Modelling the demand for educational tourism: do dynamic effect, university quality and competitor countries play a role?

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Abstract

Purpose – This study aims to develop an educational tourism demand model, particularly in respect to dynamic effects, university quality (QU) and competitor countries. Educational tourism has been identified as a new tourism sub-sector with high potential, and is thus expected to boost economic growth and sustainability.

Design/methodology/approach – This study reviews the literature on the determinants of educational tourism demand. Even though the existing literature is intensively discussed, mostly focusing on the educational tourism demand from an individual consumer's perspective, this study makes an innovation in line with the aggregate demand view. The study uses data that consist of the enrolment of international students from 47 home countries who studied in Malaysia from 2008 to 2017. The study utilised the dynamic panel method of analysis.

Findings – This study affirms that income per capita, educational tourism price, price of competitor countries and quality of universities based on accredited programmes and world university ranking are the determinants of educational tourism demand in both the short and the long term. Also, a dynamic effect exists in educational tourism demand.

Research limitations/implications – The results imply that government should take the quality of services for existing students, price decisions and QU into account to promote the country as a tertiary education hub and achieve sustainable development.

Originality/value – Research on the determinants of the demand for educational tourism is rare in terms of macro data, and this study includes the roles of QU, competitor countries and dynamic effects.

Keywords Educational tourism, Demand model, Dynamic effect, University quality, Competition environment

Paper type Research paper

1. Introduction

The tertiary education market operates precisely in the context of students' objective of travelling for education. This context has developed over some centuries, involving cooperation in the higher education sector between various countries at the international level (Bodger, 1998). This collaboration involves the movement of international students pursuing higher education abroad. Thus, international students are classified as tourists in terms of higher education. Therefore, international students behave like tourists in the context of higher education consumers, who also incur a certain amount of expenses during the period spent furthering their studies in their selected country. The country chosen is known as the host country.

Globally, the development of educational tourism has been taking place over the past 30 years (Bodycott, 2009). A report of the Organisation for Economic Co-operation and Development

(OECD) and Project Atlas shows a positive increase in the number of international students travelling worldwide continuously from 1975 to 2018. The trend of international student travel continues to remain positive, with a record 5.0 million people having travelled abroad to pursue higher education in 2018, with an increase of 8.70% over 2017 (The Organisation for Economic Co-operation and Development, 2017; Project Atlas, 2017, 2018). Bohm *et al.* (2002) stated that the trend of international student travel is expected to continue to increase to 6.0 million people by 2020, of which 70% are from Asia and the Pacific, and to reach 7.2 million people by 2025.

As a result, the increasing demand from international students will increase their total expenditure as consumers on goods offered by the higher education sector and other economic sectors in the host country. The costs incurred by international students during their study period are a source of income that will have a spillover effect on the host country's economy (WTTC, 2012). Here, it is essential to study the products and services of higher education trade, also known as educational tourism, in more depth, because they have a high potential to contribute to the host country's economy.

Past researchers of several countries have rarely developed models of educational tourism demand using macro data (where the unit analysis is a country or aggregate variable), and most have used micro data (where the unit analysis is the individual, household or establishments), to analyse educational tourism demand. Specifically, these researchers have used observation and survey methods by distributing questionnaires and conducting interview sessions with international students (James-MacEachern and Yun, 2017; Jon *et al.*, 2014; Liu *et al.*, 2018; Ojo *et al.*, 2016; Tsai *et al.*, 2017). However, Rodríguez *et al.* (2012) analysed the educational tourism demand in Spain in line with the concept that most past researchers have applied but used the GMM dynamic panel approach to capture the effect of word-of-mouth. There is potential in the study of educational tourism demand in terms of building a demand model, especially from an aggregate analysis or country perspective.

Furthermore, previous studies in the field of tourism demand have proved that, apart from the primary variables that influence tourism demand, namely price and income, the lag of dependent variables reflecting the influence of past tourism demand is one of the most important and significant variables in determining the pattern of tourism demand in a country (Garín-Muñoz, 2006; Habibi and Abbasinejad, 2011). By recognising the importance of the influence of past demand, this study adopted the lag of dependent variables by taking into account the lag of educational tourism demand projected as the international student demand in the previous year as one of the essential variables influencing the international student demand in the current year. Previous studies on the demand for educational tourism have ignored the lag of dependent variables in the field.

Similarly, universities' quality can attract international students to a country to continue their studies. According to Becket and Brookes (2008), attracting international students from various foreign countries is not easy because international students are consumers of higher education products and services exported abroad. Thus, there is competition across borders between various countries regarding whether they have a solid ability, capability and quality to attract international students. This raises two questions: (1) Does the quality of universities and prices greatly influence international students' decisions when choosing a higher education destination? (2) Is there a dynamic of educational tourism demand?

Additionally, most previous studies on educational tourism demand have only focused on international students at a particular university in a country. Thus, the use of only one sample causes the behaviour and demand for educational tourism not to be described firmly and comprehensively, especially regarding the short-term and long-term impacts on higher education services and trade activities internationally. Therefore, the objective of the current study is to determine how to build a model of educational tourism demand by taking into account 47 home countries of international students in Malaysia and to analyse the existence of dynamic effects and the determinants of educational tourism demand in Malaysia.

This study would contribute to the field by modelling how the competitors and quality of higher education determine the demand for educational tourism from the perspective of countries. Despite the fact that educational tourism has seen significant growth, international student enrolment differs for each country. The United States and the United Kingdom remain leaders in the higher education trade. However, starting in 2010, China appears to have overtaken the position of several other developed countries such as Australia, Germany and Japan. In fact, if analysed in a group of emerging country competitors, Malaysia also lags far behind China in higher educational tourism. From 2011 to 2017, China remained in the third-highest position after the United States and the United Kingdom. This clearly shows that each country continues to compete to increase the demand for educational tourism from international students.

2. Literature review

Based on demand theory, price or cost has a negative relationship with the number of products and services demanded. Shan et al. (2013) listed the essential determinants in the early stages of decision-making, namely, cost, travel access capabilities and employment opportunities. Thus, price or cost will also have an inverse relationship with international student demand and international student income (Abbott and Silles, 2016). Social costs consist of the element of security in the country, the level of interest and experience and employment opportunities, referring to the student visa application process as well as the ability to obtain permanent resident status (Jon et al., 2014), and these involve crime, discrimination and perceptions as well as the acceptance of local students and the local community towards the international students in the country (Lim et al., 2011).

The British Council (2012) concluded that income, especially per capita income, is a determinant that has a significant and robust relationship with the flow of higher education demand. An increase in per capita income will increase the ability of students to invest in higher education. Therefore, the enrolment rate of students in higher education, either locally or abroad, will increase. Meanwhile, the quality of a university is measured based on the international assessment, which is the number of universities that qualify for international education standards such as rankings (Ahmad and Shah, 2018). Van Bouwel and Veugelers (2010) divided the quality of universities into two parts: the number of international journal publications and the ranking of universities at the international level. They stated that these two qualities positively impact the demand of international students. A high ranking at the international level will enhance the positive image in the eyes of the world.

A positive image will further strengthen international students' selection of the university and the country as the best destination for further education (Cubillo et al., 2006). The probability of a demand increase is high when the education offered by the university and the country has a good image attribute. Thus, the international ranking becomes a critical factor in giving confidence and assurance to international students, representing the image and reputation of the university. In addition, Ojo et al. (2016) also included these images and reputation in the considerations of international students. However, Tsai et al. (2017) found images and reputation to be the final assessment for international students in Taiwan. There are also other determinants, such as the use of the mother tongue and the language of communication (Ahmad and Shah, 2018), as well as the distance between the country of origin of the international student and the host country (Asari et al., 2011).

Bodycott (2009) found that one of the reasons for a decrease in the international student demand is political influences, such as student visa and immigration policies. The other determinant affecting the educational tourism demand is the lagged dependent variable, which is the demand in the previous year (Rodríguez et al., 2012). The tourism demand model has adopted the lagged dependent variable; however, it still applies less to the educational tourism demand model. Furthermore, Alfattal (2017) compared the determinants of the demand for tertiary education between international students and domestic students and found that there are differences in consumer behaviour towards housing, family incentives, university reputation, faculty and

academics, participation in activities in the university co-curriculum, learning materials and facilities as well as basic financial facilities.

Among the exciting determinants is information on the host country, encouragement and suggestions from family and friends, safety, the cost of living, the travel distance between countries and the reputation and quality of the university (Mazzarol and Soutar, 2002). Binsardi and Ekwulugo (2003) studied the tertiary demand in the United Kingdom from various countries. The research method was a survey to gather information to market higher education services internationally. The respondents were randomly selected, and the study found that the main determinant is the price of higher education products and services. The subsequent determinants are the quality of the university, cultural differences, visa facilities, employment opportunities, related costs, infrastructure facilities and security. Therefore, the researchers concluded that international students choose a university due to its high status and recognised worldwide qualifications.

Chen and Zimitat (2006) studied the behaviour of Taiwanese students who pursue higher education in Western countries, namely Australia or the United States. Based on consumer behaviour theory, students' attitudes and views are the main determinants of their choice of Australia. Meanwhile, the encouragement of family and friends and word-of-mouth are essential determinants of the choice of the United States as a higher education destination. Thus, Cubillo et al. (2006) argued that the determinants that influence the demand of international students are essential to formulate promotional and marketing strategies to export higher education services. Padlee et al. (2010) conducted a study to identify the determinants that influence the demand of international students in Malaysia from various countries, using the survey method. They found that the quality of the university, encouragement and suggestions from family and friends, the needs and focus of students, costs, facilities, culture and location are determinant factors of the international student demand. Recognition of the university quality (QU) is vital because the best image and reputation will positively influence and give students confidence in their university selection (Wilkins and Huisman, 2011).

Hanafiah and Harun (2010) used the gravity model to analyse tourism demand, and Asari et al. (2011) applied the gravity model to form a model of the educational tourism demand in Malaysian public universities. They found that the per capita income and consumer price index did not affect the demand for educational tourism, while distance was negative and more flexible in determining the demand for educational tourism. The distance factor is more important than some other determinants, as it reflects the cost of travel, such as flight tickets, borne by international students. Furthermore, Dahari and Abduh (2011) studied the demand of international students, using survey data. They found that the university programme was the highest-scoring choice, followed by the price or cost of higher education, the university facilities, the qualifications of the academic staff and a conducible environment. Finally, the lowest score was for the scholarship facility.

In contrast to the previous study, Rodríguez et al. (2012) used the panel approach and GMM estimation to study the main determinants that influenced the demand for educational tourism in Spain from 2001 to 2009. The study had two categories of demand determinants: economic terms, such as the cost of living, per capita income, travel costs and non-economic terms, which cover the quality of the university, the programme of study, the level of awareness of the importance of higher education in the country of origin, the language of communication and the lag of dependent variables. They found that the most critical variable is the lag of dependent variables, reflecting the behaviour and perception of international students and the word-of-mouth effect.

Wilkins et al. (2012) used the push-pull model and the exploratory factor analysis (EFA) approach to analyse the determining factor behind international students' choice of UAE public universities. They found that the determinants of rejection are the lack of higher education facilities, the low quality of higher education and the problems of political and economic turmoil and social conflict in the country of origin. Meanwhile, the determinants of attraction are reputation and excellent quality, a high-ranking position, English as an intermediate language, employment opportunities and the

deepening of the host country's new culture. Furthermore, for private universities, the determinants of rejection include disqualification to enter a local university in the home country, and an additional determinant of attraction is the comfort and lifestyle in the host country.

A study by Shan *et al.* (2013) used observational methods. The results showed that the cost of higher education is the primary determinant, while employment opportunities in the host country offer additional support to attract international students to pursue higher education in Malaysia. Similarly, a study conducted by Tsai *et al.* (2017) in Taiwan using a questionnaire method found that scholarship is a strong determinant, followed by the list of programmes offered, the language, the environment, the job opportunities and, finally, the image of the university.

The above studies discussed educational tourism demand from microeconomic theory and, of course, studies of demand factors based on the student's perspectives and directly through questionnaires. The current study's objective is to identify the determining factors of students' decisions in choosing a country, although many previous studies were conducted in the home country. This study will contribute to the theory concerning the determinants of educational tourism demand from aggregate variables. Significantly, the exchange rate, relative prices, competition of one country with another and national higher education information will play an essential role in the flow of educational tourism. Educational tourism, that is, actual in-person study, is irreplaceable because of the COVID-19 pandemic because educational tourism is also related to actual experiences about the culture of education, work and beauty of a country.

3. Methodology

3.1 Development of the educational tourism demand model

The development of the educational tourism demand model was motivated by standard classical theory and consumer behaviour theory such as Marshallian and Hicksian demand theory. Consumer behaviour theory and demand theory are closely related to consumer behaviours towards the demand for products, and there are some constraints (Morley, 1992) that are likely to influence consumer demand.

Assuming that tertiary education is an export product, international students are consumers of the goods offered by the university. International students will make selection decisions between various destinations, universities and countries that can give them high returns. Thus, the selection maximises the utility of international students as consumers of educational tourism. Goods are divided into two models: Qd_A is classified as the quantity demanded of educational tourism goods offered in A destination, while Qd_B refers to the quantity demanded of goods offered in other destinations (competitor destinations). These two preferred destinations are mutually influential, having a positive marginal utility function and price, and they are market-determined by the demand and several other economic variables. Therefore, the utility function of international students is as follows:

$$U(Q) = U(Qd_A, Qd_B) \tag{1}$$

As consumers of higher education goods, international students will rationally choose between Qd_A and Qd_B to maximise their satisfaction or utility with income (Y). Therefore, the Marshallian concept can explain the utility maximisation of international students with available income constraints by the assumption that income constraints are linear, so the income equation is:

$$Y = P_A Qd_A + P_B Qd_B \tag{2}$$

However, the Marshallian and Hicksian demand concepts have different approaches to maximising user utility. Based on the Marshallian demand, to maximise the utility of international students, the maximum satisfaction conditions will be obtained.

$$\frac{P_A}{P_B} = \frac{Qd_B}{Qd_A} \tag{3}$$

Thus, equation (3) can solve for the quantity demanded by destination A and the quantity demanded by destination B as follows:

$$Qd_A = \frac{P_B Qd_B}{P_A}, Qd_B = \frac{P_A Qd_A}{P_B} \tag{4}$$

Equation (4) is substituted into equation (2), and the objective is maximisation for destinations A and B. Thus, the demand for destinations A and B is as follows:

$$Qd_A^m = \frac{Y}{2P_A}, Qd_B^m = \frac{Y}{2P_B} \tag{5}$$

Equation (5) shows that, by taking into account the income constraint (Y), the optimal quantity can be formed based on the function of the Marshallian demand for educational tourism as follows:

$$Qd_A^m = f(P_A, P_B, Y) \tag{6}$$

$$Qd_B^m = f(P_A, P_B, Y) \tag{7}$$

Next, based on the Hicksian demand, to maximise the utility of international students in equation (5), with the income constraint in equations (6 and 7) and taking into account the number of utilities (U), the optimal quantity formed based on the Hicksian demand function of educational tourism is as follows:

$$Qd_A^h = f(P_A, P_B, U) \tag{8}$$

$$Qd_B^h = f(P_A, P_B, U) \tag{9}$$

The Marshallian demand maximises utilities with income constraints, and the function of the demand is formed based on the price of educational tourism in destination A, the price of educational tourism in destination B (competitor destination) and the income. Meanwhile, the Hicksian demand is obtained by minimising spending with utility constraints. The Hicksian demand function is formed based on the price of education tourism in destination A and destination B (competitor destination) and utilities.

In general, both functions state that when the price of a product or service increases, the quantity demanded will fall, and vice versa, ceteris paribus. Two effects will arise when international students make selection decisions on educational tourism products and services, namely, the impact of substitution and income. Unfortunately, the Hicksian demand function only considers the effect of substitution compared with the Marshallian demand function, which considers the total effect of the substitution and the effect of income in determining the demand of international students.

Additionally, referring to the Marshallian demand function, the elasticity of demand from each variable affecting the demand will be obtained after estimating the demand model. This clearly shows that the Marshallian demand function is more stable for use as the basis for the educational tourism demand model; the Marshallian demand function is more practical and more realistic than the Hicksian demand function because it takes into account the variables that affect consumer behaviour and the demand for a product and the overall effect (substitution and income).

Thus, equations (6) and (7) form the basis for constructing the educational tourism demand model. These equations can be rewritten as a function of the educational tourism demand in Malaysia as a host country for international students as follows:

$$EDUT = f(GDPPC, PMYS, PCHN, PJPN, PNZL) \tag{10}$$

where EDUT is the demand for educational tourism in the host country, GDPPC is the per capita income for the country of origin of international students, PMYS is the price of educational tourism in the host country, PCHN is the price of educational tourism in China, PJPN is the price of educational tourism in Japan and PNZL is the price of educational tourism in New Zealand.

Apart from the primary variables that affect the demand, namely, the price of goods, the price of competitors' goods and income, several other variables also affect the demand, specifically the lag of dependent variables and the quality of products and services. The dependent variable lag refers to the previous year's demand, which is assumed to influence the current year's demand. The lag of dependent variables has been discussed more frequently in tourism demand studies (Habibi and Abbasinejad, 2011) than in educational tourism studies, except for one study conducted by Rodríguez et al. (2012), who studied the role of these variables in the analysis of educational tourism demand.

However, the lag of dependent variables also reflects the perceptions, suggestions, incentives and information disseminated and shared by users who have experienced the use of the goods to encourage and influence other users' choices. The role of suggestion and encouragement may also come from the family and friends of the users themselves. Several studies have examined the demand for educational tourism and the suggestions and encouragement of family and friends in influencing international students' choices of higher education destinations (Ahmad and Shah, 2018; Padlee et al., 2010).

At the same time, from the technical point of view of modelling the demand for educational tourism, the lag of the dependent variable refers to the lag of the demand for educational tourism, which indicates the demand for educational tourism in the previous year ($EDUT_{t-1}$). Thus, using these variables, the current study was able to analyse the dynamic effects to determine whether educational tourism in Malaysia is at the right level regarding the quality of delivery. Meanwhile, the quality variables of educational tourism products and services were added to the educational tourism demand model. Because a university offers educational tourism products and services in the host country, in terms of the QU in Malaysia, the study identified two indicators to take into account: the number of accredited higher education programmes (Malaysian Qualifications Agency, MQA) and world-class university rankings (Quacquarelli Symonds World University Rankings, QSW).

$$EDUT = f(EDUT_{t-1}, GDPPC, PMYS, PCHN, PJPN, PNZL, QU) \qquad (11)$$

Therefore, based on consumer behaviour theory and Marshallian demand theory, the model can show that international students will choose a destination to pursue higher education based on three fundamental variables: the education tourism price in the host country destination, the education tourism price in the competitor country destination and the income level. The other two additional variables are the dependent variable lag, which refers to the demand of international students in the previous year, and the quality of the university in the destination country (Malaysia).

3.2 Data sources and data selection

Our data sources are the following: for international student enrolment, the annual report of the Ministry of Higher Education Malaysia; for GDP per capita and consumer price index, the World Bank; and for currency exchange rate, the Quandl data centre (Quandl, 2018). The number of accredited study programmes is from the annual report of the Malaysian Qualifications Agency from the year 2008–2017. The global university ranking report is from the Quacquarelli Symonds World University Rankings (QSW) report (Quacquarelli Symonds World University Rankings, 2018; UniversityRanking.ch, 2018). A total of 47 countries that have contributed to the enrolment of international students in public and private universities in Malaysia were selected based on adequate data and the observation period from 2008 to 2017.

3.3 Model specification and analysis

The specifications of the study model were developed based on economic theory and previous studies and modified according to the needs and framework of this study. In this study, dynamic panel methods are used because of the need to consider the time effect of the dependent variable. In addition, each model was analysed with some specific estimation and testing methods

according to the type of dynamic panel methods to select the best model type to address the study objectives.

The educational tourism demand model in the dynamic impact is to study the key determinants that influence international students' choice of Malaysia as the host country. The national selection is based on several economic and non-economic variables. The study used a micro panel data ($i > t$); therefore, the best estimation method to use was the dynamic panel model approach – the generalised method of moments (GMM) estimation (Arellano and Bond, 1991; Blundell and Bond, 1998). Next, there is a lag of dependent variables, indicating the existence of dynamic structural effects, because the changes in educational tourism demand following time changes involve two time periods: the current and the past demand (Law, 2018). Accordingly, the dynamic panel method is better and more accurate for analysing the existence of effects, changes, interactions and dynamic specifications in modelling (Baltagi, 2008; Hsiao, 2003).

Thus, equation (11) can be rewritten empirically based on the dynamic equation as follows:

$$\ln EDUT_{it} = \alpha_0 + \beta_1 \ln EDUT_{it-1} + \beta_2 \ln GDPPC_{it} - \beta_3 \ln PMYS_{it} - \beta_4 \ln PCHN_{it} - \beta_5 \ln PJPN_{it}$$
$$- \beta_6 \ln PNZL_{it} + \beta_7 \ln MQA_{it} + \beta_8 \ln QSW_{it} + \lambda_i + \varepsilon_{it}$$

$$(12)$$

where $i = 1, \ldots N; t = 1, \ldots T; \alpha$ is the bypass parameter; $\beta_1 \ldots \beta_8$ is the coefficient of coefficients for the independent variables; each ε_{it} is an error term; i or λ_i is a country-specific effect; and ε is identical and freely distributed and ignores the time effect to form an equation with the statement Cor $(\lambda_i, EDUT_{it-1}) \neq 0$. However, the estimation of dynamic panel models produces endogeneity problems, and there is still a correlation between the specified variables with differentiation errors. Apart from the problem of endogeneity, a simultaneity bias may also occur between the independent variables. An example of equation (12) is the equation of the dependent variable, $EDUT_{it}$. Further, the equation for the lag of the dependent variable, $EDUT_{it-1}$, is as follows:

$$\ln EDUT_{it-1} = \alpha_0 + \beta_1 \ln EDUT_{it-2} + \beta_2 \ln GDPPC_{it-1} - \beta_3 \ln PMYS_{it-1} - \beta_4 \ln PCHN_{it-1}$$
$$- \beta_5 \ln PJPN_{it-1} - \beta_6 \ln PNZL_{it-1} + \beta_7 \ln MQA_{it-1} + \beta_8 \ln QSW_{it-1} + \lambda_i + \varepsilon_{it} \quad (13)$$

where $i = 1, \ldots N$ and $t = 1, \ldots T$. If we compare equations (12) and (13), finding that $\ln EDUT_{it}$ works to λ_i and $\ln EDUT_{it-1}$ also works to λ_i, then $\ln EDUT_{it-1}$ in the $\ln EDUT_{it}$ equation is correlated with the error term $\mu_{it} = \lambda_i + \varepsilon_{it}$ because country-specific effects are expected to be constant over time t. Therefore, the ordinary least square (OLS) estimation approach is not appropriate because of country-specific effects. The same is true of the pooled ordinary least square (POLS) estimation, which will produce biased and inconsistent results (Aslan *et al.*, 2009) even if ε_{it} does not have serial correlation problems. Estimations using static panel methods also obtain similar results due to the existence of error correlation or endogeneity problems. Therefore, these approaches are not suitable for estimating the model (Baltagi, 2008; Law, 2018).

However, according to Law (2018), the problem can be overcome if the model uses a long-term period, t. Unfortunately, in the study of educational tourism demand and the dynamic impact, t is small – only 10 years. Thus, the next alternative is to use other estimation methods to allow the existence of dynamic effects in the panel model specifications, such as the GMM estimation. There are two GMM estimation types: different GMM (Arellano and Bond, 1991) and system GMM (Blundell and Bond, 1998). Both will be considered in this study.

4. Results and discussion

The GMM estimation method estimates the parameters of the models because the educational tourism demand model in this study is dynamically structured. Thus, to incorporate the dynamic structures, we use the estimation of different and system GMM. Both different GMM and system GMM estimation consist of two stages, one-step and two-step, using both types of estimation,

with two levels aimed to determine the best model choice for modelling the educational tourism demand model and its dynamic impact.

Table 1 shows that an increase of 1% in the international student demand in the previous year will increase the international student demand in the current year by 0.29% in the short term. These results reflect the international students in the previous year having an excellent and satisfying experience as consumers of higher education services, encouraging them to convey and disseminate information and share positive experiences with others as well as influencing others to choose Malaysia as the best educational tourism destination. Chen and Zimitat (2006) and Bodycott (2009) have discussed the word-of-mouth effect, which is authentic and accurate for educational tourism goods in Malaysia. This study supports the view of Rodríguez et al. (2012) that a lag of dependent variables is a major determinant variable compared with the other economic variables.

These findings also show that the average international student from this country is satisfied enough with the educational services provided by universities in Malaysia, to share this view with other international students. The lag effect of educational tourism demand has clarified the habits of international students and amplified the word-of-mouth effect, which can translate the recommendation and encouragement of family and friends, which has been proven by several previous studies (Ahmad and Shah, 2018; Binsardi and Ekwulugo, 2003; Maringe and Carter, 2007; Mazzarol, 1998; Ojo et al., 2016; Rodríguez et al., 2012).

Interestingly, this study contributes to the field of educational tourism studies the new knowledge that lagged dependent variables affect the demand for educational tourism, which has been confirmed by several previous studies about tourism demand (Garín-Muñoz, 2006; Pham et al., 2017). However, Salleh et al. (2010) stated that the relationship and lag effects of dependent variables might be inaccurate due to the use of static panel models instead of dynamic panel models. However, this problem was not encountered in the current study because the dynamic panel model approach was used to justify the existence of dynamic effects in the educational

Variable	Different GMM Two-steps
Table 1 Result for determinants of educational tourism demand	
C	6.0429 (4.4915)***
$\ln EDUT_{t-1}$	0.2907 (48.7564)***
lnGDPPC	0.4910 (3.1733)***
lnPMYS	−1.9288 (−22.2569)***
lnPCHN	1.2891 (14.8071)***
lnPJPN	0.8478 (28.9411)***
lnPNZL	−0.7921 (−4.7482)***
lnMQA	−0.1644 (−33.7473)***
lnQSW	0.1425 (7.4645)***
No. of observation	376
No. of countries	47
No. of instrument	44
Wald χ^2 Prob > χ^2	6572.29 (0.0000)***
Sargan test Prob > χ^2	42.27 (0.1859)
Autocorrelation (AR1) Prob > z)	−3.41 (0.0007)***
Autocorrelation (AR2) Prob > z	1.47 (0.1428)

Note(s): ***, **, * significant at the 1%, 5% and 10% significance levels, respectively; values in parentheses ( ) refer to statistical t-values except for Wald χ^2 test; Sargan test and autocorrelation test are p-values

tourism demand model. Thus, the lag effects of the dependent variables shown here are accurate and valid.

Furthermore, this study found that a 1% increase in per capita income for international students' home country will cause the demand for educational tourism to increase by 0.49% in the short term. In addition, the value of the elasticity of the income demand obtained is between $0 < \beta < 1$; thus, referring to the results on per capita income, we conclude that educational tourism products and services in Malaysia are normal goods.

Therefore, educational tourism has become an essential basic need that will contribute to high-quality human capital and progress for students, the community and the country. The results are in line with the initial assumption of the study that an increase in per capita income in the home country of international students will positively impact the demand for educational tourism in Malaysia. From a different perspective, we find that the positive effect of income on educational tourism demand is in line with the previously shown effect of income on tourism demand (Hanafiah and Harun, 2010; Pham *et al.*, 2017). Thus, we conclude that educational tourism could be a rounded sector and provide vital support for the progress and development of the tourism sector in Malaysia, enabling it to remain competitive and sustainable.

Furthermore, the price of educational tourism reflects the cost of living that international students have to bear when pursuing higher education in Malaysia. Our results show that price harms the demand for goods. Therefore, they are in line with the demand theory in that a 1% increase in the price of educational tourism will cause the demand for educational tourism to decrease by 1.93% in the short term and be more flexible than the budget estimates. Apart from the adverse effects, we also find that the price of educational tourism is elastic. Hence, controlling for inflation's effect on the cost of living, the government should emphasise foreign exchange rates to keep them at a low or medium level, because small changes in the cost of living in Malaysia will produce significant changes that decrease the international student demand. Several previous studies examining the demand of international students through survey study approaches have also stated that the cost of living and higher education fees, as well as prices, are among the issues evaluated by international students when making decisions on higher education (Chen and Zimitat, 2006; Liu *et al.*, 2018; Mazzarol, 1998; Padlee *et al.*, 2010; Shan *et al.*, 2013; Zhang and Dai, 2017).

On a related issue, the price of competing countries has been identified as influencing tourism demand (Hanafiah and Harun, 2010; Salleh *et al.*, 2008), and in this study we find the same issue in the case of educational tourism. Looking at the impact of educational tourism prices in China, Japan and New Zealand as competitors of Malaysia, Table 1 shows that a 1% increase in educational tourism prices in China will cause an increase in the demand for educational tourism in Malaysia of 1.29% in the short term. Similarly, a 1% increase in the price of educational tourism in Japan causes an increase in the demand for educational tourism in Malaysia of 0.85% in the short term. Thus, we conclude that the price of educational tourism in China has positive cross-price elasticity of demand. It is an elastic impact because the coefficient obtained is between $1 < \beta < \infty$.

Meanwhile, the price of educational tourism in Japan has positive cross-price elasticity of demand, and it is an inelastic effect because of the coefficient between $(0 < \beta < 1)$. Furthermore, based on the theory of cross-price elasticity of demand and the impact of substitution on demand for educational tourism in Malaysia, China and Japan are the substitutes for Malaysia. On the other hand, for New Zealand, we found that a 1% increase in the price of educational tourism will cause a decrease in the demand for educational tourism in Malaysia of 0.79%. Therefore, a complementary country to Malaysia is New Zealand. In addition, the price of educational tourism in New Zealand has an inelastic cross-price elasticity of demand because the coefficient obtained is between $0 < \beta < 1$.

Between the substitute and complement effects, the substitute countries in the marketing of educational tourism goods are more important than the complementary countries. Consumers, that is, international students, tend to change their decision and choose a substitute country if the cost of host countries is higher and less competitive, especially for substitute countries that have the effect of an elastic cross-price elasticity of demand. This significant change could affect the

decrease in the demand of international students for educational tourism goods in the host country, and the country will lose the source of export income in terms of higher education services, and the profitability of universities will decline. Thus, these variables are essential to the education tourism sector to identify the weaknesses and strengths of the host country compared with the substitute countries to export higher education goods in the international market.

In terms of QU, two estimation observations have been made. First, we found that the number of accreditations of higher education programmes has a significant negative impact on the demand for educational tourism in Malaysia. An increase of 1% in the number of higher education programmes accredited by the MQA will decrease the demand for educational tourism by 0.16% in the short term. We also found that the university ranking worldwide has a positive and significant impact on the demand for educational tourism in Malaysia. On average, a 1% increase in the world ranking of Malaysian universities will increase the demand for educational tourism by 0.14% in the short term. Therefore, the more universities listed in the world-class assessment rankings, the higher the chance of international students choosing Malaysia as an educational tourism destination.

However, we found that the two types of QU have different relationships with the demand for educational tourism in Malaysia. The relationship between the numbers of accreditations of higher education programmes is harmful because we considered only the number of higher education programmes that qualify for MQA accreditation in public universities, whereas the demand for educational tourism consists of the number of international students in public and private universities. Therefore, the combined number of international students is likely to cause a harmful relationship because the number of international students in public universities used as study data is only about 30%, while it is about 70% of the total number of international students at private universities. We note that QU based on world rankings is the primary benchmark in international students' decision-making process in Malaysia.

This reflects the idea that most international students do not care about the accreditation qualifications of Malaysian public universities as a determinant of educational tourism demand. In addition, based on Mazzarol (1998), there are three stages in the decision-making process regarding higher education destinations. The identification of critical determinants is a process in the second stage, and one of the variables evaluated by international students is the quality of the university in the host country compared with competing countries. Thus, it is evident that, in terms of QU, international students are more concerned about the QU at the world level evaluated by international assessment bodies when making a preliminary comparison of QU, without taking into account the local assessment made by the host country alone.

According to several previous studies using observations and field research on international students at different universities in various countries, the university ranking at the world level is a critical indicator of quality in terms of students' choice of destination (Abubakar et al., 2014; Ahmad and Shah, 2018; Mazzarol, 1998). In this regard, Malaysia needs, in particular, to strengthen its position as the best educational tourism destination at the international level by raising the global ranking of its universities.

Further, the short-term and long-term elasticity values of both models are shown in Table 2. The results indicate that the lag of the demand for educational tourism in both models has a short-term and inelastic effect on the demand for educational tourism. Meanwhile, there is a long-term impact on the demand for educational tourism in Malaysia for the other variables. Overall, we find that, in the long term, all the variables are still relevant and have the same effect on the educational tourism demand and meeting consumer behaviour demand theory. The factors that have a long-term impact on the demand for educational tourism in Malaysia are per capita income; price of educational tourism in Malaysia; price of educational tourism in China, Japan and New Zealand; the number of accreditations of higher education programmes; and the global ranking of universities.

Our results also show that, in the long run, the price of educational tourism in Malaysia, China, Japan and New Zealand has become very elastic compared with the other variables, with elasticity values exceeding 1. These variables need to be given more serious attention; the cost of living, inflation rate and foreign exchange rate in Malaysia should always be kept under reasonable control

Table 2	Short-term and long-term elasticity values for each variable	
Variables	*Short-term elasticity*	*Long-term elasticity*
lnEDUT$_{t-1}$	0.2907	–
lnGDPPC	0.4910	0.6922
lnPMYS	−1.9288	−2.7193
lnPCHN	1.2891	1.8174
lnPJPN	0.8478	1.1953
lnPNZL	−0.7921	−1.1167
lnMQA	−0.1644	−0.2318
lnQSW	0.1425	0.2009

to ensure that the country remains competitive in the international market for higher education. The effects for the other variables are notably different from the short-term effects.

As mentioned, the factors that have a long-term impact on the demand for educational tourism in Malaysia are income; price of educational tourism in Malaysia; price of educational tourism in China, Japan and New Zealand; and number of accreditations of higher education programmes. In the short run, a 1% increase in the per capita income and the price of educational tourism in China and Japan, as well as the world university ranking, will cause an increase in the demand for educational tourism in the long term of 0.69, 1.82, 1.20 and 0.20%, respectively. On the other hand, a 1% increase in the educational tourism price in Malaysia and New Zealand, as well as the number of accreditations of higher education programmes, will result in a decrease in the demand for educational tourism in the long term of 2.72, 1.12 and 0.23%, respectively.

In the long term, the price of educational tourism in Malaysia, China, Japan and New Zealand has become very elastic. Meanwhile, the university ranking is the same as in the short term. These results indicate that in the future, competition in the educational tourism industry will focus on the determining factor: the relative price difference among host countries and the quality of the higher education. Also significant is the difference in real income per capita between home and host country. Economic growth and especially the advance of emerging countries signal a shift for this industry.

Overall, with the estimation results, the current study provides enough evidence to show that the two-step different GMM estimation results are accurate and consistent and the dynamic panel models are robust and adequate for developing educational tourism demand models and dynamic effect models. The independent variables used in models 1 and 2 are the lag of educational tourism demand (word-of-mouth effect), per capita income, educational tourism prices in Malaysia, educational tourism prices in competing countries (China, Japan and New Zealand) and quality of the university (number of accreditation and world university rankings). These are the primary determinant variables of the demand for educational tourism in the short and long run in Malaysia.

In line with these findings, even though higher educational tourism activities have been pioneered by several developed countries, such as Australia, the United Kingdom and the United States, with quality improvement of marketing strategies to attract and increase international student admissions (Mazzarol *et al.*, 2003), Malaysia and other emerging competitors might be able to compete in this industry. It could do so by providing high-quality education combined with exciting learning and life experiences.

5. Conclusion

Previous educational tourism research has almost always been conducted at the level of individual or university unit, rarely at the country level and avoiding the dynamic effect of student behaviour. In this study, we analysed the educational tourism demand at the aggregate level using a dynamic effect model and consciously including the aggregate factor of academic quality as one of the determinants of educational tourism demand.

The results show that there are two critical variables to attract international students in the short term: the lag of educational tourism demand and the quality of the university (reflected by rankings

at the world level). The lag of educational tourism demand is essential because word-of-mouth is a dynamic effect that acts as a free marketing strategy. The international ranking, as indicated by the number of accreditations of higher education programmes, is the main criterion for international students' choice. We also found that international students have a better view and perception of a university if it has successfully entered the top universities in the world, and this situation will affect their decision to study in Malaysia.

Additionally, income per capita influences the demand for educational tourism and is inelastic. Therefore, higher education goods are normal goods for which international students have a significant need. Furthermore, we found that the price of educational tourism is very elastic and affects the demand for educational tourism. In the short term, the demand will decrease significantly if the price of educational tourism increases. However, in the long run, the impact of the demand is far more significant. This is because most international students are from Asia, the Middle East and Africa, where the prices of educational tourism are relevant and will lead to a decline in demand.

With regard to the price of educational tourism of competitors – China, Japan and New Zealand – we found that China and Japan are the substitutes for Malaysia. However, the higher education sectors in China and Japan have achieved world-class status by achieving a top-30 global university ranking, while Malaysia is still far below this level. Therefore, the related agencies need to focus on the advantage of each university to ensure its competitiveness. All the determinants should be considered to promote Malaysia as a regional tertiary education hub and achieve the country's sustainable development.

In the future, educational tourism will grow due to the quality and segmentation of higher education based on the comparative advantages of each country. Educational tourism, as part of service tourism, is reflective of the sustainability of the tourism industry. The results also indicate a multiplier effect and derived demand of domestic goods from international students within the study period and from students' sharing of positive experiences within their home country. Finally, this study was conducted before the onset of the COVID-19 pandemic, and there is a necessity to understand the role of the digitalisation of education and learning at the country level of universities in attracting future international students.

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