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Gearing Service Quality into High Educational Institutes in Cambodia

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ABSTRACT

In the challenging atmosphere of globalization era, the educational quality has not only become a major industry and need of the day but it is also an investment by the parents for their children. This quality focus on excellent learning process and public satisfaction on the service offered and it is bridge to attract and keep students who want to get universities in public sector as well as in private sector. Measuring student satisfaction is key point in determining service quality at higher educational institute. The main purpose of this paper is to evaluate students' satisfaction on services provided by universities in Cambodia. Specifically, the study found significant relationship between the five dimensions of augmented SERVQUAL (tangibility, reliability, assurance, technology, empathy, and responsiveness) or TRATER and students' satisfaction. Data was collected from 1368 students from both public and private sector universities/institutes are included in this study. The estimation results show that five dimensions (TREAT dimension: tangibility, responsiveness, empathy, assurance, and technology) have a significant, positive impact on the overall student satisfaction (OSS), with empathy being the most important predictor of student's satisfaction. Recommendations and implications for policy makers are discussed and guidelines for future research are also provided. Such discovery should help universities to conduct better strategic plan to meet students' satisfaction in particular and its overall performance in general.

Keywords: Perception and Expectation of Student, Service Quality, Augmented SERVQUAL, TRATER model, Students' Satisfaction, Higher Education Institute, Cambodia

INTRODUCTION

All sectors of society, including the education sector have been affected by unlimited change of information communication technologies around the globe (Sife et al.,2007). Many researchers and academicians also are interested in educational sector. And operation of each universities are challenging with each other on the basis of service offered. The services provided by many universities and comparing these services with competitors to determine status of competitive advantage are used to evaluate by these organizations (Ahmed et al., 2010). Actually, to take competitive advantage, it requires HEIs to continuously acquire, maintain, and build stronger relationships with students (Hanaysha etal., 2011). Given this, the universities should focus on the way of managing their students' perceived service quality (Sumaedi, and Bakti, 2011; Zafi ropoulos, Vrana,2008; Morales, and Caldereon,1999). Students' perceptions of service quality is cornerstone of universities–understanding 'service' in the broad sense, including both academic and nonacademic services in order to success in competitive environment and those perceptions are also a key influence on students' decisions when they are choosing or recommending a particular institution (Martínez-Argüelles, et al.,(2010), but educational

services quality, student satisfaction has also been concern of many universities/ institutes (Legčević,2009).

Logically, quality service has contributed significantly to customer satisfaction (Bolton and Drew, 1991) and customer retention and positive word-of-mouth communications (Reichheld and Sasser, 1990). As like researcher, Letcher and Neves, (2010) pointed out that strive of service quality improving of universities approach to students satisfaction, good reputation or image of organizations, fast spread of positive word of mouth. So that the absent of service quality in educational institutes lead to pull down its image and competitive advantage.

Meanwhile, Students' needs and expectations can be satisfied was perceived as key variable (Tan & Kek, 2004). Student satisfaction helps to build self-confidence, and that self-confidence helps students develop useful skills, acquire knowledge, and become more confident, in what may be described as a virtuous cycle have been found by psychologists, and making customers loyal, organizations have strive to meet their needs and exceed their expectations (Oliveira, 2009). Core of assessment of student satisfaction have long been conducted to evaluate the effectiveness of different educational institute services in a narrower sense. The measuring of the effectiveness of particular academic programs is increasingly including assessment of student satisfaction (Letcher and Neves, 2010). So student satisfaction and service quality affect more on educational quality in university and are perceived as vital cornerstone in acquiring and sustaining competitive advantage, retaining the existing students and attracting the new ones, creating long term profitability as well as building brand name reputation of their universities.

Several techniques and approaches for measuring service quality has been proposed and are currently use in the high educational sector. Service quality (SERVQUAL) model given by Parasurman et al. (1988) is the widely attention and accepted for measuring service quality offered at the educational sector (Ahmed et al., 2010 and Oliveira, 2009). This model initially developed by Parasuraman et al. (1985) and later further refined by Parasuraman et al. (1988). Since its inception, the SERVQUAL model has been widely used in a large variety of service sectors, including HEs sector. Recent published studies on HEs sector have been carried out for many developing and developed countries, which include, among others Asia countries, Malaysia (Abu Hasan et al., 2007, Ilhaamie, 2010); Singapor (Tan and Kek, 2004); Pakistan (Malik et al.,, 200X); India (Singh and Khanduja, 2010) ; ans some european countries like UK (Barnes, 2006); Greek (Zafiropoulos and Vrana,2008).

With era of increased competitive environment and unlimited innovations world, universities in both public and private sector in Cambodia must face, among other challenges, an increasingly differentiated demand for education, the need to carry out more commercial activities in order to obtain new sources of funding, and new competitors that have to strive to fulfill their vital tasks and obligations by improving the educational service sector to win competitor as it is considered as to be a heart of university process. In this regard, the educational service areas were re-reformed in order to provide well educational service to students. Currently, many of the existing universities/institutes have been upgraded and modernized in era of growth of universities/institutes and students in Cambodia. Further, the training of educational staff and appropriate technology has also been important to many universities to meet the rising demand for students. In other words, some universities/institutes' service quality is not as expected by the students, due to its less quality. Some of the universities/institutes are reported not to meet the educational service expectations of the student such as basic skill staff needs, knowledge, courteous and

compassion, proper communications with the students. This combined with less good quality of educational service has encouraged some students to study at abroad, especially in neighboring and western countries. Some public and private universities/institutes are reported to have taken the initiative to enhance the quality of their services by improving infrastructure, modernizing educational technology, reviewing monthly performance, preparing manuals and guidelines, initiating productivity improvement programs, and universities that offer superior service quality likely contribute the quality of education and tend to be student's satisfaction and loyalty.

The primary purpose of this study is to diagnose accurately service shortfalls in the universities, through assessing the expectation and the perceptions of the universities' students in Cambodia—both public and private universities. The model of measuring universities service quality was employed by researcher, the augmented SERVQUAL model or call new model of the TRATER to determine the factors that contribute to improve the student satisfaction in the higher educational institute/universities in Cambodia. To this end, research questions need to be formally formulate, and analysis are required scientifically and systematically answer the questions below

- Does the students' perception meet their expectation on service quality in universities sector in Cambodia?
- What are the factors that contribute most significantly to the students' satisfaction?

LITERATURE REVIEW

A key strategic issue on agenda of management can not separate from service quality. Assessing the service quality is an important factor for both academics and practitioners, and finally, the quality improvement technique was developed to build customer loyalty and achieve competitive advantage (Abdullah, 2006). Recently literature documents a number of methods used to measure service quality. As pointed out by Barnes, (2006), the SERVQUAL instrument represents a multi-item scale that can be used for measuring expectations and perceptions of service quality - as perceived among consumers. Extensive statistical analysis revealed significant correlations between certain dimensions depicted in the original concept in developing the research instrument. In their later studies, Parasuraman et al. (1988, 1990) reduced the original ten potentially overlapping dimensions to five testable dimensions such as he five widely used dimensions include *tangibles* (referring to physical facilities, appearance of personnel and equipment); *reliability* (referring to the ability to perform the promised service dependably and accurately); *responsiveness* (referring to the willingness to help customers and provide prompt service); *assurance* (referring to the knowledge and courtesy of employees and their ability to convey trust and confidence); and *empathy* (referring to the provision of caring, and personalized individual attention given to customers). This model has been conducted extensively within both practitioner and academic research for assessing service quality. The initial concept presented by Parasuraman et al., (1985) is more and more useful for focusing the importance of the potential service gap between customer expectations and perceptions in service organizations in over the last fifteen years. The SERVQUAL instrument consists of twenty-two parallel related expectation (E) and perception (P) statements that represent the five service quality dimensions. In order to obtain views for the statements, customers are required to select a response using likert scales that range from strongly agree to strongly disagree. This allows for the difference scores for each dimension to be calculated. The difference (P± E = Q) represents the measure of service quality (Q). Where Q is negative – a service gap exists. However, where Q is positive, customer expectations are being exceeded. A further section of the instrument provides for the measurement of the relative importance associated with each dimension. After the mean for each dimension has been calculated, the relative importance score can then be used to calculate a weighted average score for each

dimension (Barnes, 2006).

In light of these criticisms, Buttle (1996) commons some future research directions; one of which is to continue to investigate the relationships among service quality, customer satisfaction, buying behavior, customer retention, behavioral intention, word-of-mouth communications and market share. Despite SERVQUAL model being criticized, it is more popular, and has been used for studies of service-providing organizations in many countries. SERVQUAL models was used and widely accepted by researchers and academicians in study of service quality model given by Parasuraman et al. (1988) and has been used to evaluate service quality provided by more high education institution such as in UK (Barnes, 2006); in Pakistan (Ahmed et al., 2010; Khan et al., 2011); in Malaysia (Mosahab, et al.,2010; Ilhaamie, 2010);in Brazil (Oliveira, 2009); in Greek (Zafi ropoulos and Vrana, 2008); and in India (Singh and Khanduja, 2010).

For a better chance of high educational institute to challenge have to emphasize the of students satisfaction and service quality. Actually, developing countries has become an extremely compete and great significant to society and government with providing quality higher education in recently era. As universities must face internationalization challenging with standard set of other educational institutes of the world. For attracting and keeping students cannot ignore a demand for better information and transparency about quality (Merican, et al. 2009). Aligning to education quality in high education sector, students and institutions create strong ties ; therefore, schools have to focus students for own financial benefits and in turn, and students emphasize on institutes to absorb knowledge and help to forge meaningful employment and also are one of the most important stakeholders. Students' concern for quality and measuring the quality of service provided to students are also interested for various researchers (Ahmed et al., 2010). Service quality in educational industry covers a variety of educational activities both inside and outside the classroom such as classroom based activities, faculty member/student interactions, educational facilities, and contacts with the staff of the institution and defined on the basis of students overall evaluation on the services they received which is part of their educational experience (Hanaysha, et al., 2011). As cited by Hanaysha, et al., (2011), Ahmed & Nawaz (2010) said that service quality is a key performance measure in educational excellence and is a main strategic variable for universities to create a strong perception in student's mind in relation to attraction, satisfaction and retention of students and it has direct impact on funding, job security and viability of educational institute (Low 2000). Veloutsou et al. (2004) indicated that the service and education quality lead students to make decision for selection of university. Generally, comparing what students want or expect against what they are really getting cannot separate from evaluating and judging the service quality to be satisfactory (Hanaysha, et al., 2011).

With purpose of improving service quality provided to students in educational institutes was conducted through student satisfaction survey (Low 2000). And one of the prime priories in education sector focus on student satisfaction in which leads to competitive advantage and word of mouth marketing for educational institutions (Ahmed et al., 2010). Satisfaction of students depends on teaching staff, enrolment and course organization and leads students to intent to return to schools, helps university to improve and keep its reputation, and increasing number of students (Navarro et al. 2005), intentions of further studies in the same institute, using ancillary services and lastly willingness to recommend others (Blackmore et al., 2006), direct bearing on performance of student (Chambel and Curral, 2005).

This research also borrowed one technology dimension from researcher of Ramsaran-Fowdar (2007) that conducted research in hotel industry in Mauritius incorporated two additional

dimensions, core benefits and hotel technologies, to those of SERVQUAL model. Ramsaran-Fowdar's results suggest that the five conventional dimensions of SERVQUAL technology cannot be fully replicated to hotel industry.. The researcher has, however, adjusted some items of technology dimensions to fit current situation in HEI and pilot test was conducted on some students in 2 public universities and 2 private universities, the results also shown to be important attributes that high education students used for evaluating university service. One additional technologies dimension (including, equipment in each room such as LCD, air condition, connect wifi in classroom, university install of hardwares and software system to fulfill the need of students research, and university should provides computer science, IT and internet for students to do research and study).

In a more recent study in HEIs, Khan et al., (2011) determined the dimensions of service quality in Pakistan, they found that service dimension of empathy carries the heaviest weight in explaining student satisfaction, followed by responsiveness, reliability and assurance, but Ahmed (2010) found that tangible, empathy and responsiveness contribute significantly to student satisfaction. For Malaysia's high education sector, Abu Hasan et al., (2008) finds that high educational institutes, empathy, assurance, tangibles, responsiveness and reliability dimensions are found to be the significant predictors of overall student satisfaction, with empathy dimension making the most contribution.

RESEARCH DESIGN

Research approach and data collection method

Exploratory research, quantitative and qualitative approach were conducted for this research. This study was used augmented SERVQUAL dimensions, in particular tangibility, reliability, assurance, technology, empathy and responsiveness that researcher call new name (TRATER model) in order to investigate the relationship between these dimensions and student satisfaction in university sector. The research design also developed with references to a theory of perception of service delivery gaps between high education sectors' students and universities/ institute's service. Relevant information about student satisfaction, perceptions, expectations and socio-demographics in both public and private universities/institutes is obtained by the way of a survey conducted to collect a sample containing the needed information for the analysis. For the universities students, questionnaires were distributed to students that were selected randomly from the universities under study in different branches located inside and outside the capital city of Phnom Penh and some selected provinces. This research used a self-administered questionnaire method for collecting the required primary data, which is designed based on, among others. For the sake of simplicity, questionnaire is classified into five parts. The first part of the questionnaire contains Perceptions (P) of respondents, according to augmented SERVQUAL's six dimensions which are tangibility, reliability, responsiveness, assurance, empathy, and technology using a five pre-defined scale - "5 strongly satisfied", "4 satisfied", "3 neither nor", "2 dissatisfied", and "1 strongly dissatisfied". The second part of the questionnaire also applies the same concept used in the first part of the questionnaire. The aim is to collect the opinions of the respondents who are users of services provided by university sector in order to get a better understanding of the importance of augmented SERVQUAL in the Cambodia's context. The answers to the questionnaire are solely based on the respondents' experience and personal opinions regarding universities services, the researcher also used a scale of 1 (strongly unimportant) to 5 (strongly important) to indicate the level of importance. In the third section, overall student satisfaction of university will be obtained, while the fourth part of the questionnaire is used to get the information on the demographic factors of the respondents, and fifth part, open question was developed to gain more and freely information from respondents.

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Once came up with the first draft of questionnaire, twenty questionnaires were handed out to the students, and they were asked whether the questions made sense to them and they were easy to understand. After refining questions, the well- improved questionnaire was developed. The survey was handed out directly to undergraduate students through volunteer students, lecturers and colleagues for approximately four months, starting from October 2015 to January 2016. Due to the fact that no incentive was offered to the respondents, their decision participating in the survey was of pure interest.

Sample size and sampling method

The target population in this research covered all the undergraduate students enrolled in both private and public university and the sampling unit included all the current full-time undergraduate students in university. Students who had completed at least one semester in university were targeted for this study because they are familiar with the business school faculty and services in comparison with those newly enrolled students. A series of general rules in determining acceptable sample sizes for research and he proposes that for any research intending on conducting multiple regression analysis, a sample size should be 10 times that of the number of variables (Roscoe, 1975). The sample size was 1800, and non-probability convenience and purposive sampling technique and simple random sampling were conducted to select potential respondents in this survey.

Analytical method

All data collected are fed into the Statistical Package for the Social Sciences (SPSS 20.) and/or Statistics Data Analysis (STATA12.1) for analysis. It is imperative that all information collected is strictly for this research only. Likewise, all information and the identity of the respondents are strictly confidential and will not be disclosed to any party in any circumstances. The statistical analysis of data includes descriptive statistics (frequency, mean, standard deviation, and chart), gap analysis and multiple regression analysis and other necessary testing. To report the most accurate results from the estimation of the regression model, several diagnostic tests need to be carried out. Other statistical diagnostic tests will also be conducted. These tests include multicollinearity checks, heteroskedasticity test and model specification test, known as Ramsey (1969)'s specification test. Since the data collected is cross-sectional, heteroskedasticity is often present in such as data set.

Proposed TRATER model

Based on the literature review presented above, TRATER dimensions, in particular tangibles, reliability, assurance, technology, empathy, and responsiveness, and have been utilized in order to investigate the relationship between these dimensions and students' satisfaction in both public and private sector. On the basis of the previous theoretical and empirical literature, the following model is used to examine the service quality dimensions that may affect the overall student satisfaction in educational services delivered by public and private university in Cambodia.

Model for this research

$$OSS = \beta_0 + \beta_1 Tangibility + \beta_2 Reliability + \beta_3 Assurance + \beta_4 Technology + \beta_5 Empathy + \beta_6 Responsiveness + +\varepsilon$$

where OSS denotes overall student satisfaction, and is error term, which is assumed to be normally distributed.

EMPIRICAL DATA ANALYSIS

Basic statistics

This research as well as estimation results in order to assess the factors that may affect student's satisfaction of service quality of the universities in Cambodia. Initially, a total of 1,800 questionnaires were distributed to students who once have been learning in universities in Cambodia. The return rate was 83% out of 1,800 surveys. Following cleaning process of the data, a sample of 1,368 observations is considered usable for the empirical data. The 1368 respondents in academic year were male 53.6% and female 46.4%, nearly 29% of respondents study in three year, followed by 27.4%, 25.5% and 15.5% in second, fourth and first year, respectively. Moreover, respondents from five state universities is National University of Management 14.6%, followed by Royal University of Law and Economic; Royal University of Phnom Penh; University of Health Science; and Royal University of Agriculture 9.2%; 9.0%; 5.5%; and 4.2%, respectively, and six private universities refers to Build Bright Univeristy 10.8%, followed by University of Management and Economic; Pannasastra University of Cambodia; Norton University; Cambodian Mekong University; Human Resource University 8.7%; 6.7%; 5.9%; 5.4%; and 5.3%, respectively. In addition, respondents is bachelor degree 82%; follow by master degree 12%, associate degree 4%; and Doctor degree 2%, respectively, With respect to students' preferences to choose university for study, the majority of the respondents seem to prefer university by good lecturers (51.5%), followed by *long-term experiences* (43.9%); *satisfy major for study* (nearly 42%); reasonable fee (40.6%), respectively.

Table 1: Average TRATER scores of universities in Cambodia

Dimension items		Expectation	Perception	TRATER score
Tangibility	The university has up-date classroom tools	3.99	3.47	0.52
	The university's classroom are visually appealing	3.97	3.54	0.43
	University instructors/staffs are well dressed and appear neat	4.15	3.84	0.31
	The appearance of the classrooms of the university is appropriate for the type of service offered	3.93	3.55	0.438
	Has hygienic bathrooms and toilets	3.98	3.24	0.74
	Average	4.00	3.53	0.47
Reliability	When they promise to do something by certain time, they do so	3.82	3.34	0.48
	They provide their service at the time they promise to do so	3.89	3.38	0.51
	They have knowledgeable about university area to answer my questions	3.99	3.61	0.38
	They are well-trained experienced	3.99	3.47	0.52
	They have good communication skills	3.88	3.45	0.43

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	Accurate information about services	4.03	3.54	0.49
	Has timely housekeeping services	3.95	3.57	0.38
	Average	3.94	3.48	0.46
Assurance	University staff is willing to provide help Promptly	3.91	3.31	0.60
	University staff is ready to provide service	3.89	3.46	0.43
	Staffs willingness to help	4.12	3.71	0.41
	Average	3.97	3.49	0.48
Responsiveness	They are friendly	4.05	3.64	0.41
	They are consistently courteous with me	4.02	3.58	0.44
	They has ability to instill confidence in students	4.06	3.69	0.37
	Average	4.04	3.63	0.41
Empathy	They give special attention to the students	4.04	3.54	0.50
	University has availability of room service	4.16	3.73	0.43
	They understand the students' requirements	4.01	3.44	0.57
	They listen carefully to student's complaints	3.87	3.36	0.51
	They are willing to handle special requests	3.94	3.39	0.55
	They have students' best interest at heart	3.95	3.50	0.50
	Average	4.56	4.08	0.48
Technology	Equipment in each room such as LCD, air condition, connect wifi in classroom	4.04	3.49	0.55
	University install of Hard wares and Software system to fulfill the students research	4.01	3.39	0.62
	University provides Computer Science, IT and Internet for students	4.08	3.52	0.56
	Average	4.04	3.47	0.57

Respondents' expectations and perceptions of service quality are presented in Table1. As can be seen from the Table above, the TRATER scores for all items bear positive signs, indicating that expectations are greater than performance (E-P). Yet, perceived quality is less than satisfactory and a service-quality gap has materialized. So the university should strengthen their service quality in order to satisfy the students' needs, and also meet the domestic and global competition in 21st century.

Table 2 Comparison of students' expectation and perception on service quality of university

University	*Comparison*	*N*	*Mean*	*Gap Mean*	*SD*	*SE*	*T*	*P*
Public and private	*Expectation*	1368	*3.98*	*0.48*	*0.61*	*0.016*	*28.57*	*.000***
	Perception		*3.51*		*0.63*	*0.017*		
Public	*Expectation*	*582*	3.98	*0.49*	.574	.024	18.87	*.000***
	Perception		3.50		.561	.023		
Private	*Expectation*	*786*	4.00	*0.48*	.652	.023	21.44	*.000***
	Perception		3.52		.675	.024		

Notes: ***, ** and * denotes significance difference between perception on service quality and type of university/institute at the 1%, 5%, and over 10% significance level, respectively

For testing the difference between the mean score of students' expectations and perceptions of the university's service quality in Cambodia, the researcher carried out the compared T-test. The gap scores for each attribute are calculated by deducting the expectation means from the perception means. A positive score indicated that, students perceived service quality was exceeding the customer's expectations. On the contrary, a negative gap showed that the students perceived service quality which does not meet the customers' expectations. That is, the positive score showed superiority to the expected service while the negative scores showed poor quality. Paired-sample t-test between the respective mean of expectation and perception of all the 27 attributes showed that they were significantly different. In general, there were highly significant differences among the dimensions.

In order to compare the expectation and perception scores of TRATER model of each TRATER dimension and the hypothesis mentioned that students' perception meets the expectation in public sector as well as private sector, public university, and private university in Cambodia. Referring to table2, a high value of t-test statistic of 28.57; 18.87; and 21.44, respectively suggests that the null hypothesis is strongly rejected. Therefore, there is strong evidence that student's expectations on service quality in both public and private universities, state universities' expectation of students, and private universities' expectation of students on service quality exceed their perceptions. This indicates that a gap occurring in these dimensions, since positive value reflect higher expectations than perception in the TRATER model. This indicates that a gap occurring in these dimensions, since positive value reflect higher expectations than perception in the each of TRATER dimension

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Table 3 Reliability of Individual Variable

Reliability Statistics Check				
TRATER Dimension	**Number of Valid**	**%**	**Cronbach's Alpha**	**No. of Items**
Tangibility	1,368	100	.822	5
Reliability	1,368	100	.881	7
Assurance	1,368	100	.805	3
Technology	1,368	100	.852	3
Empathy	1,368	100	.881	6
Responsiveness	1,368	100	.800	3
Overall student satisfaction	1,368	100	.830	3

Table 3 presents reliability statistics for all individual variables of interest. Items are grouped into the item-dimension correlations of both perceived service items for each of the six augmented dimensions and overall student satisfaction. These alpha values for overall instrument are high, while the reliability coefficients for the six augmented dimensions exceed the 0.7 cut off recommended by Hair et al. (2010). So combined all items (both dependent and independent variables items) are reliability because of their Cronbach's Alpha is much larger than the threshold of 0.7. As can be also seen from this table, Cronbach's Alpha estimated for tangibility scale was 0.822; reliability scale was 0.881; responsiveness sale was 0.800; assurance scale was 0.805; empathy scale was 0.881; technology scale was 0.843, and overall student satisfaction scale was 0.830. As the Cronbach's Alpha in this study was all much higher than 0.7, the constructs were therefore deemed to have an adequate reliability (Hair et al., 2010).

Following the previous theoretical and empirical literature, the following model is used to examine the factors that may affect the overall student satisfaction in university sector in Cambodia.

$$OSS = \beta_0 + \beta_1 Tangibility + \beta_2 Reliability + \beta_4 Assurance + \beta_5 Technology + \beta_5 Empathy + \beta_3 Responsiveness + \varepsilon$$

where OSS denotes overall student satisfaction, and is error term, which is assumed to be normally distributed.

The data set used for the analysis is from a survey of more a thousand students of universities in Cambodia. The data set contains detailed information on the explanatory variables--tangibility, reliability, assurance, technology, empathy, and responsiveness,--which are included in the model presented above.

Statistical diagnostic tests are of vital approach to determine the appropriate statistical models and estimation techniques to avoid misleading econometric results and hypothesis tests because of data set employed is cross-sectional data in which heteroskedasticity is often present in such a data set. So before presenting econometric results, the researcher reports several tests such as those for multicollinearity, based on variance inflation factor (VIF), heteroskedasticity and Ramsey's regression specification error (RESET) for functional form misspecification. There are a number of competiting tests for heteroskedasticity (Wooldridge, 2006). Only the modern tests are briefly discussed here. The first one is the Breusch and Pagan (1979) test for heteroskedasticity (Verbeek, 2004; Wooldridge, 2006), The second test is

known as the general White test for heteroskedasticity. And the other hand, to conserve degrees of freedom, especially when a model consists of a moderate or large number of independent variables, Wooldridge (2006) proposes the special White test for heteroskedasticity, which incorporates the Breusch-Pagan and the general White tests. However, RESET test was used for this study because of a multiple regression model may suffer from functional form misspecification when it does not or insufficiently account for the relationship between the dependent and independent variables. Important or relevant variables may be excluded from the regression equation or the model, when a non-linear model is estimated as a linear model. Such misspecification will be detected by using the RESET test (*F* statistic), which is based on Ramsey (1969).

Table 4: Multicollinearity Check

Predictor Variable	Collinearity Statistics	
	Tolerance	VIF
Tangibility	.370	2.702
Reliability	.409	2.446
Assurance	.306	3.270
Technology	.469	2.134
Empathy	.283	3.538
Responsiveness	.364	2.744

Table 4 provides multicollinearity checks which are based on variance inflation factor (VIF). The VIF has been shown to be equal to $1/(1 \quad R_i^2)$, where R_i^2 is obtained from the multiple correlation coefficient of an explanatory variable X_i regressed on the remaining explanatory variables. Evidently, a higher VIF_i indicates R_i^2 to be near unity and therefore points to collinearity. In order to obtain a stable estimated slope parameters, VIF should be less than 5 (Studenmund, 2006). As can be seen from Table 4.5, VIF for all explanatory variables is much less than 5, confirming the absence of harmful multcollinearity. Therefore, estimated coefficients of the explanatory variables are considered to be stable. To avoid reporting misleading results, two additional tests such as heteroskedasticity test and RESET test were also performed. If there is the presence of heteroskedasticity, a regression with heteroskedasticity-corrected standard error should be applied for relevant tests to be valid.

Table 5: Estimation results with usual standard errors

Variable	Coefficients	Std. Error	T statistics	Sig.
Constant	.378	.064	5.872	.000
Tangibility	.175	.026	6.657	.000
Reliability	.014	.022	.636	.525
Assurance	.199	.027	7.368	.000
Technology	.161	.018	8.856	.000
Empathy	.224	.029	7.801	.000
Responsiveness	.124	.027	4.676	.000

No. of Obs = 1368	-Ramsey RESET F(3, 1358) = 2.06
R = 0.818, R^2 = 0.668,	Statistic (P-value = 0.103)
Adjusted R^2 = 0.667	-Special case of White Test 82.918
Std. Error = 0.406, F = 457.34, P = .000	Statistic (P-value = 1.4e-07)
	-Breusch-Pagan statistic: 12.527
	Statistic (P-value = 0.0512)

For the sake of comparison, Table 5 that present the estimation results with usual standard error and with heteroskedasticity-corrected standard error. Overall student satisfaction is regressed on the six dimensions of service quality--tangibility, reliability, assurance, technology, responsiveness, and empathy. As discussed above, since heteroskedasticity often arise in cross-sectional data set, heteroskedasticity test was carried out in order for relevant statistical tests to be valid. It is found that the special case of White test statistic of 82.918 with p-value = 1.4e-07 is highly significant at less than the 1% significance level, pointing to a clear evidence of heteroskedasticity presence in the data set. To strong confirm this, BP test was also carried out. The significant BP statistic of 12.527 with p-value = 0.0512 is significant at the more than 5% level, suggesting the absence of heteroskedasticity. Ramsey's RESET test was also undertaken. RESET statistic (F-value) of 2.06 with p-value =0.103 is insignificant at any conventional significance level. This suggests that the model does not suffer from functional form misspecification. Interestingly, all the included explanatory variables have the expected positive signs, while the model fits the data set quite well as shown by the high value of R^2 of 0.668, which implies that about 66.80 % of the variation in the overall student satisfaction is explained by tangibility, reliability, assurance, technology, empathy, and responsiveness. Moreover, the value of F-statistic of 457.34 is highly significant at less than the 1% significance level. Coefficient on empathy is highly significant at the 1% significance level, indicating that empathy has indeed positively affected on overall student satisfaction. It means that a unit change in the response rate of universities in Cambodia for empathy item, *ceteris paribus*, leads to an estimated change in their overall student satisfaction of about 0.224. Similarly, technology is also highly significant at less than 1%. The estimated coefficient of about 0.224, implies that, holding other factors fixed, a unit change in the response rate of universities for empathy leads to a positive change in their overall satisfaction of about 0.166.

The coefficients on the other four explanatory variables—tangibility, responsiveness, technology, and reliability are also highly statistically different from zero at the 1% level, suggesting the evidence that these four variables have generated a positive impact on the overall student satisfaction in educational services of Cambodia's universities. The coefficients on assurance 0.199, tangibility of 0.175, technology of 0.161, and on responsiveness of 0.124 imply that for every one unit change in the response rate of universities for assurance, tangibility, technology, and responsiveness, holding other factors constant, lead to a positive change in their overall student satisfaction of 0.199; 0.175; 0.161; and 0.124, respectively. But coefficient on reliability is less significant at the more than 5% significance level, and indicating that reliability has positively affected on overall student satisfaction.

CONCLUSION AND RECOMMENDATION

In this respect, this study has been conducted in order to measure service quality and determine the dimensional structure pertinent to the universities sector in Cambodia. The main purpose of the study is to emphasize on comparison of expectation and perception of students of public and private university on service quality and the relationship between TRATER dimension and its attributes with overall satisfaction of students who once has been using educational service in universities in Cambodia. This research investigates the way of developing and improving service quality through student satisfaction. Also, the study is carried to help the universities make an informed decision to improve its service quality. Multiple regress was used for this analysis and in order to provide the best results possible, several important statistical tests such as multicollinearity checks, tests for heterskedasticity, and specification test based on Ramsey (1969)'s RESET test, were carried out in order to choose the best regression model and in order for other relevant tests to be valid. More ever, using the own surveyed data from 1368 individual students of universities' educational

services, the estimation results show that tangibility, reliability, assurance, technology, empathy, and responsiveness, have generated a positive impact on overall student satisfaction of educational services provided in the Cambodia's universities sector. The findings signify the applicability of the TRATER model to the universities sector in Cambodia. To identify which dimensions of service quality contribute most to the overall student satisfaction, regressions using z-scores are run to obtain standardized coefficients or beta coefficients. The results show that all the five dimensions of service quality suggest a significant, positive effect on the overall student satisfaction. The estimated standardized coefficient on empathy of 0.224 makes the greatest contributions to satisfaction, following by assurance (0.199), tangibility (0.175), technology (0.161), and responsiveness (0.124). The mean of expectation of students on both public-private universities, and on separate public and private universities are greater than mean of students' perception that show that universities have to strengthen its service quality to meet students' needs in era of digital education.

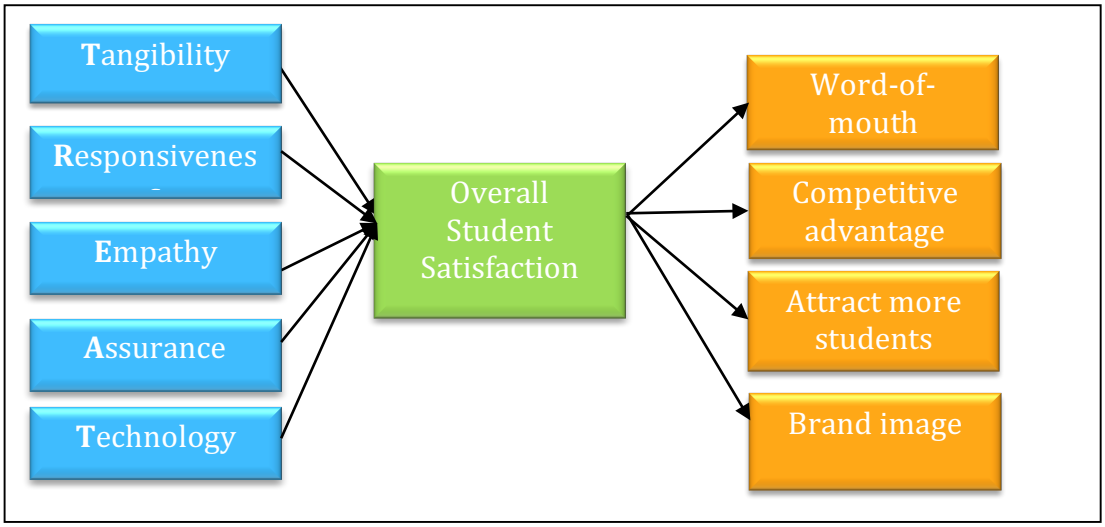
Through the findings of this study also present a number of implications and the recommendations for practitioners in either universities sector or in other service-providing organization of both profit and non-profit, while it also contributes to the established model of applications in university in Cambodia. The main theoretical contribution of the study demonstrates that the model related to a combination of tangibility, assurance, technology, reliability, empathy, responsiveness factors have a significant influence over the overall student satisfaction (OSS). Integrating findings of this research into established frameworks related to the model provides an explanation of how five factors (empathy, technology, tangibility, responsiveness, and assurance) are statistically and positively correlated to the overall student satisfaction. But factor of reliability is positively and less significantly correlated to universities' student satisfaction.

The findings of the regression analysis reveal that the students' perceived service quality provided by universities and the overall evaluation of service quality is determined largely by five factors; namely, "TREAT" (*Tangibility, Responsiveness, Assurance, Empathy, Technology).* The five significant dimensions have significant levels that do not exceed 0.05. It noted that empathy variable should be interested by universities such as giving special attention to the students, university has availability of room service, understand the students' requirements, listen carefully to student's complaints, and willing to handle special requests and have students' best interest at heart. And variable technology describes three items such as university has equipment in each room such as LCD, connect wifi in classroom, and AC , university install of hardwares and software system to fulfill the need of students research, and university should provides computer science, IT and internet for students. The tangibility variable describes availability of up-date classroom equipment, classrooms are visually appealing, well dressed and appear neat of staffs, the appearance of the classrooms of the university is appropriate for the type of service offered, and hygienic bathrooms and toilets. On the other hand, responsiveness variable describes three items, such as university staff is willing to provide help promptly, university staff is ready to provide service, and staffs willingness to help. Assurance variable shows three items, such as friendly, consistently courteous with students, and ability to instill confidence in students.

The results of this study also indicate that dimensions in SERVQUAL cannot be replicated fully to the university in Cambodia. Other dimension such as *technology'* (including equipment in each room such as LCD, connect wifi in classroom, and AC; university install of hardwares and software system to fulfill the need of students research; and university should provides computer science, IT and internet for students to do research and study) was equally critical when determining the attributes that students use to evaluate service quality of university in

Cambodia.

Since these five explanatory variables significantly influenced the overall student satisfaction, implying that improving each item in each of the five variables is expected to improve student satisfaction in the universities sector in Cambodia. It is shown evidently that the overall student satisfaction depends on TREAT (refer to tangibility, responsiveness, empathy, assurance, technology). Therefore, encouraging in publication of the information by the universities sector is also contributing to an effective decision making of managers, rector of university about the way of delivery service to meet students' needs.



The results of this study also present evident useful, vitally for university manager in Cambodia in identifying the factors and attributes that help to attract students and promote student satisfaction in their universities sector. Therefore, universities could realize a competitive advantage by emphasizing new model of TREAT in service delivery.

Cambodian students prefer human/personal interactions when dealing with universities sector. These findings suggest that universities sector managers should implement student-oriented strategies and install technology to satisfy students' needs. Frontline employees should be motivated and appropriately trained to understand students' needs, personalize services, provide individual attention, and generally demonstrate caring behavior in all of their interpersonal dealings with students. In the era of globalization and innovation, technology can be present in any business or universities sector. Actually, in class room should have modern LCD, fast speed internet and free wifi for students to do research. Universities managers should emphasize the "tangibility", "responsiveness" and "assurance" dimension of service quality, the important predictors of satisfaction among Cambodian students. Since "tangibility" focus on availability of up-date classroom equipment, classrooms are visually appealing, well dressed and appear neat of staffs, the appearance of the classrooms of the university is appropriate for the type of service offered, and hygienic bathrooms and toilets. "Responsiveness" refers to willing to provide help promptly by university staff, ready to provide service university staff is, and staffs willingness to help. And "assurance" emphasize on providing service promptly, university staff ready to provide service, and willingness to help students. Actually, service quality plays great role in supporting sustainable development in organization in both profit and non-profit sectors as service quality has preferable affect on customer satisfaction, customer loyalty, gain competitive advantage, and intent to get more students to register to learn in university.

A few limitations exists for this research. First, this research was conducted in Phnom Penh city, and few selected provinces in Cambodia. People's belief and attitudes about service quality can be significantly different across different geographic regions and universities in Cambodia. Furthermore, the sample respondents were limited to universities students who have had experience in using educational services. Therefore, further research may be devoted to focus on more universities or can expand toward primary or secondary school in Cambodia. Second, this study identified and empirically examined six factors that influenced universities students' satisfaction. However, there may be additional factors that may also exert an impact on overall student satisfaction in other service-providing sector. Further empirical research may be needed to identify these factors. At the national level, similar study could be replicated in other service sectors Cambodia, such as communication, finance, health, insurance, transportation, travel, etc. In a similar, at an international level, the study of service quality can be conducted in comparison between the local universities sectors with universities of other ASEAN countries if possible.

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