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Service quality enhancing student satisfaction in international programs of higher education institutions: a local student perspective

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ABSTRACT

This article aims to examine the impact of five different dimensions of service quality on student satisfaction in international programs of higher educational institutions. Data were collected from 398 students who have experienced services provided by the faculties and staff in international programs of higher education institutions in Thailand. The model examination result was statistically acceptable in terms of reliability and validity. The strongest dimension of service quality that affects student satisfaction is responsiveness, followed by empathy and facility, accordingly. This research highlights important dimensions of service quality that, if improved in higher education institutions, would enhance student satisfaction.

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Introduction

For decades, higher education has provided opportunities for individuals to have a better quality of life, greater economic stability, and better access to health care. However, many higher education institutions around the world have encountered many challenges, including fierce global competitions, complexity of socio-demographics, and uncertain market demand. First, with globalization and the growing international experience, institutions from developed countries; for example, US, UK, and France, have been expanding their global networks by establishing branch campuses overseas, such as in the United Arab Emirates, China, Singapore, Qatar, and South Korea (Guimon, 2016). Second, the demand from new students is more complicated than that of older generations. As most of them belong to the millennial generation, they are multitasking-skilled, confident, goal-oriented, and optimistic about their futures (Howe & Strauss, 2000). Third, the number of new enrolments coming to higher education institutions has dropped precipitously and varies disproportionately by area. Under these circumstances, many institutions have inevitably modified their strategies in order to remain competitive and survive. For example, US universities have expanded their market to other developing countries in Asia and the Middle East (Tierney & Lanford, 2015). Likewise, universities in Singapore have developed lifelong learning courses by allowing undergraduates to be enrolled for 20 years to access new workforce markets (Tan, 2017).

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Given the rapid transition of an educational environment, it is increasingly difficult for institutions to sustain competitive advantage in their respective target markets (Pucciarelli & Kaplan, 2016). Previous literature has emphasized service quality as an essential component in promoting competitive advantage for higher education sectors (Ali, Zhou, Hussain, Nair, & Ragavan, 2015; Douglas & McClelland, 2007; Sultan & Wong, 2010). To be successful in the education industry, high service quality can potentially enhance student recommendations of their current programs to friends and relatives, as well as future study, contributions, and support. In particular, past studies on higher education has revealed that service quality is already extensively emphasized in several countries, including UK (Douglas & McClelland, 2007; Li & Kaye, 1998), Canada (Leblanc & Nguyen, 1997), New Zealand (Joseph, 1997), Hong Kong and China (Kwan & Ng, 1999), Portugal (Alves & Raposo, 2006), Spain (Duque & Weeks, 2010) and South Africa (Jager & Gbadamosi, 2010).

Numerous studies have pointed out a significant impact of service quality on student satisfaction across many different countries. However, very few studies have investigated the service quality of an international program. Many higher education institutions increasingly recognize the importance of establishing international or English-speaking courses/programs that enable students to obtain global, international, and intercultural competencies (Soria & Troisi, 2014). These competencies enable students to effectively work in diverse cultural backgrounds (Lee, Poch, Shaw, & Williams, 2010), improve their leadership in a global environment (Earnest, 2003) and strengthen intercultural communication skills (Deardorff, 2006). Remarkably, international programs of higher education in many countries have also gained interest from new millennial generations, especially in Thailand, where the number of enrolled students in international programs in Thailand has increased from 71,204 in 2013 to 144,065 in 2018.

Although international programs in Thailand have gained popularity among students, there are several learning barriers that they routinely encounter, such as lack of English language proficiency and self-motivation. Given these barriers, faculty members or course developers should focus on improving the service quality of such programs. Previously, there were three research teams that examined the service quality of international program in higher education. Two of them, conducted by Sultan and Wong (2010) and Shekarchizadeh, Rasli, and Hon-Tat (2011), revealed important items used to measure service quality of international programs. Another study by Ali et al. (2015) further showed that service quality significantly affects international student satisfaction. In sum, these researchers emphasized the perceptions of international students, which may be different from the local students. In many non-English speaking countries, the majority of students enrolled in international programs were locals. According to the Bureau of International Corporation Strategy (BICS, 2014), 96% of students enrolled in international programs in Thailand were locals. This study aims to extend the existing literature by investigating the service quality from a local perspectives as well as its impact on local student satisfaction.

In addition, service quality provided by Thai higher education institutions, which is controlled by the OHEC (Office of Higher Education Commission), is severely mismatched with the quality expectations of their key stakeholders, comprising students, teaching staff, managerial staff, employers, and government (Sandmaung & Khang, 2013). This research, therefore, attempts to further reveal a more insightful picture of how different dimensions

of service quality impact currently enrolled students in international programs. The following sections discuss a review of the relevant literature, research method, findings, conclusion, and limitations.

Literature review

In conceptualizing the relationship between relevant constructs, researchers have reviewed a broad spectrum of the literature on research covering service quality and student satisfaction. The integrative approach is employed by drawing insights and variables from various dimensions of the literature in order to comprehensively understand these relationships in the educational context. This study posits that the dimensions of service quality have different levels of influence on student satisfaction towards international program service providers in higher education institutions. A conceptual model and hypotheses are developed to examine the impact of antecedents on the outcome (Figure 1). In the following subsections, the key constructs and associated research hypotheses are discussed.

Service quality in higher education

Service quality of higher education institutions is a critical driver for a university's performance and competitiveness in the marketing literature (Hill, 1995; Stimac & Simic, 2012) and has also been very popular in recent research on services covering many aspects, including the identification, measurement, and implementation (Chong & Ahmed, 2012). Importantly, this concept is imperative for higher education institutions to monitor the quality of their services to commit themselves to continuous improvement. Service quality can lead to excellence in the educational industry and can have lasting effects on both the institution and the students it serves.

Despite the popularity of improving service quality in HIEs, it is still difficult to define the universal characteristics of this construct. Service quality is a multi-dimensional construct and difficult to define due to the unique characteristic of intangibility in services as

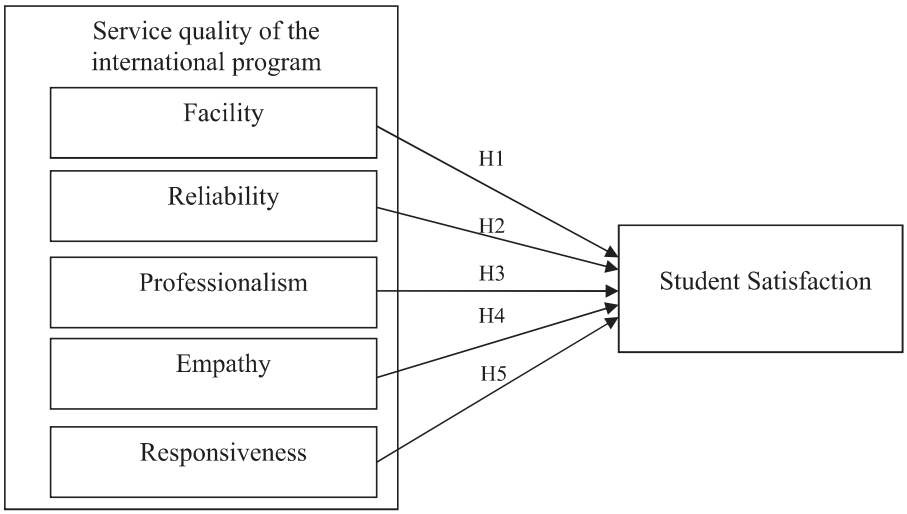

Figure 1. Conceptual model.

opposed to goods. This difficulty in determining service quality is also found in the measurement of service quality, as no general or widely accepted framework can be operationalized to make a precise assessment of service quality (Seth, Deshmukh, & Vrat, 2005). As suggested by Sharif and Kassim (2012), service quality is usually consumer driven, making it difficult for service providers to understand and define it in a standardized form. Since students are considered the primary consumers of higher education institutions (Hill, 1995; Molesworth, Scullion, & Nixon, 2011), this study mainly focuses on the student's perspective in order to determine a more appropriate measurement for service quality.

Many researchers in business management have attempted to measure the characteristics of service quality. A widely accepted study by Parasuraman, Zeithaml, and Berry (1988) presents a five-dimensional construct, or so-called SERVQUAL, consisting of tangibles, reliability, responsiveness, assurance, and empathy. Although SERVQUAL has since been widely used across a range of service categories, there have been many modifications of the dimensions in accordance with different industries, such as the tourism and hospitality industries (Rauch, Collins, Nale, & Barr, 2015), healthcare services (Kilbourne, Duffy, Duffy, & Giarchi, 2004), and banking (Ganguli & Roy, 2011). However, these researchers did not focus on the dimension of service quality in higher education institutions, especially in international programs. Extending previous studies on service quality of international programs (Ali et al., 2015; Shekarchizadeh et al., 2011; Sultan & Wong, 2010), this study employs a measurement of service quality of international programs in higher education institutions and examines its impact on student satisfaction.

Despite a wide range of discovered dimensions of service quality, they can all be bundled into two major groups: institutional factors and personal factors (Appleton-Knapp & Krentler, 2006). Institutional factors include course structure and contents, support from faculty and staff, facilities (classroom, equipment, library), and campus environment (social life, activity involvement), whereas personal factors include student's age, gender, motivation, and lifestyle. Since most of the institutional variables have been shown to have more effects on satisfaction than personal ones (Martirosyan, 2015), this study includes most of these variables in the conceptual framework in order to fully explain the degree of service quality received by the students.

In terms of operationalizing this construct, previous literature presents three methods of measuring each dimension of service quality: expectations-only scores, performance-only scores, and performance-minus-expectations scores. However, we chose performance-only scores, which have been robustly tested to have higher reliability and predictability than other methods or the so-called SERVPERF, in the business industry (Cronin & Taylor, 1992) and higher education institutions (Li & Kaye, 1998). This method has also been suggested as a proper antecedent of satisfaction (Brady & Brand, 2002). As such, this research measures performance in service quality by the degree to which a student perceives the quality of service provided by international programs in higher education institutions.

Student satisfaction

In the business research literature, satisfaction is defined as a customers' state of feeling when they experience the quality of products or services and consequently evaluate

them by comparing with their perceived value and expectations (Johnson & Fornell, 1991). In addition, satisfaction in the service industry involves the judgment of customers after encountering a specific quality from a service provider (Bolton & Drew, 1991). Overall, satisfaction can be measured as an overall feeling or as satisfaction with the elements of a transaction (Fornell, 1992). Importantly, customer satisfaction is a fundamental component that makes business successful and sustains competitiveness.

In the context of higher education, students are typically considered as the main customers since they are the decision makers in choosing and using this service. As such, student satisfaction is viewed as a disconfirmation of the service provided by the institutions. This means that satisfaction occurs after a student evaluates the degree of discrepancy between expectation and perceived performance (Athiyaman, 1997). As a result, student satisfaction arises when actual performance meets or exceeds the student's expectations.

Student satisfaction plays a vital role in developing more accurate and better service quality of education institutions. In the literature on education, this concept has been widely tested to improve student perception and attitude in many different aspects, such as student retention (Elliott & Healy, 2001), loyalty (Brown & Mazzarol, 2009), and student success (Pike, 1993). In a recent study by Barnett (2011), student satisfaction is demonstrated as a potential indicator for evaluating service quality providers of higher education. The following section proposes the relationships between two main constructs: service quality and student satisfaction supported by the existing literature.

Hypotheses development

This research investigates the impact of service quality dimensions on student satisfaction. Specifically, dimensions of service quality were adapted from the previous literature and refined by academicians and experts in the field of higher education. These dimensions include facility, reliability, professionalism, empathy, and responsiveness, as shown in the conceptual model in Figure 1.

Service quality is considered as a primary component that dominates student decision making for selecting an institution of higher education (McBurnie & Ziguras, 2007). The impact level of service quality on student satisfaction can be theoretically justified by Bagozzi's (1992) coping framework. This framework helps explain the cognitive and emotional self-regulatory processes, suggesting that initial service evaluations (i.e. appraisals) generate an emotional response (Gotlieb, Grewal, & Brown, 1994). Widely applied in a number of empirical service studies, this indicates that the perception of high performance-oriented service quality precedes satisfaction (Brady & Robertson, 2001; Cronin, Brady, & Hult, 2000). With respect to the services provided by education institutions, students are generally not interested in organizational hierarchies/ structure or even management processes. Instead, they expect to receive the service delivered from all staff members who represent the institution (Oldfield, 2000). The service quality is evaluated when there is personal interaction between students and the institutional environment, including faculty and staff members, course content, physical environment, and social interaction (Peterson & Augustine, 2000). Consequently, student satisfaction occurs whether or not their learning experience with staff members exceeds each individual preference and capability.

There are a handful of studies that identified factors affecting student satisfaction in different continents. For example, a survey of an online course in the USA by Eom, Wen, and Ashill (2006) found that students' self-motivation and learning style, instructor knowledge, facilitation, feedback, course structure and interaction have positive impacts on satisfaction. In Spain, Duque and Weeks (2010) found that student involvement and learning outcomes positively influence the satisfaction of undergraduate students. In Armenia, Martirosyan (2015) found that student support facilities, academic experience, faculty services, demographics, and social integration have positive impacts on student satisfaction. Similarly in Asia, Chong and Ahmed (2012) found that overall service quality, involving academic quality, administrative quality, and general service quality affect the satisfaction of undergraduate students in Malaysia.

In addition to the aspects of service quality, this research is the first attempt to examine the service quality of international programs in Thailand. We extend past studies that have undertaken international programs in non-English speaking countries. Recently, Ali et al. (2015) collected data from international student perspectives in Malaysia. They adopted HEDPERF's service quality dimensions and found that all five dimensions, including academic and non-academic aspects, program issues, reputation, and access, have positive effects on satisfaction. However, we argue that the service quality dimensions of international programs should be considerably different from other courses as they require more stringent requirements that are monitored by OHEC. In addition, this study also investigates the perspectives of local students who may have different expectations of service quality compared to foreign/ international students. These dimensions include facility, reliability, professionalism, empathy, and responsiveness. Therefore, the following hypotheses are proposed:

H1: Facility has a significant positive impact on student satisfaction.

H2: Reliability has a significant positive impact on student satisfaction.

H3: Professionalism has a significant positive impact on student satisfaction.

H4: Empathy has a significant positive impact on student satisfaction.

H5: Responsiveness has a significant positive impact on student satisfaction.

Research method

Measures

A review of the previous empirical literature reveals that the most popular measurement for service quality, consist of service quality or SERVQUAL (Parasuraman et al., 1988), service performance or SERVPERF (Cronin & Taylor, 1992), higher education performance or HEDPERF (Abdullah, 2006). Although these dimensions have been extensively cited by many scholars, their use in a particular context is still questioned. This study attempts to examine the measurement of service quality specifically for international programs in higher education institutions in Thailand.

A two-stage method was conducted to test five dimensions of service quality. At the first stage, we adapted the items to measure service quality from Parasuraman et al. (1988) and Shekarchizadeh et al. (2011). At the second stage, a total of 33 items for

service quality were then reviewed and refined through interviews with two groups of participant. For the first group, we conducted in-depth interviews with six academicians who were firmly involved in developing international programs and dealing with student counselling activities. For the second group, we conducted a focus group interview with five student representatives who were enrolled in an international program at least one year. By doing this, we were able to identify and eliminate potential problems from irrelevant and confusing wording. On average, each interview lasted 30–45 min.

For the measurement of student satisfaction, all items were adapted from Hasan, Ilias, Rahman, and Razak (2008) and Athiyaman (1997). This measurement consists of six items that capture the positive feelings towards the program and right decision for enrolling in the program.

Questionnaire development

A survey questionnaire was developed from the literature and refined by expert interviews as shown in Appendix 1. The first draft of a structured questionnaire was designed in the English language. It was then back-translated into the Thai language (Brislin, Lonner, & Thorndike, 1973). The second version was reviewed by six academicians who were closely involved in developing an international programs of both public and private universities. From doing this, we were able to revise and remove confusing wordings, unclear questions, and ambiguities. The final draft of the questionnaire employed a five-point Likert scale (1 = completely disagree to 5 = completely agree) for each item, and was subsequently pretested by thirty Thai students. Pretesting was aimed to improve the validity of the questionnaire before distributing the full-scale survey. Thus, we selected the local students who had enrolled in an international program for at least two years at the university level since they had sufficient experience with the service. In a full-scale survey, copies of the final draft of the questionnaire were mailed to a large number of target respondents who met the qualification criteria for this study.

Sample

Since most of the students in an international program in Thailand are locals, the sample in this study included local Thai students who were enrolled for least one year in six private and five public universities in Thailand. Students with this experience have sufficient familiarity with the university, faculty members, and staff. After having gradually perceived the service quality of the faculty, they should therefore have some critical viewpoints that match our research objectives. We collected the data from students with a wide range of majors, including international business management, business English, accounting, and marketing.

In order to obtain correct responses, the respondents were assured that their personal information would be kept anonymous and confidential. As a result, a total of 398 usable questionnaires out of 450 were returned (194 from private universities and 206 from public universities), providing a response rate of 88.44%. The percentage of male and female respondents was 34 and 66 respectively. The average age of these respondents was 20.60 years old.

Results

The descriptive statistics show the general information on each factor and the correlations amongst all constructs (Table 1). As a result, students who enrolled in international courses were highly satisfied ($\bar{x} = 3.509$, SD = 0.927). In terms of service quality, they experienced a high level of reliability ($\bar{x} = 4.098$, SD = 0.687), followed by responsiveness ($\bar{x} = 3.691$, SD = 0.753), facility ($\bar{x} = 3.556$, SD = 0.767), professionalism ($\bar{x} = 3.358$, SD = 0.879) and empathy ($\bar{x} = 3.205$, SD = 0.9257), respectively. Moreover, the results suggest that multicollinearity was not a problem as the correlations between variables were less than 0.80 (Cohen, Manion, & Morrison, 2011).

The results of inferential statistics were analyzed by a structural equation modelling (SEM) procedure, following the two-stage method recommended by Anderson and Gerbing (1988). First, the model's validity and reliability were tested by using SPSS. Second, the hypotheses of the theoretical model were tested by SEM techniques that combine factor analysis and path analysis.

Measurement model

In the measurement model, all 33 items of service quality and six items for student satisfaction were used to perform factor analysis. First, exploratory factor analysis (EFA) was conducted in order to measure the unidimensionality of each construct. All 39 items derived from the literature and interviews were run through principal component analysis (PCA) procedure, followed by the varimax rotation method (Appendix 1). Prior to EFA, the Kaizer-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were computed to confirm whether the data were suitable for this analysis or not. As a result, a KMO test yielded a sampling adequacy value of 0.62, which exceeds the 0.50 acceptable limit. In addition, Barlett's test showed an approximate chi-square of 1894.864 with 820 degrees of freedom (df) at a significant level of 0.00. Both measures affirmed that the data were satisfactory for the EFA procedure (Kaiser, 1974). Factor loadings were then analyzed to reveal how the underlying construct was loaded by each item and whether there was any cross loading between constructs. There were five factors with eigenvalues greater than one extracted from the data, accounting for 71.426% of the total variation. Three cross-loading items were removed from the original measurement, yielding 36 items whose loadings were above 0.70, as suggested by Nunnally and Bernstein (1994). As a result, these items were loaded on six dimensions. Five were named to measure service quality, and the other measures student satisfaction (Appendix 2).

Second, confirmatory factor analysis (CFA) was performed by including all variables in a single model to evaluate model fitness. The results indicate an acceptable value of

Table 1. Means, standard deviations, and correlations.

Variables	Mean	SD	1	2	3	4	5	6
1. Facility	3.556	0.767	1.000					
2. Reliability	4.098	0.687	0.397	1.000				
3. Professionalism	3.358	0.879	0.482	0.348	1.00			
4. Empathy	3.205	0.925	0.356	0.152	0.301	1.00		
5. Responsiveness	3.691	0.753	0.454	0.594	0.583	0.301	1.00	
6. Satisfaction	3.569	0.927	0.486	0.311	0.393	0.682	0.463	1.00

Note: All correlations are significant at the 0.05 level (two-tailed).

goodness of fit index ($\chi^2 = 1197.740$, df = 573, $\chi^2/df = 2.09$, CFI = 0.915, GFI = 0.828, NFI = 0.850, RMSEA = 0.058). The results showed that factor loadings across all constructs range from 0.563 to 0.829. Furthermore, all values of construct reliability (CR) surpass the acceptable level of 0.70 (Raykov, 1997), and all estimates of average variance extracted (AVE) were higher than 0.50 (Nunnally & Bernstein, 1994). These results support a clear convergent validity for all constructs. In addition, discriminant validity can be evaluated by following Fornell-Larcker criterion (Fornell & Cha, 1994). The square correlations between variables in Table 1 were compared with the AVE of each variable. For example, the square correlation between empathy and satisfaction was 0.465 (obtained from 0.682^2). This value was lower than the AVE of the two variables (0.519 and 0.537), thus providing the evidence for discriminant validity.

To measure reliability, Cronbach's alpha coefficient of each construct was computed. All values were above 0.70, which is greater than an acceptable value (Nunnally & Bernstein, 1994). In addition, the values of estimated variance extracted and construct reliability surpass the critical values of 0.40 and 0.70, respectively. These values indicate evidence of acceptable reliability. Overall, all values of reliability and validity support the suitability of the measurement model with acceptable fit indices ($\chi^2_{(260)} = 1197.740$, $p = 0.000$), a root mean square error of approximation (RMSEA) = 0.058, and comparative fit index (CFI) = 0.915. (Table 2).

Structural model

The overall structural model fit is considerably good with the following values: $\chi^2_{(573)} = 1197.740$, $p = 0.000$; RMSEA = 0.058, CFI = 0.915 (Table 3). All dimensions of service quality can explain the variance of 27% in student satisfaction. As a result, responsiveness has the strongest positive impact on student satisfaction ($\beta = 0.605$, $p < 0.10$), followed by empathy ($\beta = 0583$, $p < 0.01$) and facility ($\beta = 0.179$, $p < 0.05$), respectively. Therefore, hypothesis 1, 4 and 5 are supported, whereas hypothesis 2 and 3 are not.

Discussion and implications

The primary objectives of this study are to examine the impact of five dimensions of service quality on student satisfaction in international programs of higher educational institutes. Data were collected from the students who had experienced such services, which were provided by the faculties and staff members from international colleges of Thai universities. The results show that responsiveness has the strongest positive impact on student satisfaction, followed by empathy and facility, respectively. This prioritizes the importance of each dimension.

Firstly, how the faculty and staff members respond to student requests plays a significant role in satisfying the enrolled students. Notably, students who are enrolled in the international programs require greater responsiveness than those in other local programs due to language barriers. Since English is the primary language used and spoken in the class and documentation, it may cause confusion and misunderstandings in local students. Many questions regarding the courses and regulations may arise during their course of study. This result is confirmed by Hasan et al. (2008) who found that responsiveness has a high correlation with student satisfaction in regular programs provided by two private

Table 2. Properties of the measurement model.

Construct	Standardized loading	Cronbach's alpha coefficient	Estimated variance extracted	Construct reliability
Facility		0.819	0.604	0.820
FAC1	0.769			
FAC2	0.816			
FAC3	0.745			
Reliability		0.839	0.517	0.841
REL1	0.746			
REL2	0.799			
REL3	0.656			
REL4	0.743			
REL5	0.637			
Professionalism		0.954	0.620	0.942
PRO1	0.767			
PRO2	0.790			
PRO3	0.773			
PRO4	0.761			
PRO5	0.810			
PRO6	0.816			
PRO7	0.794			
PRO8	0.804			
PRO9	0.828			
PRO10	0.725			
PRO11	0.782			
PRO12	0.769			
PRO13	0.768			
Empathy		0.856	0.519	0.864
EMP1	0.721			
EMP2	0.829			
EMP3	0.811			
EMP4	0.641			
EMP5	0.563			
EMP6	0.723			
Responsiveness		0.700	0.495	0.744
RES1	0.792			
RES2	0.702			
RES3	0.604			
Satisfaction		0.883	0.537	0.823
SAT1	0.775			
SAT2	0.735			
SAT3	0.691			
SAT4	0.729			
SAT5	0.757			
SAT6	0.743			

Model fit indices: $\chi^2 = 1197.740$, $p = 0.000$, $df = 573$; $\chi^2/df = 2.09$; RMSEA = 0.058; CFI = 0.915.
Note: All loadings are significant at $p < 0.01$, Items with low factor loadings were removed.

higher education institutions in Malaysia. Similarly, Douglas and McClelland (2007) found that responsive and a communicative environment are critical determinants enhancing student satisfaction in regular programs in business schools in UK universities.

Secondly, empathy from faculty and staff members through expressing concerns and attention to student problems also significantly results in a higher level of student satisfaction. Since students enrolled in international programs may under stress due to the language barrier, this factor makes students feel comfortable and confident in completing their studies as planned. The result is consistent with Parahoo, Santally, Rajabalee, and Harvey (2015), who found that instructor empathy is positively related to satisfaction in online learning courses. With learning difficulties, this type of distance course also needs some special care in supporting student motivation toward achieving their study plans.

Table 3. Results.

		Student satisfaction	
Independent variables	Hypothesis	Standardized regression weight	*t*-value (standard error)
Facility	H1	0.179[a]	2.530 (0.096)
Reliability	H2	0.111	1.076 (0.245)
Professional	H3	0.125	1.454 (0.174)
Empathy	H4	0.583[b]	7.885 (0.067)
Responsiveness	H5	0.605[c]	1.906 (0.459)
R^2		0.27	

Model fit indices: $\chi^2 = 1197.740(p = 0.000)$, $df = 573$; RMSEA = 0.058; CFI = 0.915; NFI = 0.850; GFI = 0.828.
[a]Significant at the $p < 0.05$ level.
[b]Significant at the $p < 0.01$ level.
[c]Significant at the $p < 0.10$ level.

Thirdly, the physical environment, including school facilities, has a significant impact on student satisfaction. Because studying in an international program in Thailand markedly requires foreign language skills, especially in English, students expect to find facilities such as language laboratory, skill improvement equipment, and modern libraries, in the institution. This result is consistent with Kärnä and Julin (2015), who found that campus facilities, including a comfortable learning environment and accessibility, play a vital role in improving the satisfaction of university students of regular programs in Finland. Similarly, Hanssen and Solvoll (2015) found that high quality libraries, social areas, and auditoriums effectively improved the satisfaction of Norwegian students in higher education institutions.

This study, therefore, extends the existing literature into a multi-cultural environment in the context of higher education. The results provide both academic and managerial implications. For academic implications, this study contributes to the existing theory by extending SERVQUAL dimensions to international programs at a higher education level and their impacts on student satisfaction. In this paper, we adapted five dimensions used to measure the level of service quality perceived by local students. In addition, this research provides a better understanding on how these dimensions individually impact student satisfaction.

For managerial implications, the findings of this study are useful for international college administration team members, including the faculty and staff who are part of international college. Firstly, faculty and staff should promptly respond with a positive attitude and care to the students. A communication network between two parties can be developed in order to minimize possible misunderstandings and build rapport. As suggested by Sebastianelli, Swift, and Tamimi (2015), professor-student interaction improved the interpersonal relationship and had a significant positive impact on student satisfaction. Secondly, faculty facilities (laboratory and library) should be one of the primary concerns for international college administrations to invest in and make them more attractive to prospective students. Thirdly, although professionalism and reliability did not have a statistically significant impact on the satisfaction, their directions were clearly positive towards satisfaction and should not be ignored. The administration should be aware of the

professionalism of the faculty and a reliable process in the service. According to Keeley, Smith, and Buskist (2006), professional competency, including knowledge, communication skills, and the personality characteristics of professors, can enhance successful teaching and serve student preferences.

Limitations and future research

Generally, there are several limitations that should be addressed in this study. First, since the sample consisted of domestic students who make up the majority of international programs in Thailand, they may share a common point of view towards the program. Future research may include international students and bundle them into different nationalities or cultural backgrounds, for example, Asian and European. Second, this study employs a cross-sectional approach that may not be statistically suitable for testing causal relationships among constructs (Rindfleisch, Malter, Ganesan, & Moorman, 2008). Thus, longitudinal studies in future research would be able to establish greater confidence in inferring causal relationships. Third, the dimensions of service quality were tested to influence student satisfaction; however, the impact of service quality can be further explored. Future study should develop a more comprehensive model and focus on other potential outcomes, such as student behavioural intention and retention.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendices

Appendix 1

Table A1. Measurement items.

Construct	Items
Facility	1. School has modern equipment to support learning activities.
	2. School library and books are modern.
	3. School has a modern language laboratory.
	4. Teaching facilities are visually appealing.
Reliability	1. School does what they have promised.
	2. School provides services at scheduled times.
	3. Support staff performs service right, the first time.
	4. Support staff maintains error-free records.
	5. Support staff informs exactly when services are performed.
Professionalism	1. Faculty members are well known in a specific area.
	2. Faculty members are competent in their academic field.
	3. Faculty members performs their job correctly.
	4. Faculty members understand the content of the subject.
	5. Faculty members give correct instructions in a timely manner.
	6. Faculty members give prompt solution to you.
	7. Faculty members readily help you as requested.
	8. Faculty members are fair and impartial in grading.
	9. Faculty members' behaviour instils confidence in you.
	10. Faculty members consistently stimulate your learning of skills.
	11. Faculty members have the knowledge to answer your questions.
	12. Faculty members give you individual attention.
	13. Faculty members understand your problems in the subjects.
	14. Faculty members are well dressed.
Empathy	1. Faculty and staff are willing to help all students.
	2. Faculty and staff show honest interest in solving your problems.
	3. Faculty and staff are willing to go out of their ways to help you.
	4. Faculty and staff are consistently concerned about you.
	5. Faculty and staff understood your specific needs.
	6. Faculty and staff consistently courteous to you.
	7. Faculty and staff had your best interest at heart.
Responsiveness	1. School always welcomes your questions and comments.
	2. School is never too busy to respond to your requests.
	3. Support staff respond to your enquiry promptly.
	4. Support staff respond to all of your requests.
Satisfaction	1. I am satisfied with my decision to attend this program.
	2. If I had a choice to do it all over again, I would still enrol in this program.
	3. My choice to enrol in this program is a wise one.

(*Continued*)

Table A1. Continued.

Construct	Items
	4. I am happy with my decision to enrol in this program. 5. I made the right decision when I decided to enrol in this program. 6. I am happy that I enrolled in this program.

Note: These items were adopted from previous studies before EFA.

Appendix 2

Table A2. Factor analysis[a].

Items	Professionalism	Empathy	Reliability	Facility	Responsiveness
FAC1	.128	.157	.067	**.869**	.048
FAC2	.415	.181	.068	**.731**	.107
FAC3	.346	.172	.063	**.566**	.038
REL1	.170	.438	**.634**	.140	.262
REL2	−.049	.362	**.721**	.220	.035
REL3	.174	.588	**.475**	−.088	.148
REL4	.194	.277	**.812**	.029	−.150
REL5	.275	.157	**.680**	−.072	.213
PRO1	**.765**	−.034	.256	.154	.296
PRO2	**.783**	.236	.100	.138	.203
PRO3	**.794**	.093	.106	.161	.014
PRO4	**.653**	.319	−.148	.294	−.160
PRO5	**.808**	.155	−.052	.044	.312
PRO6	**.845**	−.002	.142	.059	.244
PRO7	**.722**	.360	−.004	.019	−.120
PRO8	**.642**	.226	.233	.279	.073
PRO9	**.775**	.066	.298	.123	−.077
PRO10	**.583**	.276	.074	.258	−.429
PRO11	**.700**	.461	.047	.068	−.086
PRO12	**.619**	−.024	.290	.194	.182
PRO14	**.646**	.423	.121	.105	.110
EMP1	−.048	**.639**	.383	.199	−.017
EMP2	.023	**.657**	.368	.182	.167
EMP3	.172	**.690**	.314	.307	−.163
EMP4	.477	**.631**	.208	.071	.119
EMP5	.148	**.790**	.141	.068	.022
EMP6	.392	**.633**	.061	.228	.146
RES1	.271	.352	.344	−.048	**.740**
RES2	.215	.248	−.050	.186	**.733**
RES3	.368	.626	.064	−.021	**.646**
Eigen value[b]	16.532	3.658	2.244	1.737	1.513
	(8.730)	(5.868)	(3.919)	(2.750)	(2.391)
Percentage of variance[c]	40.322	8.921	5.474	4.236	3.689
	(21.292)	(14.312)	(9.557)	(6.707)	(5.832)

Note: items with low factor loadings were removed.

[a]Principle component analysis. Varimax rotated factors. Bold factor loadings of survey items related to the corresponding construct.

[b]Eigenvalue of the initial extraction (eigenvalue for the rotated factors).

[c]Percentage of variance of the initial extraction (percentage of variance for the rotated extraction); cumulative percentage = 71.426.

Kaizer-Meyer-Olkin measure of sampling adequacy = 0.52.

Bartlett's test of sphericity $\chi^2 = 1894.864$; Significance = 0.000.

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