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Chin-Hong Puah

PhD (Economics), Associate Professor, Deputy Dean (Postgraduate and Research), Faculty of Economics and Business, University of Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
chpuah@feb.unimas.my

**Fung-Thai Thien**

MSc (Tourism Economics), Research Assistant, Faculty of Economics and Business, University of Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
fungthai87@hotmail.com

**Mohammad Affendy Arip**

PhD (Economics), Senior Lecturer, Dean, Faculty of Economics and Business, University of Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
amaffendy@feb.unimas.my

SINGAPOREAN DEMAND FOR TOURISM IN MALAYSIA

Abstract. Tourism is among the most important service industries in Malaysia. It plays a crucial role in the new economic model, in which the government is increasing its efforts to shift the border of economic activities from a resource-based to a service-based economy. One of Malaysia's major tourist origination countries is Singapore, which accounts for more than half of the annual tourist arrivals in Malaysia. Looking at the significant volume of tourist arrivals from Singapore, this paper investigated the determinants of Singaporean tourism demand in Malaysia from a macroeconomic perspective using quarterly data from 2000Q1 through 2010Q4. The empirical results suggest a long-term cointegration relationship between Singaporean tourist arrivals and specified macroeconomic variables, including real Singaporean income, tourism price, real travel cost, and currency exchange rate between Singapore and Malaysia. In particular, higher real income and stronger currency will induce Singaporeans to visit Malaysia, while higher tourism prices and travel costs will discourage tourists from Singapore. It is difficult to infer specific policy for the tourism industry using foreign real income and exchange rates, however, a detailed microeconomic survey on tourist demand behavior regarding tourism prices and travel costs should be conducted and addressed by the Malaysian tourism action plan.

Keywords: tourism industry; tourism demand; error-correction model; Malaysia; Singapore.

JEL Codes: C32, F20, L83

Чин-Хонг Пуах

PhD (екон.), доцент, заступник декана факультету економіки та бізнесу, Університет Малайзії Саравак, Малайзія

Фунг-Тхай Тхієн

магістр (туризм, екон.), науковий співробітник, Університет Малайзії Саравак, Малайзія

Мохаммад Аффенді Аріп

PhD (екон.), старший викладач, декан факультету економіки та бізнесу, Університет Малайзії Саравак, Малайзія

СІНГАПУРСЬКИЙ ПОПИТ НА ТУРИЗМ У МАЛАЙЗІЇ

Анотація. Туризм є однією із ключових галузей сфери послуг у Малайзії. Він відіграє пріоритетну роль у новій економічній моделі, у рамках якої уряд активізує свої зусилля з переходу від ресурсо орієнтованої до сервісно орієнтованої економічної діяльності. Серед важливих країн туристичної оригінації Малайзії виділяють Сінгапур, на частку якого припадає понад половина щорічних туристських прибуттів у Малайзію. Беручи до уваги значний обсяг туристських прибуттів із Сінгапуру, у цій статті автори досліджували фактори, що визначають сінгапурський туристський попит у Малайзії з макроекономічної точки зору, використовуючи дані, починаючи від першого кварталу 2000 року до четвертого кварталу 2010 року. Результати нашого емпіричного дослідження показали довгостроковий коінтеграційний взаємозв'язок між сінгапурськими туристськими прибуттями й такими макроекономічними змінними, як реальні доходи сінгапурців, ціни на послуги туризму, вартість проїзду, обмінний валютний курс між Сінгапуром і Малайзією. Зокрема нами виявлено, що більш високі реальні доходи й сильна валюта будуть підвищувати попит у сінгапурців відвідати Малайзію, а більш високі ціни на туристичні й транспортні видатки перешкоджатимуть туристам із Сінгапуру. На основі сукупності отриманих даних було запропоновано скласти План дій Малайзії у сфері туризму.

Ключові слова: індустрія туризму; попит у секторі туризму; модель корекції помилок; Малайзія; Сінгапур.

Чин-Хонг Пуах

PhD (екон.), доцент, заступник декана факультета економіки та бізнесу, Університет Малайзії Саравак, Малайзія

Фунг-Тхай Тхієн

магістр (туризм, екон.), науковий співробітник, університет Малайзії Саравак, Малайзія

Мохаммад Аффенді Аріп

PhD (екон.), старший преподаватель, декан факультета економіки та бізнесу, Університет Малайзії Саравак, Малайзія

СІНГАПУРСЬКИЙ СПРОС НА ТУРИЗМ В МАЛАЙЗІЇ

Анотація. Туризм является одной из ключевых отраслей сферы услуг в Малайзии. Он играет приоритетную роль в новой экономической модели, в рамках которой правительство активизирует свои усилия по переходу от ресурсо

ориентированной к сервисно ориентированной экономической деятельности. Среди важных стран туристической оригинации Малайзии выделяет Сингапур, на долю которого приходится более половины ежегодных туристских прибытий в Малайзию. Беря во внимание значительный объем туристов из Сингапура, в этой статье авторы исследовали факторы, определяющие сингапурский спрос на туризм в Малайзии с макроэкономической точки зрения, используя данные, начиная от первого квартала 2000 года до четвертого квартала 2010 года. Эмпирические исследования показали долгосрочную коинтеграционную взаимосвязь между сингапурскими туристскими прибытиями и такими макроэкономическими переменными, как реальные доходы сингапурцев, цены на услуги туризма, стоимость проезда, обменный валютный курс между Сингапуром и Малайзией. В частности, более высокие реальные доходы и сильная валюта будут повышать спрос у сингапурцев посетить Малайзию, а более высокие цены на туристические и транспортные услуги будут препятствовать путешествиям. На основе совокупности полученных данных было предложено составить План действий Малайзии в сфере туризма.

Ключевые слова: индустрия туризма; спрос в секторе туризма; модель коррекции ошибок; Малайзия; Сингапур.

Introduction. From the time it achieved independence in 1957 until the mid-1980s, the Malaysian economy was very much dependent on primary commodities and the manufacturing industry. In the late 1980s, realizing that most national natural resources were being depleted and that the manufacturing sector was sensitive to global economic crises, the government started to shift the border of economic activity to service-based economic activities. The government came to realize that Malaysia owned a specific comparative advantage in the tourism sector. In 1987, the government established the Ministry of Culture, Arts and Tourism – renamed the Ministry of Tourism in 2004 – with the vision of developing Malaysia as a world-class tourist destination. Under this ministry, tourism promotion campaigns were enhanced, which brought Malaysia to the eyes of the world as the host of various international events such as the Langkawi International Maritime and Aerospace Exhibition, the Rainforest World Music Festival, the Borneo International Jazz Festival, to name few.

The active promotion campaigns and tourism activities are noteworthy because, since 1994, the tourism sector has contributed more than 10% of the total gross domestic product (GDP) and employment in Malaysia. In 2013, the tourism sector contributed 16.1% (RM158.2 billion) of Malaysia's GDP, and according to the World Travel and Tourism Council (WTTC, 2014) [1], this is forecasted to increase to 16.4% (RM168.9 billion) in 2014. The total contribution of tourism to employment was 1.86 million jobs in 2013 (14.1% of total employment), and this is expected to increase to approximately 1.95 million jobs (14.5% of total employment) in 2014.

Under the Economic Transformation Programme (ETP), the tourism industry has been identified as one of the 12 National Key Economic Areas (NKEAs) that function as key engines of economic growth. The tourism industry in Malaysia is ranked in the top 10 in the world for both most visited country and tourist arrivals and ranked in the top 15 in global receipts (PEMANDU, 2010) [2]. Given the critical role of the tourism industry in the future development of the Malaysian economy, it is vital to study the factors that affect tourism demand in Malaysia.

In this regard, it is pertinent to pay attention to the major source of tourist arrivals in the country. One of the major tourist origination countries for Malaysia is Singapore, which contributes more than half of annual tourist arrivals. Singaporean tourism in Malaysia has recorded an average annual growth of 10.2% since 2000. In 2004, tourism from Singapore contributed 60.6% of tourist arrivals in Malaysia. As illustrated in Table 1, Singaporean tourist arrivals have continuously increased, except in 2003 due to the outbreak of severe acute respiratory syndrome (SARS).

Brief Literature Review. Studies that have used tourist arrivals as a measure of tourism demand includes those of Dritsakis (2004) [4], Garin-Munoz and Montero-Martin (2007) [5], Ouerfelli (2008) [6], and Habibi et al. (2009) [7]. [4] examined the German and British tourism demand for Greece with the explanatory variables of income, tourism price, transportation cost, and exchange rate. He discovered a long-term relationship among the specified explanatory variables for tourism demand for both countries. He further reported that income levels of the tourist-generating country are significant and elastic for tourists from both Germany

and the UK. An elastic coefficient of income also was found in other tourism demand studies, including Botti et al. (2007) [8], Brida et al. (2008) [9], and [6] for the cases of France, Mexico, and Tunisia, respectively. The finding of an elastic income coefficient suggests that tourism is a luxury good for tourists, as demand increases more than proportionally to changes in income.

On the other hand, [5] stated that a price variable should be selected with caution in tourism demand studies because for tourism activity, price constitutes several components. Most studies have relied on tourism price, or relative price, which measures a tourist's cost of living at the destination [7; 10; 11; 12]. The cost of living includes the prices of goods and services consumed by the tourist at the destination.

Another price variable that has often been used as an explanatory variable for tourism demand is travel cost or transportation cost [5; 13; 14]. This price variable measures the cost of traveling from the tourist origination country to the destination and represents a significant part of the total cost of the trip. For example, [4] and [14] used airfare to measure travel cost in their studies. However, as pointed out by [10], it is difficult to determine the exact flights of tourists abroad and thus to know the airfares they paid. Therefore, [10] suggested using the price of crude oil as the proxy for travel cost. This travel cost proxy was also used in studies by [5; 11; 12; 13].

Exchange rate has proven to be an important explanatory variable for tourism demand in studies [4; 6; 10; 11]. The appreciation of currency indicates that the currency of the tourist-generating country has strengthened. Currency appreciation will encourage more tourists to travel because their currency can be exchanged for more currency at the tourism destination, which means that tourists are wealthier and able to purchase more goods and services in the tourism destination.

In the case of war or terrorism, such as the Gulf War or terrorist attacks, tourists around the globe will cancel or delay their travel plans because they fear for their safety. Similar reasoning applies to the outbreak of diseases such as SARS and Avian flu; tourists will resist traveling to disease-affected countries. For example, the terrorist attacks of September 2001 revealed a significant disruption in tourism demand [5; 13; 15]. Meanwhile, the SARS outbreak also negatively affected tourist flows [7; 10; 11].

Purpose. This study aims to determine the factors that attract Singaporean tourist inflows into Malaysia from a macroeconomics perspective.

Tab. 1: Information of Singaporean Tourist in Malaysia, 2000-2011

Year	Tourist Arrival (Person)	Market Share (Percentage)	Annual Growth (Percentage)
2000	5,420,200	53.0	10.6
2001	6,951,594	54.4	28.3
2002	7,547,761	56.8	8.6
2003	5,922,306	56.0	-21.5
2004	9,520,306	60.6	60.8
2005	9,634,506	58.6	1.2
2006	9,656,251	55.0	0.2
2007	10,492,692	50.0	8.7
2008	11,003,492	50.0	4.9
2009	12,733,082	53.9	15.7
2010	13,042,004	53.1	2.4
2011	13,372,647	54.1	2.5

Source: Tourism of Malaysia [3]

Model, Data & Methodology. According to [15], classical economics theory hypothesizes that income and price-type factors play significant roles in determining the demand for international tourism. Following the work of [4], this study analyzed the Singaporean demand for Malaysia tourism using the following function:

$$TA = F(Y, TP, TC, ER) , \tag{1}$$

where TA represents Singaporean tourist arrivals in Malaysia; Y is the real income of Singaporeans; TP is the tourism price; TC is the real travel cost; and ER is the exchange rate between Singapore and Malaysia.

Singaporean real income was expected to have a positive relationship with tourism demand such that an increase in the real income level would increase the inflow of tourists arriving in Malaysia and a decrease in the real income level would reduce the inflow of Singaporean tourists to Malaysia. Singaporean real income was proxied by Singapore GDP deflated by its consumer price index (CPI).

Both price-type factors (tourism price and travel cost) were expected to have a negative relationship with tourist arrivals in Malaysia; an increase in any of the price factors would decrease the number of Singaporean visitors to Malaysia because the cost of their trip would increase. Tourism price was computed by dividing the CPI of Malaysia by the CPI of Singapore [10; 11] while travel cost was calculated by deflating the crude oil price with the CPI of the US.

Exchange rate was hypothesized to have a positive impact on tourist inflow such that appreciation of the Singapore dollar increases the number of tourists visiting Malaysia because the cost is relatively cheaper than before appreciation of the Singapore currency. In contrast, depreciation of the Singapore dollar decreases the number of tourists visiting Malaysia due to an increase in costs created by the depreciation. The exchange rate used in this study was the ratio of currency between Malaysia and Singapore.

The empirical model tested in this study can be expressed as follows:

$$LTA_t = \beta_0 + \beta_1LY_t + \beta_2LTP_t + \beta_3LTC_t + \beta_4LER_t + \varepsilon_t , \tag{2}$$

where LTA represents the logarithm of Singaporean tourist arrival; LY refers to the logarithm of real income of Singaporean tourist; LTP is the logarithm of tourism price between Malaysia and Singapore; LTC denotes the logarithm of real travel cost; LER stands for the logarithm of exchange rate between Malaysia and Singapore and lastly; ε_t is the error term.

Data for tourist arrivals were obtained from Tourism Malaysia, while the data used to compute Singaporean real income, tourism price, and exchange rate were compiled from International Financial Statistics (IFS) published by the International Monetary Fund (IMF) [16]. Real travel cost was calculated by deflating the crude oil price obtained from the Global Economic Monitor published by the World Bank [17] with the CPI of the US. All variables were transformed into natural logarithm form before any estimation was conducted. The period of study covered 2000Q1 through 2010Q4, and the study employed quarterly data.

In the first step of empirical testing procedures, the time series properties of the variables were determined by implementing unit root tests of Augmented Dickey-Fuller (ADF) [18; 19] and Philips-Perron (PP) [20]. Once the time series properties of variables were determined, the next step was to test for long-term relationships among the variables using the Johansen and Juselius multivariate co-integration test [21]. After establishing the long-term co-integrating relationship, we used the error-correction model (ECM) to investigate the interaction between the variables and to examine the speed of adjustment of the dependent variable back to equilibrium when there were changes in the independent variables. A short-term Granger causality test result was obtained from ECM in the next step and, last, a series of diagnostic tests was conducted to check the robustness of the model.

Results & Discussion. To obtain robust results of the time series properties of variables, this study employed two unit root tests – the ADF and PP unit root tests.¹ We cannot reject the null hypothesis of non-stationary at the level, but the data appear to be stationary after first differencing, indicating all the variables under study reflect an integrated order of one, or I(1). After learning that the variables were in I(1) process, the Johansen and Juselius multivariate co-integration test was used to determine the number of co-integrating vector(s) in the model. Table 2 shows that the null hypothesis of zero cointegration ($r = 0$) was rejected by both maximum eigenvalue and trace statistics at a 5% level of significance. Nevertheless, the null hypothesis of at most one co-integrating vector cannot be rejected. Therefore, a single co-integrating vector exists in the model, and subsequently, we presumed a long-term equilibrium relationship among the variables in the model.

Tab. 2: Johansen and Juselius Cointegration Test Results

H ₀	H ₁	Λ_{max}	Λ_{trace}
Variables: LTA, LY, LTP, LTC, LER			
$r = 0$	$r = 1$	35.509**	72.167**
$r \leq 1$	$r = 2$	20.180	36.658
$r \leq 2$	$r = 3$	12.356	16.478
$r \leq 3$	$r = 4$	4.088	4.122
$r \leq 4$	$r = 5$	0.033	0.033

Notes: r is the number of cointegrating vectors. Asterisk (**) indicates significant at 5% level. The optimal lag length for the VAR model is three, which was selected based on Schwert (1987) [22] criteria.

Source: Authors' own estimation

Since a long-term equilibrium relationship was found in the cointegration test, we proceeded to normalize the obtained co-integrating vector with respect to the dependent variable (LTA) to acquire the long-term estimates for the independent variables. Results estimated from the vector error correction estimates can be written as follows:

$$LTA = - 2.22 + 2.16LY - 2.51LTP - 0.42LTC + 3.72LER$$

(4.15) (-1.78) (-3.79) (7.48)

Figures reported in parentheses are the t-statistics, which indicate that all the estimated coefficients are statistically significant at the 10% level. All signs in the estimated equation are plausible and in line with past literature.

From the normalized equation, a 1% increase in Singaporeans' real income will increase their arrival in Malaysia by 2.16%. This suggests that tourism in Malaysia can be considered as a luxury good to the Singaporean tourists. On the other hand, a 1% increase in tourism price will decrease Singaporean tourist arrivals by 2.51%. Thus, every price increase in tourism products and services in Malaysia will reduce Singaporean tourist inflows.

Travel cost and Singaporean tourist arrival in Malaysia have a negative relationship, where a 1% increase in travel cost will result in a 0.42% decrease in tourist arrival. If travel cost increases, the trip to Malaysia will be more expensive, and this will discourage Singaporean tourists from visiting Malaysia.

Finally, from the normalized equation, a 1% percent increase in the exchange rate will lead to a 3.72% increase in tourist arrivals. When the Singapore dollar appreciates, Singaporeans perceive that they are wealthier as more units of Ringgit Malaysia can be exchanged for a unit of the Singapore dollar. Hence, an increased number of Singaporean tourists will travel to Malaysia, because the products and services there are relatively cheaper. This is known as the wealth effect.

Table 3 summarizes the estimation of ECM for Singaporean tourism demand in Malaysia. Diagnostic test results imply that the model is satisfactory in terms of goodness-of-fit. The estimated residuals are normally distributed with constant variances, free from serial correlation and well specified. Moreover, the model is stable within the period of study, as

¹ To conserve space, the unit root tests results are not reported here, but the results are available from the authors upon request.

Tab. 3: Estimation of Error-Correction Model

Variables	Coefficients	Std. Errors	t-statistics	p-values
Constant	0.036	0.018	1.937	0.064
ΔLTA_{t-1}	0.153	0.156	0.982	0.335
ΔLTA_{t-2}	0.055	0.141	0.391	0.699
ΔLY_{t-1}	-0.432	0.832	-0.519	0.608
ΔLY_{t-2}	-0.355	0.612	-0.579	0.567
ΔLTP_{t-1}	4.018	2.170	1.851	0.076
ΔLTP_{t-2}	1.041	2.369	0.439	0.664
ΔLTC_{t-1}	0.239	0.122	1.947	0.063
ΔLTC_{t-2}	-0.021	0.109	-0.200	0.842
ΔLER_{t-1}	-2.555	1.029	-2.483	0.020
ΔLER_{t-2}	-0.490	1.085	-0.451	0.655
Dum2003Q2	-0.530	0.102	-5.162	0.000
ECT(-1)	-0.885	0.175	-5.061	0.000
Diagnostic Tests:				
R^2	0.734		ARCH[1]	0.413 [0.520]
\bar{R}^2	0.602		HETERO	29.530 [0.163]
JB	2.326 [0.312]		RESET[1]	1.612 [0.204]
AR[4]	3.412 [0.490]			

Notes: JB is the Jarque-Bera statistic for testing normality. AR[4] and ARCH[1] are the Lagrange Multiplier tests for 4th order serial correlation and ARCH effects, respectively. HETERO and RESET refer to the White Heteroscedasticity test and Ramsey RESET specification test.

Source: Authors' own estimation

indicated by the CUSUM and CUSUM of squares stability tests (see Figure 1 and Figure 2).

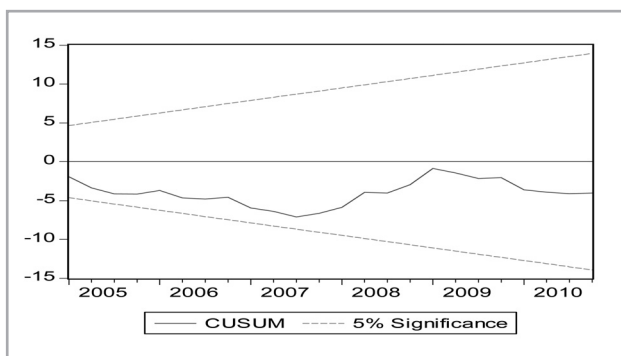


Fig. 1: CUSUM Stability Test Result

Source: Authors' own estimation

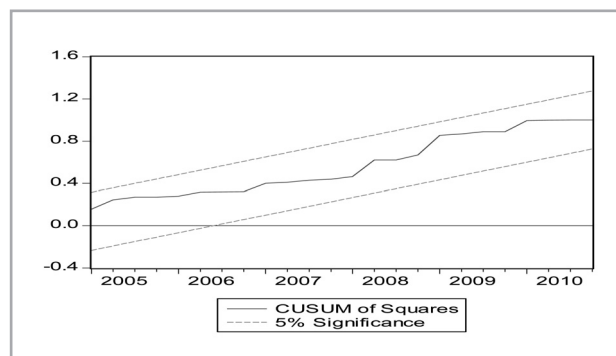


Fig. 2: CUSUM of Squares Stability Test Result

Source: Authors' own estimation

The estimated coefficient of error-correction term (ECT) has the correct negative sign and is statistically significant, and thus reemphasizes that the variables in the system are cointegrated in the long term [23]. The ECT value of -0.885 implies that about 88.5% of short-term deviations in tourism demand will be adjusted on a quarterly basis toward the long-term equilibrium state. This provides evidence that tourism demand adjusts rapidly to correct any disequilibrium among the variables in the system.²

Table 4 reports the short-term causality test results from the ECM. The F-test of overall significance in the Wald test context

Tab. 4: Short-run Granger Causality Test Results

Null Hypothesis	F-statistic of Wald Test [p-value]
$\sum_{i=1}^2 \Delta LTA_{t-i}$	0.491 [0.617]
$\sum_{i=1}^2 \Delta LY_{t-i}$	0.257 [0.775]
$\sum_{i=1}^2 \Delta LTP_{t-i}$	2.025 [0.153]
$\sum_{i=1}^2 \Delta LTC_{t-i}$	1.997 [0.157]
$\sum_{i=1}^2 \Delta LER_{t-i}$	3.207 [0.058]*

Source: Authors' own estimation

² A dummy variable (Dum2003Q2) was included in the ECM to capture the impact of the SARS outbreak.

was used to determine the joint significance of the sum of the lags of each independent variable in first difference form [24]. The results imply that the null hypothesis of no causal relationship was only rejected for the case of exchange rate at a 10% level of significance. This means that exchange rate, but not other explanatory variables, can influence tourism demand in the short term. This finding is deemed to be rational as tourists are more sensitive to exchange rate changes in the short term. On the other hand, tourists will need a longer time span to respond to the adjustment in income, tourism price, and travel cost.

Summary & Conclusion. In the study we have examined the determinants of Singaporean tourism demand in Malaysia from a macroeconomic perspective. The explanatory variables used in the estimation included Singaporean real income, tourism price,

real travel cost, and exchange rate between Singapore and Malaysia. The empirical findings demonstrate that Singaporean tourism demand is elastic with respect to changes in Singaporean real income, tourism price, and exchange rate. Growth in real income and appreciation of the Singapore dollar will induce more Singaporean tourists to travel to Malaysia. However, an increase in tourism price will reduce the number of Singaporean visitors arriving in Malaysia. This is in line with the conventional theory of income and price regarding demand. As for real travel cost, our findings indicate that travel cost is inelastic because Malaysia and Singapore are in close geographic proximity; tourists can travel to Malaysia using their own transportation, which is relatively cheaper than airfare. Hence, Singaporean tourists are less responsive to changes in real travel cost because they have an alternative to airline service. The ECM results reinforce that a long-term stable equilibrium exists among the variables in the model. Any short-term deviation will be adjusted quickly toward long-term equilibrium. Besides, the Granger causality test results from ECM show that changes in past values of the exchange rate can be used to predict future movements of Singaporean tourists.

Since Singaporean tourists are sensitive to income and price factors, a strategic pricing policy is needed so as to adjust the relative price of tourism products in Malaysia due to changes in real income in Singapore. Looking at the portion of tourist arrivals from Singapore to Malaysia, pricing strategy based on Singaporean tourism demand can be used as a benchmark for tourism products in Malaysia. Nevertheless, a microeconomic survey is needed to determine the type of Singaporean tourist (e.g., recreational, visiting relative, shop-

ping, medical) and Singaporean tourist spending behavior prior to establishing any pricing strategy. This information will be useful for tourism service providers in segmenting their tourism product for different groups of customers.

The success, however, very much depends on the availability of goods and convincing shoppers that these goods are more attractive in terms of factors such as value for money, quality, and selection. Since Singaporean tourists prefer to use their own vehicle to travel in Malaysia, the role of government-related agencies in improving service efficiency (e.g., eliminating serious obstacles and troublesome custom clearance and immigration procedures) would boost the tourism industry in Malaysia. Furthermore, Malaysia could also enjoy the benefits of foreign tourists who come to Singapore for tourism or business activities.

In brief, the tourism sector in Malaysia has been one of the major contributors to the country's economy, and this contribution is expected to extend into the future. As pointed out by WTTC, the tourism industry has a wide impact on an economy through its direct and indirect or induced contributions. Therefore, it is important to study the determinants of tourism demand in Malaysia. To optimize the benefit of tourists from Singapore, further analysis at the micro level is indeed important. Future researches may address the various purposes for Singaporeans' visits to Malaysia and explore the characteristic of tourists who visit Singapore and use Singapore as a hub from which to enter Malaysia.

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