The Mediating Role of Placement in Service Quality of Education: From International Students' Perspective

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Abstract

The drive of this investigation is to diagnose the mediation effect of placement between program quality, industrial link, student satisfaction, and service quality in the circumstance of tertiary education in Malaysia. Using the Cue Utilization theory, the proposed model is tested employing data collected from 173 international students who are pursuing study at University Utara Malaysia through the convenient sampling approach. The analysis is conducted through the Structural Equation Modeling (SEM).The goodness of fit model is ensured through RMSEA ($<$ 0.08), CFI ($>$ 0.90), and Chisq/Df ratio ($<$ 5.0) fit indices. The findings reveal that placement mediates fully between industrial link and service quality of education. However, placement does not confirm any significant mediation effects between program quality, student satisfaction and service quality. Results give the impression to suggest that program quality and student satisfaction are influencing service quality directly and significantly. The findings of this study have potentially valuable implications for service quality improvement in higher education context of Malaysia by reinforcing placement, program quality, industrial link and student satisfaction. The results signify amply by approving the mediating influence of placement about industrial link and service quality of education respecting international students.

Keywords

Service quality, Program quality, Placement, Student satisfaction, and Industrial link.

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Introduction
Malaysia has emerged as an important destination for students from the Middle East. Malaysia provides excellent education and adequate security thus it becomes fertile ground for higher studies among international students (Sirat, 2008). Malaysia has one of the highest numbers of international students pursuing higher education and over the past decade, the country had become the fastest growing destination for international students, attracting an annual growth of over sixteen percent (The Daily Sun, 2015). According to a prediction, the country is on track to achieve the goal of welcoming 200,000 international students by 2020 in line with Malaysia's intention of becoming an international and regional education hub (Yeoh, 2016). In Malaysia, higher education is a main industry and performs an imperative job in national advancement. The present condition in Malaysia is extremely vibrant, reasonable and challenging.

In total quantity of students registered in higher education institutions in Malaysia in 2010 stood at 1,134,134, of which 568,731 students (50.1%) are registered at the government funded institutions (MOHE, 2010). Total 86,923 international students from 141 countries enrolled in higher education institutions in 2010 and they are contributed hugely to the Malaysian budget by means of overseas trade incomes from the inflow of international students (MOHE, 2010). In the context of higher education, quality of education services is getting priority because of rivalry among colleges, internationalization inner force, higher desire towards advanced education institution, an increase in educational cost charges, and the characterization of education as an attractive service (Kwek et al., 2010).

Service quality of a higher institution is normally evaluated by utilizing student judgment and the contention is that college students are the main clients of universities (Sakthivel et al., 2005; Hill 1995). High service excellence is gradually more essential for the continued existence of a business entity or an organization and to remain competitive. Inadequate research has been expounded on the excellence of services until the time of 1970s, once it is perceived that services connected with the encounters of customers for the period of the service providing, proposing the significance to extend in the investigation of services and all the more explicitly in the

investigation of their value (Porral & Mangin, 2013).Therefore, assessing service quality is emerging as a vital issue in higher education (HE). In this connection, Yaghoubi, Salehi, and Moloudi (2011) stated that service quality has become an essential issue to organizations due to the huge growth of service industries.

Thus, the objective of this study is to examine the mediation effect of placement between program quality, industrial link, student satisfaction, and service quality of education in the context of tertiary education on international students at University Utara Malaysia. The study exposed perceptions of international students towards the quality of education services. The present study contributes to our understanding of what international students expect to receive when they are engaged in higher education aboard and how to improve the quality education services to satisfy their requirements and improve their overall perceptions. A little research has performed considering mediating variable *placement* to examine service quality of education on international students in Malaysian higher education perspective. This gap inspired the authors to observe how the variable influences on service quality of education from international students' perspectives.

Furthermore, student satisfaction is placed as an antecedent of service quality in this study which is certainly a rare effort. In this regard, Bitner (1990) endorsed that consumer satisfaction ought to be considered as a predecessor of service excellence. Despite what might be expected, Parasuraman et al. (1985) and Cronin and Taylor (1992) expressed that service quality ought to be set prior consumer satisfaction. There is a general perception surrounded by experts that there is a connection between service quality and customer satisfaction yet what isn't clear is the path of this affiliation. Hence, examiners imagined an exceptional opportunity to reexamine to the connection as a theoretical gap.

This research is organized as follows: The subsequent segment highlights a theoretical underpinning and past research which is then followed by the literature review, research framework and hypothesis, research method, and the results section. The final section of this paper discusses the conclusion.

Theoretical Underpinnings and Past Research
The Cue Utilization Theory was developed by Jerry C. Olson in 1972 and it debates that product or service comprises of several arrays of signals that work as surrogate indicators of product or service quality. Cue Utilization Theory is a concept that has been used in marketing for years to determine why consumers react differently to a given product. There are both inherent and external signs assist clients with determining quality towards a specific item or service. Natural signals are those prompts that are inborn to an item. Literature has demonstrated that consumers will in general utilize a mix of both extraneous and inborn signs while assessing the nature of merchandise (Richardson et al., 1994). External properties are those aspects that identify with the fundamental object yet are not an inborn essence of the object. Essentially, external signals are product related to deliver facts, for example, trademark and value (Reimer and Kuehn, 2005).

This arrangement is regarded to be a universal structure which isn't limited to only two proportions of value in light of the fact that there is no common settlement with regards to the nature or substance of service quality measurements (Brady & Cronin, 2001). However, there is a common perspective that service quality is a multi-facets or multi-property construct (Kang & James, 2004; Grönroos, 1990 & Parasuraman et al.1985, 1988). In this study, program quality is considered as an intrinsic cue and industrial link, student satisfaction, and placement are considered as extrinsic cues for determining quality education.
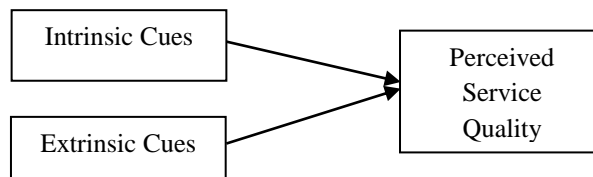

Fig. 1. The Cue Utilization Theory of Service Quality
Source: Jerry C. Olson (1972)

Literature Review
Service Quality
Service quality is tied in with giving something elusive in a manner that satisfies the end user and that ideally offers a few incentives to

buyers (Brysland & Curry, 2001). Johnson and Winchell (1988) characterize the service quality as the totality of highlights and attributes of a product or service that bears on its capacity to fulfill implied needs. Gronroos (1984) perceives the need and convenience of creating measures of service quality. In a college setting, service quality can be viewed as the students' impression of whether their program and program related experiences were fantastic (Porral & Mangin, 2013). Furthermore, good service quality of education can diminish the high joblessness rate of a country (Passey & Samways, 2016). Oldfield and Baron (2000) brought up that managers of advanced education should concentrate on student view of learning quality. Consequently, service superiority in advanced education is expected to assess from end to end the student's point of view.

Parasuraman et al. (1985) created SERVQUAL (gap related device), a broadly perceived device for estimating service quality. Conversely, the SERVPERF (completely-performance based) an additional standard instrument was created by Cronin and Taylor (1992). They discussed that SERVPERF clarifies a more noteworthy degree of variation in a total proportion of service quality than ensures SERVQUAL. Because of a lesser amount of foreseeable intensity of SERVQUAL show, this endeavor conveyed SERVPERF model to abridge the weakness. In this study, five dimensions of SERVPERF proposed by Cronin and Taylor (1992) have been adapted to measure service quality of education in perspective of international students.

Placement

Placement improves students' acquaintance with practical work and makes possible them to reflect constructively on issues related to work; to help students to assess and realize how work experience and upcoming professional development; to develop employability skills, intellectual skills, key skills, personal attributes, knowledge about how organizations work; maintains and develops links between the university, the industry and the community (University of Ulster, 2001). Placement provides a greatly related educational experience that is valued by students and that usually lives up to their expectations (Juznic & Pymn, 2011).

In a study, Geng-Qing Chi and Gursoy (2009) observe that

institutions need to put in further capitals on refining the quality of their programs. They also emphasized that industry inclined to hire more future managers from particular universities if they perceive their education quality is "better" than that of others. Ellis and Moon (1998a) express that employers' perceptions of a university were enormously colored by the quality of the placement service. Walsh and Byrne (2013) report that reputation, location of the college and content of courses have impact on work placement.

Program quality and Placement
Senthi and Arulraj (2011) mention that 'teaching methodology' in terms of 6 items in their study such as relevant curriculum, teaching and learning support, theoretical and practical knowledge of academic staff, course material, degree to which exams are representative of courses taught, extent to which academic staff are up to date in their subject. This study found that there was a significant impact of 'teaching methodology' on the mediating factor placement. The study also found that 'teaching methodology' explained 41% variation. Here, 'teaching methodology' is representing program quality because items used in this study are very similar to other studies such as Angell et al. (2008), and Gatfield et al. (1999).

Dopson and Tas (2004) contend that educational programs ought to be verbalized in two different ways to get ready graduates for a prosperous profession in the trade - the educational programs ought not just give the drive to students to learn expected aptitudes to maintain a business yet in addition enable them to accomplish a considerable knowledge on the most proficient method to deal with their staffs. Other investigators disagree that in designing a syllabus, educationalists must think through the three main segments of hospitality education: fundamental knowledge, skills, and values (Gursoy & Swanger, 2004, 2005). Program quality and its components lead students to acquire substantial knowledge, and values. Therefore, they earn necessary skills to run the business efficiently and consequently they can get a successful career in the industry. Thus,

H1: Program quality has a significant positive effect on placement.

Industry Links and Placement

It is needed to create a three-way relationship of patrons such as university, host organization and student (Espelt et al., 2005). Rehman and Chaudhry (2005) suggest that practical training provides in depth of knowledge about the place of work and as well permit graduates to develop meaningful strategic relations inside the industry still in advance they have accomplished their ceremonial education. These sorts of associations not simply assist their lessons but also enhance job opportunities. Dawson et al. (2009) reported that potential employers were willing to hire those who had practical training. In this relation, Booth (2004) explicitly calls for increased linkages between SMEs and higher education institutions in order to raise awareness of employment opportunities in such businesses. Internships build up the affiliation between industries and universities, which might boost up joint investigation prospects, and increase university and enterprise image among learners. Developing and maintaining long-standing associations between the industry and the university possibly will help both entities by elevating job prospects for potential former students (Walo, 2001). Industrial link can create long-term relationship with various industries, thus it can create employment opportunities for students. Therefore,

H2: Industrial link has a significant positive effect on placement.

Satisfaction and Placement

Student satisfaction comes from practical experience, which is the contributing factor of placement. Over 90% of Australian students rated placement as a valuable or a very valuable, with 80% students reported it was superior or a huge improvement, than their hopes. Some 83% Slovenian students reported it was worthwhile, and 54% reported that it was enriched, or a huge improvement, than their hopes. Slovenian students were disappointed by their placement concerning the short length of time of three weeks as being too little, weak control while on employment, and reporting managers were very eventful or poorly organized for advising (Juznic & Pymm, 2011). Hence, it may be stated that students are not whimsically satisfied. Their satisfaction means that they have added value in their lives. This value usually fosters students towards better job opportunity. Thus,

H3: Student satisfaction has a significant positive effect on placement.

Placement and Service Quality of Education
Senthikumar and Arulraj (2011) claimed that the placement was the superior way of interaction for enhancing image of the quality education. Virtually, their model exposes that the quality of education is based on the quality faculty, the excellent physical facilities, and a broad range of programs which molded the diverse student body to improve the employability of the former students (i.e. placement as mediating factor). Juznic and Pymm (2011) stated that placements contribute truly with the pertinent educational experience that is praised by learners and it also affords with the prospect to earn precious expertise and knowledge for future employment. Kaur and Bhalla (2015) expressed that placement was an important factor for quality of higher education directly. Recently, Rudhumbu, Tirumalai and Kumari (2017) suggested that employment prospects of graduates had very high influence on students' choice towards a university. Basically, students become mature through placement and become a warrior to fight with competitive world to snatch a job and sustain in the job. Ultimately, service quality of education recognizes itself as a reflection of placement. Thus,

H4: Placement has a significant positive effect on service quality of education.

Program Quality and Service Quality of Education
Numerous service quality investigations connected to tertiary education, program quality has been regarded as a significant element of service quality. Empirical studies reveal that the program quality aspect is accessible in the tertiary education literature (Abdullah, 2006). Notably, the prospects of the service/product itself (e.g. degree programs) and the consequence of service feeding (e.g. knowledge gain) are two diverse aspects in the intake of tertiary education services. As a result, it is wise to disintegrate program quality from outcomes. Ko and Pastore's (2005) reinforced the standing of program quality in the recreational sport model through the focus group discussion and exploratory factor exploration. In this recommended model, program quality is demarcated through the four sub-dimensions: such as syllabus, academic facilities, industry interaction, and input quality. Curricula should be meaningful, valuable, and beneficial to learner's career prospect. It also enriches students with

contemporary knowledge which give directions to expertise and practices. Hence, it creates request for job seekers in the industries and reduces lead time for receiving a job offer. Furthermore, Hameed and Amjad (2011) empirically tested that faculty, advisory staff and the classes have a significant influence on the students' higher education experience. Recently, Osman, Saputra and Luis (2018) empirically justified that program quality has a significant impact on service quality in higher education perspective. Hence, the hypothesis is:

H5: Program quality has a significant positive effect on service quality of education.

Industrial link and Service Quality of Education
Angell et al. (2008) found in their study that the "academic" and "industry links" aspects of service quality were the most critical to postgraduate students. This finding perhaps indicates that postgraduate students are focusing about career through industrial links and considering it an aspect of service quality. Jain et al. (2013) mentioned that "*industrial interaction*" was accounted for 8.028 percent of the variance in their study. The three items defining this factor such as organizes for summer internships, organizes industrial tours and guest lectures from industry experts with factor loadings 0.811, 0.798, and 0.705 respectively. The study also demonstrated that *industry interaction* was positively correlated with overall service quality (t-statistic = 3.1, significant at 0.05 level). Industrial link creates job opportunities for students and this link constantly exposes image of the university through student placement. As a result, students distinguish industrial link as a feature of service quality. Hence, the hypothesized is:

H6: Industrial link has a significant positive effect on service quality of education.

Student Satisfaction and Service Quality of Education
According to Huang (2010) there is a strong positive correlation between the overall service quality and student satisfaction. Kemboi et al. (2014) in their study revealed that the provision of quality services was significantly related to customer satisfaction about SMEs (standardized coefficient = 0.396, significant at p < 0.001 level). A few more scholars also endorsed that service quality had positive

influence on customer satisfaction (Alves & Raposo, 2010; Caruana et al., 2000; Chodzaza & Gombachika, 2013; Gruber et al., 2010; Sulieman, 2013; Wilkins & Balakrishnan, 2013). In connection with higher education, Subrahmanyam (2017) statistically proved that students' perceived service quality is a key antecedent to students' satisfaction, motivation and loyalty. On the contrary, a quite few scholars stressed that customer satisfaction had a significant positive impact on service quality (Bitner, 1990; Sultan and Wong, 2012). To wipe out the controversy above, this study has taken the initiative to validate the relationship once again. Thus,

H7: Student satisfaction has a significant positive effect on service quality of education

Mediating Role of Placement

Placement in the mediating position is hardly ever exposed in the paradigm of program quality, industrial link, student satisfaction, and service quality in higher education. Dopson and Tas (2004) debate that curriculum must be designed in such a way that is helpful for student to learn required skills and also to gain a successful career in the industry. This argument is indicating the influence of program quality on placement because curriculum is one of the dimensions of program quality (Angell et al., 2008; Kwan & Ng, 1999; Navarro et al., 2005). Several researchers highlighted that the students focus about their career through industrial links (Angell et al., 2008; Jain et al., 2013). Thus, it can be said that industrial link influences placement. Furthermore, student satisfaction derives from real-world experiences of education which is the contributing aspect of placement (Juznic & Pymm, 2011). Recently, Kaur and Bhalla (2015) conveyed that placement is an essential aspect for endorsing service quality of higher education. Thus, it can be postulated that placement is reflecting the essence of service quality. Visualizing the literature review above, the study formulated several paths such as program quality → placement, industrial link → placement, student satisfaction → placement and placement → service quality of education. In view of these paths, the study justified a mediating role of placement and logically formulated three hypotheses as follows:

H8: Placement is mediating between program quality and service quality of education.

H9: Placement is mediating between industrial link and service quality of education.

H10: Placement is mediating between student satisfaction and service quality of education.

Research Framework and Hypotheses

Based on pertinent literature review, the study formulates the antecedents of service quality of education (see Figure 2). In the research framework, it shows that placement is direct predictors of service quality of education while program quality, industrial link, and satisfaction are direct antecedents of placement. The literature indicates that placement direct antecedents of service quality of education. The three exogenous variables of program quality, industrial link, and satisfaction each contain seven, six and three manifesting (observed) variables respectively. For endogenous latent variables quality education, and placement, the manifesting variables are 22, and 7 respectively. This is a second order structural model thus service quality (dependent variable) is measured through five dimensions such as tangibility, reliability, responsiveness, assurance and empathy and each dimension occupied four, five, four, four, and five items respectively. Afterwards, ten hypotheses are derived from the conceptual model for the study.
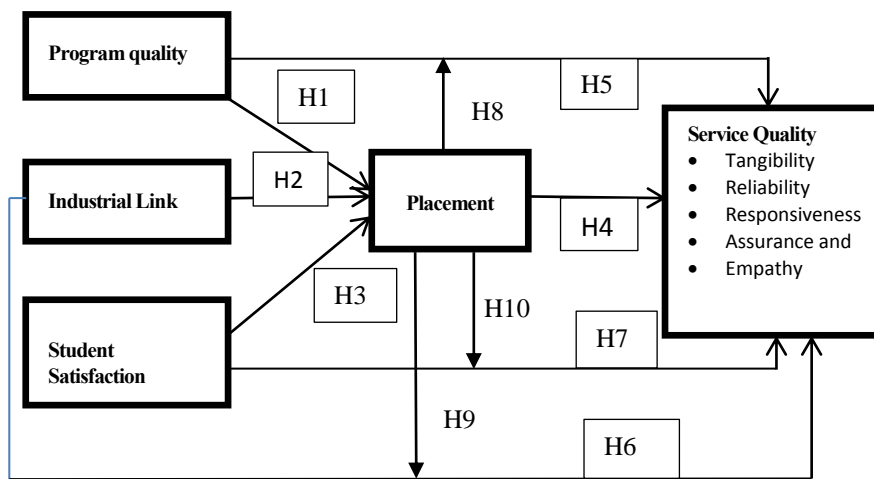

Fig. 2. Conceptual Research Framework

Research Method
Sampling and Instrument
A total of 280 international students were requested to complete a questionnaire that contained measures of the constructs of concern. According to Hair et al. (2010), if seven or less latent constructs and each construct has equal to three items with item communality 0.50 or higher, then the minimum sample size is required 150. To remain in the safe side, we distributed 280 questionnaires to respondents which is not an indication of violation according to Hair et al. (2010). The questionnaires were distributed to the respondents in their dormitories by using convenient sampling method because authority of the university is reluctant to disclose program-wise list of international students. Nearly, 73% response rate was collected back equivalent to 204 responses. Each one construct is investigated through earlier authenticated instrument and a five point Likert Scale was used to measure all the variables as follows: *service quality* education measure was adopted 22 items comprise of five dimensions from Parasuraman et al, (1994) with overall Cronbach's Alpha = 0.802; *program quality* was adopted from Angell et al., (2008) comprising 7 items with overall Cronbach Alpha = 0.78; *industrial link* was adopted from Jain et al., (2013) consisting of 6 items and overall Cronbach alpha is 0.79; *student satisfaction* was adopted from Turkyilmaz and Ozkan (2007) and overall Cronbach alpha is 0.80 for three items; *placement* was adopted from Walsh and Byrne (2013) comprising of seven items and overall Cronbach alpha is 0.79.

Data Screening and Analysis
The 204 dataset were rightly coded and protected into SPSS version 14 and analyzed through AMOS version 20. At the time of data screening for outliers detection, thirty-one data deleted due to Mahalanobis (D2) values greater than the $\chi 2$ value (χ^2=65.17; n=48, p<.05) leaving a absolute 173 dataset to be examined. A KMO (Kaiser-Meyer-Olkin) index of 0.853 and Bartlett's test of sphericity (sig. at 0.000) indicated that the data size was suitable for factor analysis. The study steered normality test by using z-scores of skewness statistics and standard error of skewness as well as kurtosis statistics. The value of Z-score skewness of higher than 2 needs to be converted since it is regarded as an indication of non-normal data

(Hair et al., 2006). The converted variables were then incorporated in subsequent CFA and fit models (see Figure 3).

Results and Discussion
Demographic Profile of the Respondents
Male response frequency is 144 (83.2%) and female response frequency is 29 (16.8%). The respondents are full-time international students. Respondents are from Master's degree, 76 (44%), Bachelor's degree, 31 (18%), and PhDs, 66 (38%). There is no significant mean difference between male and female responses on service quality of education and it is confirmed through t-test. Another vital finding is that undergraduate foreign students are more pleased than graduate foreign students.

Descriptive Analysis
The highest mean (3.95) is obtained associated to program quality means that respondents' perception is fairly strong. The lowest mean (3.63) is found connected to industrial link and placement means that respondents' perception is weak about them (see Table 1).

Table 1. Descriptive Statistics

Variable Name	N	Min	Max	Mean	Std. Deviation
Program Quality	173	1	5	3.95	0.771
Industrial Link	173	1	5	3.63	0.877
Student Satisfaction	173	1	5	3.66	0.973
Placement	173	1	5	3.63	0.837
Service quality	173	1	5	3.74	0.938

Exploratory Factor Analysis
Exploratory factor analysis (EFA) result is presented in Table 2. The study detected that the factor loadings of 45 manifesting observed variables or items were fluctuating from 0.41 to 0.85. Table 2 depicts that 10 items' factor loadings are below 0.60 those are highlighted with bold face and deleted at the first phase for further analysis because to ensure uni-dimensionality factor loading must be 0.60 or higher (Zainudin, 2012). If R^2 value and factor loading are less than 0.40 and 0.60 respectively, then delete one item at a time but the lowest factor loading first. Moreover, if MI (modification index) value equal to 15 or more, then delete one item at a time but the highest MI value first (Zainudin, 2012). All these are incorporated in this study

for the improvement of the model. Ultimately, 35 items are left for confirmatory factor analysis.

Table 2. Variables, Items and Factor Loadings from Exploratory Factor Analysis (EFA)

Variables	Items	Factor loadings
Program quality	PQ1 Skilled & dedicated faculty	0.72
	PQ2 Practical skills taught	0.75
	PQ3 Access to teaching staffs	**0.59**
	PQ4 Easily transferable skills	0.71
	PQ5 Reputable degree program	0.68
	PQ6 Variety of books & journals	**0.41**
	PQ7 Computing & web facilities	**0.59**
Industrial Links	INDL1 Contemporary teaching method	**0.57**
	INDL2 Industrial tours	0.74
	INDL3 On the job training	0.76
	INDL4 Guest lectures from industry	0.67
	INDL5 Summer training	0.66
	INDL6 Seminars/workshops	**0.50**
Student Satisfaction	STUDS1 Overall satisfaction	0.66
	STUDS2 Filled expectations	0.82
	STUDS3 Performance well than ideal one.	0.79
Placement	PLC1 Emphasizing students' personal chemistry and skills	**0.57**
	PLC2 Employers' have good perception.	**0.57**
	PLC3 Facilities and interview rooms are adequate.	**0.58**
	PLC4 Career counselor has a unique 'people skills'.	0.71
	PLC5 Placement office provides correct information and timely response.	**0.59**
	PLC6 Efficient in organizing interviews.	0.73
	PLC7 Maintaining strong ties with employers.	0.75
Tangibility	TANG1 Most recent teaching & IT facilities	0.79
	TANG2 Attractive appearance	0.76
	TANG3 Exposing professional character	0.79
	TANG4 Interesting and understandable materials	0.77
Reliability	REL1 Impartial and reliable assessment	0.76
	REL2 Sincere intention solving problems	0.81
	REL3 Fulfills students' requirements	0.84
	REL4 Fulfills promises	0.85
	REL5 Produces error free records	0.68
Responsiveness	RES1 Delivers correct information	**0.58**
	RES2 Provides quick response	0.81
	RES3 Willing to provide academic assistance	0.77
	RES4 Improving students' personal & communication skills	0.79
Assurance	ASSUR1 Delivering Professional skills	0.70
	ASSUR2 Praiseworthy for quality education	0.75
	ASSUR3 Offers support services to foreign students	0.80
	ASSUR4 Teachers are knowledgeable	0.81
Empathy	EMPTH1 Staffs realize well challenges facing students	0.83
	EMPTH2 Well broadcasted convenient opening hours	0.73
	EMPTH3 Provides emergency services	0.82
	EMPTH4 Gives personalized advice to foreign students	0.75
	EMPTH5 Staffs recognize specific needs	0.82

Reliability Measures

To ensure Confirmatory Factor Analysis (CFA), the researchers need to assess the uni-dimensionality, validity, and reliability for all constructs prior exposing their inter-relationship (Zainudin, 2012). The listed explanations provided below ensured the evidence of confirmatory factor analysis.

The loadings of hidden to observed variable must be 0.60 or greater for already established scales to ensure uni-dimensionality (Zainudin, 2012). According to the suggestion of Zainudin (2012), items with loading under 0.60 were removed with the aim of achieving uni-dimensionality and the remaining numbers of items for each construct are as follows: program quality (from 7 to 4 items), industrial link (6 items to 4), student satisfaction (3 items – no deletion), placement (7 items to 3 items), and service quality (22 items to 21) which is presented in the fit model Figure 3. The convergent validity is performed to make sure the content validity in this study. AVE (average variance extracted) is the technique used to evaluate convergent validity. Fornell and Larcker (1981) proposed that lower than 50 percent explained variance (AVE) by any variable is acceptable. Respecting the recommendation of Fornell and Larcker (1981), the study attained the convergent validity. Also, the convergent validity can be assessed through the composite reliability. Composite reliability specifies that the degree to which a number of items consistently specify the unseen construct. The proposed value of composite reliability is 0.70 or higher should be satisfactory (Hair et al., 2010). Ultimately, the present investigation reached the composite reliability as the value is ranging from 0.88 to 0.96 (see Table 3).The value Cronbach's Alpha must be 0.70 or higher for assessing reliability of a measurement model (Hair et al., 2006). This evidence is satisfied and demonstrated in Table 3.

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis is a popular factor exploration device and it consumes power to certify regarding a construct and its items are steady with the investigator's postulating the structure of that construct. Prior settling the CFA for all variables, uni-dimensionality, validity, and reliability need to be accomplished (Zainuddin, 2012). Relating to Table 3, the study has confirmed the uni-dimensionality,

validity, and reliability. The final acceptable model (Figure 3) is fabricated after the proper execution of CFA.

Table 3. Uni-dimensionality, Validity, and Reliability Assessment

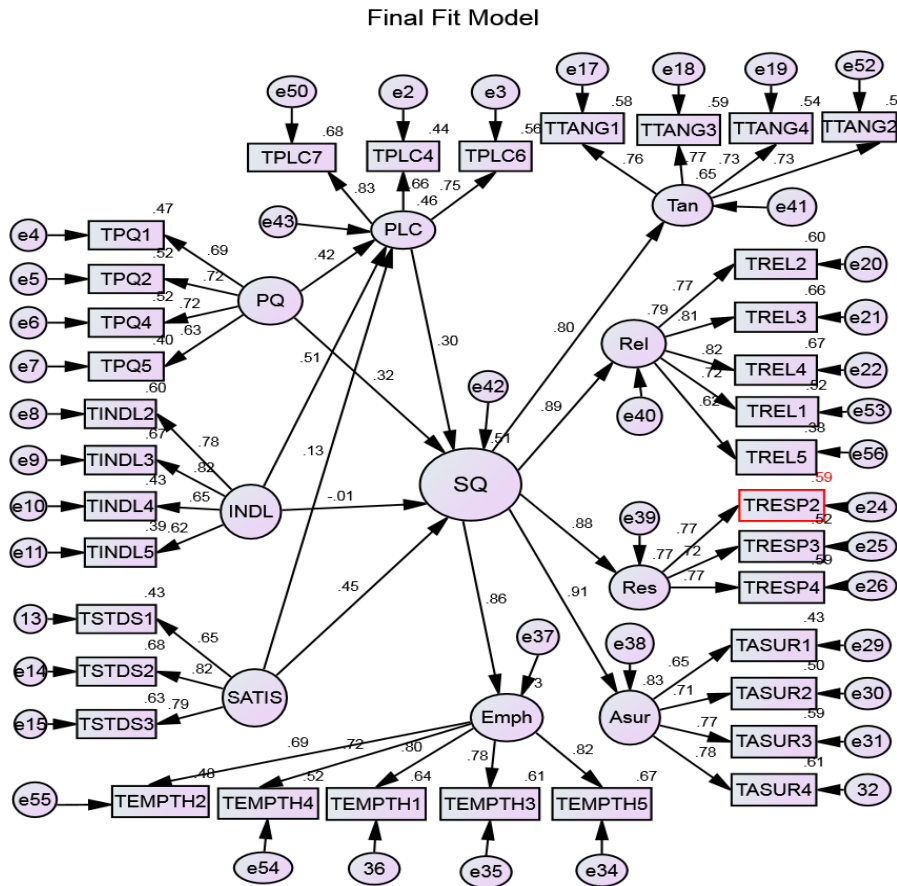| Construct	Factor Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)
Program quality (PQ)		0.78	0.95	0.48
PQ1	0.69			
PQ2	0.72			
PQ4	0.72			
PQ5	0.63			
Industrial link (INDL)		0.79	0.92	0.57
INDL2	0.78			
INDL3	0.82			
INDL4	0.65			
INDL5	0.62			
Student satisfaction (STUD)		0.80	0.93	0.58
STUD1	0.65			
STUD2	0.82			
STUD3	0.79			
Placement		0.79	0.92	0.56
PLC4	0.66			
PLC6	0.75			
PLC7	0.83			
Tangibility		0.76	0.92	0.56
TANG1	0.76			
TANG2	0.73			
TANG3	0.77			
TANG4	0.73			
Responsiveness		0.79	0.93	0.57
RES2	0.77			
RES3	0.72			
RES4	0.77			
Reliability		0.82	0.91	0.69
REL1	0.72			
REL2	0.77			
REL3	0.81			
REL4	0.82			
REL5	0.62			
Assurance		0.75	0.88	0.53
ASUR1	0.65			
ASUR2	0.71			
ASUR3	0.77			
ASUR4	0.78			
Empathy		0.89	0.96	0.69
EMPH1	0.80			
EMPH2	0.69			
EMPH3	0.78			
EMPH4	0.72			
EMPH5	0.82			

Fig. 3. Final Fit Model

Goodness of Fit of Structural Model

Through the confirmatory factor analysis (CFA) the structural model is designed and goodness of fit is achieved, see Figure 3. The CFA, measurement and structural model have shown good fit with the data relied on several assessment standards such as GFI, CFI, TLI, RMSEA (Hair et al., 2006). The entire CFAs of constructs established a reasonably good fit as pointed out by the goodness of fit indices such as CMIN/df ratio (< 2); p-value (> 0.05); Goodness of Fit Index (GFI) of > 0.90; and root mean square error of approximation (RMSEA) of values less than 0.08 (< 0.08) (Hair et al., 2006). This is

predictable as hypothesized model is typically confidently confirmatory (Byrne, 2010). CFI of revised fit model is 0.908 and root mean square error approximation (RMSEA) also displays an acceptable value of 0.043 which is below the acceptable limit (< 0.08).

Hair et al. (2006, 2010) and Holmes-Smith (2006) endorsed the use of no less than three fit indexes by addressing at least one index from each group of model fit. The three fitness classes are absolute fit, incremental fit, and parsimonious fit. The investigators have the right to select at least one fitness index from every class to report accountable on which texts is being referred. The indexes are in bold are recommended as they are vastly informed in literatures. The evidence regarding the fitness index group, their level of approval, and remarks are exposed in Table 3. In this study, at least one index is found in acceptable range from three categories of fitness according to Table 4. Therefore, goodness of fit is ensured in this study.

Table 4. Fit Index

Name of Category	Name of Index	Level of Acceptance	Values Extracted from Fit Model, Figure 3.
Absolute fit	Chisq	$P > 0.05$	$P = 0.665$
	RMSEA	$RMSEA < 0.08$	$RMSEA = 0.043$
	GFI	$GFI > 0.90$	$GFI = 0.911$
Incremental fit	CFI	$CFI > 0.90$	$CFI = 0.908$
	TLI	$TLI > 0.90$	$TLI = 0.903$
Parsimonious fit	Chisq/Df = Ratio	$Ratio < 5.0$	$Ratio = 0.955$

Source: Zainudin, A. (2012)

Several past surveys have reported that service quality education has been influenced by several factors, but none of these studies have investigated the mediating role of job placement between program quality, industrial link, student satisfaction, and service quality. This study has demonstrated, at least for this sample, that placement is much important for shaping service excellence of education in the tertiary education segment. The results of the revised fit model support six hypotheses, such as *Hypothesis 1, Hypothesis 2, Hypothesis 4, Hypothesis 5, Hypothesis 7,* and *Hypothesis 9* and do

not support four hypotheses such as *Hypothesis 3, Hypothesis 6, Hypothesis 8 and Hypothesis 10* (see Table 5 and 6).

These findings are similar to those reported in other studies. Like Senthilkumar and Arulraj (2011) and Edwards (2014), there is a strong relationship between program quality and placement. Like Dawson et al. (2009) and Booth (2004), there is a strong relationship between industrial link and placement. Like Juznic and Pymm (2011), there is a substantial association between student satisfaction and placement but *hypothesis 3* is inconsistent with this outcome. As Senthikumar and Arulraj (2011), Juznic and Pymm (2011) and Sarpkaya (2010) find, there is a strong association between placement and service quality education. Similar to Osman et al. ((2018), program quality has a significant positive influence on service quality. Like Sarpkaya (2010) and Sultan and Wong (2012), student satisfaction has a significant positive impact on quality education. Reversely, Osman et al. (2018) establish that student satisfaction has no significant impact on service quality. Like Senthilkumar and Arulraj (2011), placement has a full mediating role between industrial link and quality education.

Table 5. Direct Impact of Final Fit Model: Standardized Regression Weights

Hypothesis	Endogenous		Exogenous	Std. Estimate	S.E.	C.R.	P-value	Status
H1	Placement	<---	Program quality	0.42	0.128	3..281	***	Significant
H2	Placement	<---	Industrial link	0.51	0.093	5.483	***	Significant
H3	Placement	<---	Student satisfaction	0.13	0.086	1.511	0.183	Not Significant
H4	Service Quality	<---	Placement	0.30	0.105	2.857	0.011**	Significant
H5	Service Quality	<---	Program quality	0.32	0.116	2.758	0.004**	Significant
H6	Service Quality	<---	Industrial link	-0.01	0.084	-0.119	0.849	Not Significant
H7	Service Quality	<---	Student satisfaction	0.45	0.077	5.844	***	Significant

Note: Significant at * p < 0.10 level, ** p < 0.05 and *** p < 0.001 level.

Table 6. Path Analysis of Mediating Hypothesis based on the Final Fit Model (Figure 3)

	Exogenous		Mediating		Endogenous	Indirect Effect	Direct Effect	Status
H8	Program quality	--->	Placement	--->	Service Quality	PQ→PLC, β=0.42, Sig*** PLC→SQ, β=0.30, Sig**	PQ→SQ, β=0.32, Sig**	Placement is not mediating
H9	Industrial link	--->	Placement	--->	Service Quality	INDL→PLC, β=0.51,Sig*** PLC→SQ, β=0.30, Sig**	INDL→SQ, β= -0.01, Not Sig.	**Placement is fully mediating**
H10	Student satisfaction	--->	Placement	--->	Service Quality	SATIS→PLC, β=0.13, Not Sig. PLC→SQ, β=0.30, Sig**	SATIS→SQ, β=0.45,Sig***	Placement is not mediating

Note: Significant at * p < 0.10 level, ** p < 0.05 and *** p < 0.001 level.

In the current study, the Cue Utilization Theory (CUT) of service quality served as a useful foundation for helping explain service quality education, even though the model used here departed from its traditions by including mediating variable. The affiliation between program quality and service quality is strong and statistically significant, even though it is not mediated by placement. The direct relationship in CUT in the middle of program quality and service quality is reinforced here, and the relationship between student satisfaction and service quality is strong. However, the effect of industrial link has been mediated by placement to influence service quality of education. As for the service quality of education studied, the findings imply that perceived service quality is swayed more directly by their perceptions about the program quality and student satisfaction than by concerns they might have about industrial link of the higher education institute.

Conclusion

The main objective of this study is to examine the mediation effect of placement between program quality, industrial link, student satisfaction, and quality of education in the context of higher education in Malaysia. The study has been unable to demonstrate that placement as a possible mediator between program quality, student satisfaction, and service quality of education. Alternatively, the research exposes that placement is fully mediating between industrial link and service quality of education. Result confirms that industrial

link is influencing placement significantly which in turn increase service quality. Thus, it can be concluded that *industrial link* and *placement* have strong determining roles on service quality of education and leaders of higher education institutions should be very careful to deal with these critical factors, because these factors could turn as pull factors for attracting international students now and in future. This study would assist leaders of higher education to abstain from the impractical thinking about international students thus service quality of education would get momentum to move forward by replicating this suggested model in different higher education environments. Furthermore, it is recommended that institutions must increase number of placements for international students by maintaining effective industrial link because placement transmits the effect of industrial link to service quality of education which is the contributing factor for attracting and retaining meritorious students in the context of Malaysian higher education without compromising program quality and student satisfaction. Finally, the study needs to be implemented in other regions of the universe to receive the soundness of the conceptual model. Obviously, there is a distinctive viewpoint to explore the study further, concentrating on other interested parties of education, containing colleges and occupational institutions that perceive the equal quality enrichment intentions.

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