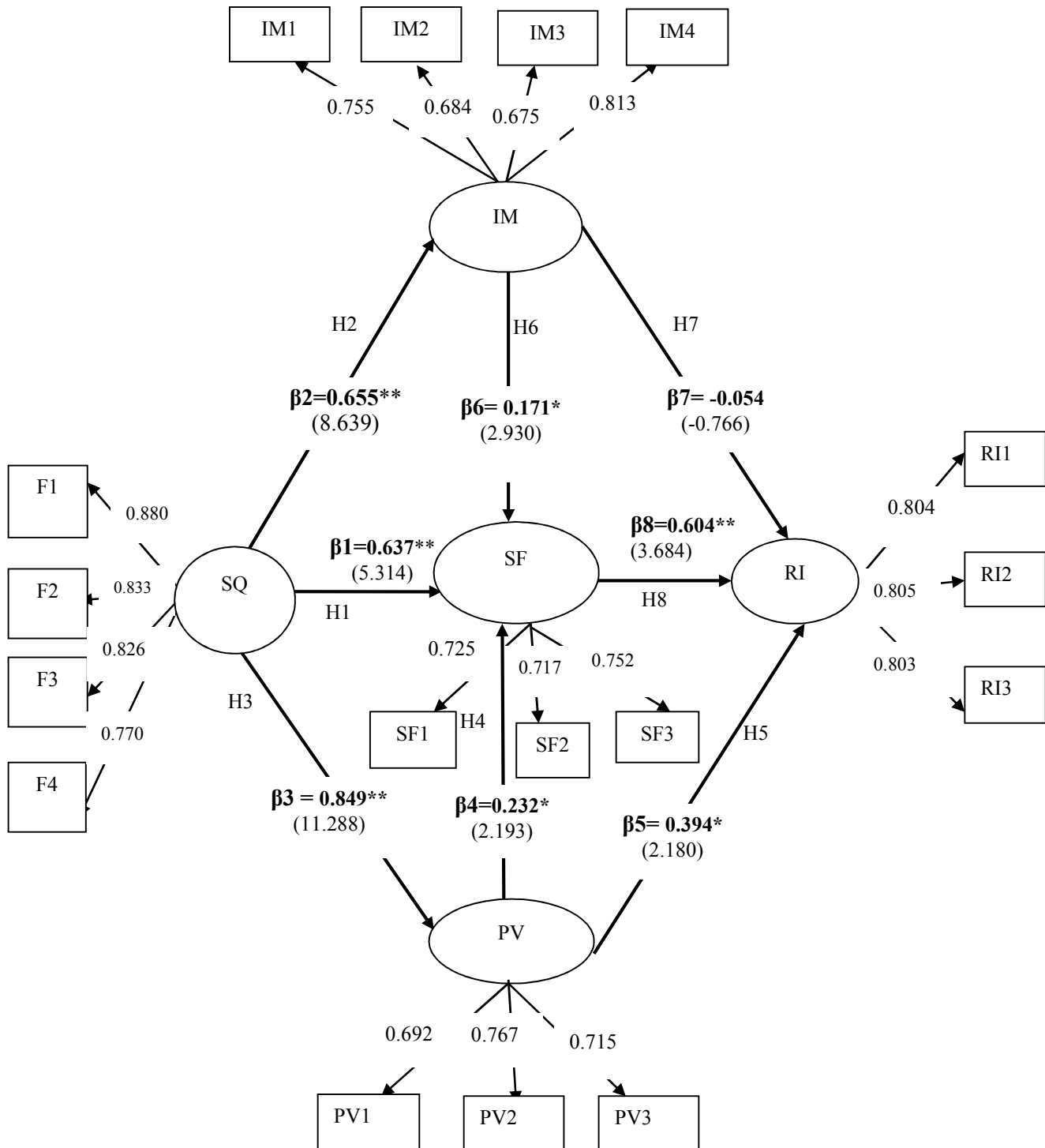
Figure 2. The Results of Structural Model

χ^2/d.f. = 1.404, RMSEA = 0.031, CFI = 0.964, GFI = 0.930

Notes: (1) Numbers not in parentheses are standardized path coefficients.

(2) Numbers in parentheses are t-values.   (4) **$p \leq 0.001$.

(3) Solid arrows indicate direct effects.   (5) *$p \leq 0.05$.

4.2.4. Direct, Indirect, and Total Effects of Relationships

After testing the relationships of the structural model, the results of each relationship in term of direct, indirect, and total effects were also reported by AMOS program. Table 5 presents the measured effects of all relationships in this study. The total effect is estimated as the sum of direct and indirect effects (Kou *et al.,* 2009).

In terms of total effects, satisfaction appeared to have the greatest effect on re-enroll intention (0.604), followed by perceived value (0.558), and image (0.261), respectively. This result is consistent with the argument of previous study (Brown and Mazzarol, 2008) that the most important factor for re-enroll intention or student

loyalty is student satisfaction. In addition, the total effect of service quality on satisfaction (0.946) is lager greater than the total effects of perceived value (0.232) and image (0.171) on satisfaction.

With respect to direct effect, satisfaction also had the largest effect on re-enroll intention (0.604) and followed by perceived value (0.394), while there was the insignificant direct effect of image on re-enroll intention (-0.054). Although, image showed the insignificant direct effect on re-enroll intention, however it had the strongest indirect effect on re-enroll intention (0.315) mediated by satisfaction. Lai et al. (2009) found the importance of satisfaction on customer loyalty via the mediating effect of image and repurchase intention among customers of a telecommunication firm in China.

Furthermore, the direct effect of service quality on perceived value (0.849) is the greatest, followed by image (0.655) and satisfaction (0.637). Although, service quality had the lowest effect on satisfaction, but it had highly indirect effect on satisfaction (0.309) mediated by perceived value and/or image.

Table 5. Direct, Indirect, and Total Effects of Relationships

Path[1]	Direct effect	Indirect effect	Total effect
H1: SQ → SF	0.637**[2]	0.309**	0.946
H2: SQ → IM	0.655**	-	0.655
H3: SQ → PV	0.849**	-	0.849
H4: PV → SF	0.232*[3]	-	0.232
H5: PV → RI	0.394*	0.164*	0.558
H6: IM → SF	0.171*	-	0.171
H7: IM → RI	-0.054	0.315*	0.261
H8: SF → RI	0.604**	-	0.604

[1]SQ = Service Quality, IM = Image, PV = Perceived Value, SF = Satisfaction, RI = Re-enroll Intention.

[2]Significant at the level 0.001 significant levels (**$p <0.001$)

[3]Significant at the level 0.05 significant levels (*$p <0.05$)

5. Conclusions

This study developed a re-enroll intention model of students using international students enrolled in Taiwan's universities as the case. The relationships between proposed factors and re-enroll intention were investigated. Based upon literature review, a hypothesized conceptual model was developed which comprises of five constructs, service quality, perceived value, image, satisfaction, and re-enroll intention. The questionnaire survey was conducted with 418 international students studying at private and public universities located North, Central, and South Taiwan. The analyses of descriptive statistics and Structural Equation Model (SEM) were carried out in this study.

International higher education institutions across the globe are currently experiencing fierce competition to attract international students. Retention rate has been confirmed to affect company's bottom line profit significantly in marketing literature. In this study, the concept of retention regarding students' intention of being returning to the current attending university is termed as "re-enroll." Therefore, this study attempted to explore students' insights of being re-enrolled.

This study aimed to examine the relationships among service quality, perceived value, image, satisfaction, and re-enroll intention. The results showed that satisfaction has the greatest positive effect on re-enroll intention, followed by perceived value; service quality plays the important role in improving perceived value, image and satisfaction. In addition, perceived value and image were found to positively affect satisfaction.

For service quality, the results indicated that academic service is perceived as the most important dimension of service quality, followed by physical evidence, administrative services, and augmented and access service.

This study also identified the impacts of students' demographics and current studying condition towards re-enroll intention. It was found that age, religion, the category of attending university, the type of degree programs, source of funding, and location of attending university can lead international students to have different re-enroll intention levels.

Recommendations

This study suggests that universities should make continuous efforts to improve service quality in term of academic services, administrative services, physical evidence, and augmented and access services. By recruiting academics with a strong background in teaching, and to train and motivate them to ensure they continue to provide the high quality academic service that international students seek for. Moreover, universities must continue to monitor the job market to ensure their designed courses are properly aligned with the labor market-both domestically and internationally-to ensure that courses they offer maximize the likelihood of employment in the desired fields upon graduation. In addition, students may consider physical evidence to be an important part of their experience. Thus, universities should provide a well-designed campus with excellent facilities and training programs on using well

equipment to satisfy students' living and learning needs.

In order to retain and maybe also to attract international students, Taiwan universities should promote these services to international students at marketing events overseas. This can be done through education expo held overseas and by providing detailed testimonials from international students who have satisfied education experience before in Taiwan. In addition, Taiwan universities also could monitor international students' satisfaction regarding these key service dimensions extracted in this study via surveying techniques from time to time.

In addition, better understanding the relationships among service quality, perceived value, image, satisfaction, and re-enroll intention in higher education sector will assist university management to develop more efficient marketing strategies to better meet the demand of international students. For example, universities should make continuous efforts to improve service quality, as quality service offerings will result in favorable image and higher perceived value of university, then, along with better service quality will in turn contribute to an increased level of satisfaction, which ultimately leads to favorable intentions.

Furthermore, this study demonstrates that the differences among student demographics have effects on different levels of re-enroll intention. Therefore, these results suggest that education management should design different strategies for specific international student segments. For example, Taiwan should provide more funding to universities to help them recruit more international students. Building more branches of university around places that are near public transportations and city.

Finally, this study contributes to improve the understanding of various factors that influence student's re-enroll intention in the case of higher education. The findings regarding students' insight toward re-enrollment can provide valuable information to serve when formulating effective communication and recruitment strategies for higher education institutes to retain or even attract international students.

Limitations and Suggestions for Further Study
The results are based on a convenience sampling that was drawn from 30 universities located in the northern, the central, and the southern Taiwan. However, given the facts that there are more universities than these 30 universities in Taiwan recruit international students, and that the number of international students enrolled in higher education institutions in Taiwan is much more than the sample size this study has drawn. As a result, it might subject to sampling errors. Therefore, an overall study based up the whole population could be further conducted. Second, the questionnaire designed in this study does not contain the questions regarding whether the respondent students are returning to the current attending university or to Taiwan who had studies in Taiwan before. Therefore, the retention rates cannot be obtained. Finally, this research mainly focused on international students in higher education, i.e., undergraduate and postgraduate programs. It could be expanded to study students' re-enroll intention in general in the higher education sector; since the importance of vocational education has been increased due to its curriculum is better linked to the demand of job market, or it could be applied toward vocational education institutions; in addition, a comparison study for international students' re-enroll intention toward higher education institutions between Taiwan and Mainland China could also be interesting to be carried out.

6. References
Abdullah, F. (2006). The development of HEdPERF: a new measuring instrument of service quality for the higher education sector. *International Journal of Consumer Studies, 30*(6), 569-581.
Ahmed, N., Gamage, D. T., Suwanabroma, J., Ueyama, T., Hada, S., & Sekikawa, E. (2008). The impact of quality assurance measures on student services at the Japanese and Thai private universities. *Quality assurance in Education, 16*(2), 181-198.
Angell, J. R., Heffernan, W. T., & Megicks, P. (2008). Service quality in postgraduate education. *Quality Assurance in Education, 16*(.3), 236-254.
Alves, H., & Raposo, M. (2007). Conceptual model of student satisfaction in higher education. *Total Quality Management, 18*(5), 571-588.
Alves, H., & Raposo, M. (2010). The influence of university image on student behaviour. *International Journal of Educational Management, 24*(1), 73-85.
Arambewela, R., & Hall, J. (2009). An empirical model of international student satisfaction. *Asia Pacific journal of marketing and logistics, 21*(4), 555-569.
Arambewela, R., Hall, J., & Zuhair, S. (2006). Postgraduate international students from Asia: Factors influencing satisfaction. *Journal of Marketing for Higher Education, 15*(2), 105-127.
Arum, S., & Van de Water, J. (1992). The need for a definition of international education in US universities. *Bridges to the futures: Strategies for internationalizing higher education*, 191-203.
Aydın, O. T. (2013). Location as a Competitive Advantage to Attract Students: An Empirical Study from a Turkish Foundation University. *International Review of Management and Marketing, 3*(4), 204-211.
Beerli Palacio, A., Díaz Meneses, G., & Pérez Pérez, P. J. (2002). The configuration of the university image and

its relationship with the satisfaction of students. *Journal of Educational administration, 40*(5), 486-505.

Brown, R. M., & Mazzarol, T. W. (2009). The importance of institutional image to student satisfaction and loyalty within higher education. *Higher Education, 58*(1), 81-95.

Butt, B. Z., & ur Rehman, K. (2010). A study examining the students satisfaction in higher education. *Procedia-Social and Behavioral Sciences, 2*(2), 5446-5450.

Chang, Q. (2005). Internationalization of higher education from the perspective of globalization. Retrieved October 25, 2008.

Chen, C.-F. (2008). Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan. *Transportation Research Part A: Policy and Practice, 42*(4), 709-717.

Clemes, M. D., Gan, C. E., & Kao, T.-H. (2008). University student satisfaction: An empirical analysis. *Journal of Marketing for Higher Education, 17*(2), 292-325.

Cronin, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of retailing, 76*(2), 193-218.

Dado, J., Petrovicova, J. T., Cuzovic, S., & Rajic, T. (2011). An empirical examination of the relationships between service quality, satisfaction and behavioral intentions in higher education setting. *Serbian Journal of Management, 7*(2), 203-218.

Dlačić, J., Arslanagić, M., Kadić-Maglajlić, S., Marković, S., & Raspor, S. (2014). Exploring perceived service quality, perceived value, and repurchase intention in higher education using structural equation modelling. *Total Quality Management & Business Excellence, 25*(1-2), 141-157.

Gibbs, P., Pashiardis, P., Saginova, O., & Belyansky, V. (2008). Facilitating innovations in higher education in transition economies. *International Journal of Educational Management, 22*(4), 341-351.

Grönroos, C. (1984). A service quality model and its marketing implications. *European Journal of marketing, 18*(4), 36-44.

Hanaysha, J. R., Abdullah, H. H., & Warokka, A. (2011). Service quality and students' satisfaction at higher learning institutions: The competing dimensions of Malaysian universities' competitiveness. *The Journal of Southeast Asian Research, 2011*, 1-10.

Helgesen, Ø., & Nesset, E. (2007). Images, satisfaction and antecedents: Drivers of student loyalty? A case study of a Norwegian university college. *Corporate Reputation Review, 10*(1), 38-59.

Hemsley-Brown, J., Lowrie, A., Gruber, T., Fuß, S., Voss, R., & Gläser-Zikuda, M. (2010). Examining student satisfaction with higher education services: Using a new measurement tool. *International Journal of Public Sector Management, 23*(2), 105-123.

Hsin Chang, H., & Wang, H.-W. (2011). The moderating effect of customer perceived value on online shopping behaviour. *Online Information Review, 35*(3), 333-359.

Hu, H.-H., Kandampully, J., & Juwaheer, T. D. (2009). Relationships and impacts of service quality, perceived value, customer satisfaction, and image: an empirical study. *The Service Industries Journal, 29*(2), 111-125.

Huang, Q. (2010). The relationship between service quality and student satisfaction in higher education sector: A case study on the undergraduate sector of Xiamen University of China. *AU Journal of Management, 8*(1).

Jiewanto, A., Laurens, C., & Nelloh, L. (2012). Influence of service quality, university image, and student satisfaction toward WOM intention: A case study on Universitas Pelita Harapan Surabaya. *Procedia-Social and Behavioral Sciences, 40*, 16-23.

Joseph, M., & Joseph, B. (1997). Service quality in education: a student perspective. *Quality assurance in Education, 5*(1), 15-21.

Kandampully, J., Juwaheer, T. D., & Hu, H.-H. (2011). The influence of a hotel firm's quality of service and image and its effect on tourism customer loyalty. *International Journal of Hospitality & Tourism Administration, 12*(1), 21-42.

Kennedy, S. H. (1977). Nurturing corporate images. *European Journal of marketing, 11*(3), 119-164.

Kheiry, B., Rad, B. M., & Asgari, O. (2012). University intellectual image impact on satisfaction and loyalty of students (Tehran selected universities). *African Journal of Business Management, 6*(37), 10205.

Koilias, C. (2005). Evaluating students' satisfaction: the case of informatics department of TEI Athens. *Operational Research, 5*(2), 363-381.

Kuo, Y.-F., Wu, C.-M., & Deng, W.-J. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services. *Computers in human behavior, 25*(4), 887-896.

Kwan, P. Y., & Ng, P. W. (1999). Quality indicators in higher education-comparing Hong Kong and China's students. *Managerial Auditing Journal, 14*(1/2), 20-27.

Ladhari, R. (2009). Service quality, emotional satisfaction, and behavioural intentions: A study in the hotel

industry. *Managing Service Quality: An International Journal, 19*(3), 308-331.

Lai, F., Griffin, M., & Babin, B. J. (2009). How quality, value, image, and satisfaction create loyalty at a Chinese telecom. *Journal of Business Research, 62*(10), 980-986.

Lai, W.-T., & Chen, C.-F. (2011). Behavioral intentions of public transit passengers—The roles of service quality, perceived value, satisfaction and involvement. *Transport Policy, 18*(2), 318-325.

LeBlanc, G., & Nguyen, N. (1997). Searching for excellence in business education: an exploratory study of customer impressions of service quality. *International Journal of Educational Management, 11*(2), 72-79.

Lin, C.-H., Sher, P. J., & Shih, H.-Y. (2005). Past progress and future directions in conceptualizing customer perceived value. *International Journal of Service Industry Management, 16*(4), 318-336.

Lo, W. Y. W. (2009). Reflections on internationalisation of higher education in Taiwan: Perspectives and prospects. *Higher Education, 58*(6), 733-745.

Marzo Navarro, M., Pedraja Iglesias, M., & Rivera Torres, P. (2005). A new management element for universities: satisfaction with the offered courses. *International Journal of Educational Management, 19*(6), 505-526.

Nguyen, N., & LeBlanc, G. (1998). The mediating role of corporate image on customers' retention decisions: an investigation in financial services. *International Journal of Bank Marketing, 16*(2), 52-65.

Nguyen, N., & LeBlanc, G. (2001). Image and reputation of higher education institutions in students' retention decisions. *International Journal of Educational Management, 15*(6), 303-311.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research*, 460-469.

Paswan, A. K., & Ganesh, G. (2009). Higher education institutions: satisfaction and loyalty among international students. *Journal of Marketing for Higher Education, 19*(1), 65-84.

Petruzzellis, L., & Romanazzi, S. (2010). Educational value: how students choose university: Evidence from an Italian university. *International Journal of Educational Management, 24*(2), 139-158.

Price, I., Matzdorf, F., Smith, L., & Agahi, H. (2002). The Impact of Facilities on Student Choice of University.

Roberts, A., Chou, P., & Ching, G. (2010). Contemporary trends in East Asian higher education: Dispositions of international students in a Taiwan university. *Higher Education, 59*(2), 149-166.

Saha, G. C., & Theingi. (2009). Service quality, satisfaction, and behavioural intentions: A study of low-cost airline carriers in Thailand. *Managing Service Quality: An International Journal, 19*(3), 350-372.

Sahney, S., Banwet, D., & Karunes, S. (2004). A SERVQUAL and QFD approach to total quality education: A student perspective. *International Journal of productivity and performance management, 53*(2), 143-166.

Sheu, T.-S. (2011). A Comprehensive Model for Explaining University Students. *品質學報, 18*(1), 1-18.

Sigala, M., Christou, E., Petruzzellis, L., D'Uggento, A. M., & Romanazzi, S. (2006). Student satisfaction and quality of service in Italian universities. *Managing Service Quality: An International Journal, 16*(4), 349-364.

Sultan, P., & Wong, H. (2010). Performance-based service quality model: an empirical study on Japanese universities. *Quality assurance in Education, 18*(2), 126-143.

Tam, J. L. (2004). Customer satisfaction, service quality and perceived value: an integrative model. *Journal of marketing management, 20*(7-8), 897-917.

Telford, R., & Masson, R. (2005). The congruence of quality values in higher education. *Quality assurance in Education, 13*(2), 107-119.

Wang, R., & Tseng, M.-L. (2011). Evaluation of international student satisfaction using fuzzy importance-performance analysis. *Procedia-Social and Behavioral Sciences, 25*, 438-446.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *The Journal of marketing*, 2-22.