The Determinants of Malaysian Tourism Revenue: Pre and Post Impact of Visit Malaysia Year 2007 and Global Recession 2008

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Tourism industry has been considerably emerged to be one of the prominent sectors to the growth of national as well as regional economic status especially for developing countries like Malaysia. The campaign 'Visit Malaysia Year (VMY) 2007' was an encouraging move to promote tourism in different states of West and East Malaysia and the scheme was extended up to August 2008. However, the outcome of VMY 2007 might be influenced by Global recession 2008 and therefore, an attempt is made in the present article to study the pre and post impact of VMY 2007 on Malaysia Tourism revenue. In addition, focus is made on the dynamic relationship between the macroeconomic factors and tourism revenue from January 2002 to December 2010 in Malaysia. Further, the pre and post impact of VMY 2007 and Global recession 2008 on the macroeconomic factors influencing the five top tourist-generating countries into Malaysia are studied.

Keywords: VMY 2007; global recession 2008; ARIMA, models; Malaysia, tourism revenue

Introduction

According to World Tourism Organization (2008), international tourism can be defined as an activity of visitors who make temporary visits across international borders and remains for more than 24 hours. The purpose of visit may be visiting relatives and friends; leisure, business meeting or conventions, education, healthcare and sports. Gaynor and Kirkpatrick (1994), in 2008, international tourist arrivals reached 924 million, up 16 million over 2007, representing a growth of 2%. As a result of the extremely volatile world economy on financial crisis, commodity and oil price rises, sharps exchange rate fluctuations. Akal, M. (2004), tourism demand slowed down significantly over the years. Morley, Clive (2009), the last six months of 2008, in particular, showed an abrupt shift in trends, with international tourist arrivals either flat or showing negative growth. After the economic crisis and the swine flu pandemic produced one of the most difficult years, for the sector in 2009, global tourism is set to rebound in coming years stated by Athanasopoulos, and Hyndman (2008).

Hanke and Wichern (2008) stated Malaysia has some of the most attractive holiday destinations in the world. Local and foreign tourists have contributed significantly to the development of tourism and this sector is the major contributor to the nation's economy. Witt and Witt (1995), the tourism industry in Malaysia is an important foreign exchange earner, contributing to economic growth, attracting investments and providing employment. Lee, Song and Mjelde (2008), the focus of the government is to enhance the country's position as a leading foreign tourist destination, while promoting domestic tourism. Kulendran, and King (1997) stated that opportunities are plenty for entrepreneurs, business owners and investors who support the government's direction. The Ministry of Tourism will take the lead in developing the industry. Li, Gang, Song, and Witt (2005) stated Malaysian Tourism Centre and Virtual Malaysia will, through a collaborative effort, market and promote the country's diverse tourism products and services locally and abroad.

Tourism Demand in Malaysia

Tourism is one of the major contributing sectors for Malaysia's economic growth for over several years. The number of international tourist arrivals to Malaysia showing an upward trend and this has been supported by the country's political stability, besides

several programs and packages introduced by the Malaysian government to encourage international tourists visit to Malaysia. Malaysia recorded 24.6 million tourist arrivals in 2010, higher than the 23.6 million arrivals in 2009 and 220 million arrivals in 2008 as compared to 20.9 million arrivals in 2007. The top 5 tourist-generating markets for Malaysia last year were Singapore, Indonesia, Thailand, Brunei, and China. According to Bonham, Gangnes, and Zhau, (2008), the Malaysian tourism industry will continue to grow rapidly in coming years on the back of increasing promotional activities by the government and growing reputation of the country as a shopping hub. According to a research report by RNCOS, "Opportunities in Malaysian Tourism Industry (2007-2009)", Malaysian tourism industry continues to grow rapidly, where:

i.   Singapore, Thailand and Indonesia are important sources of visitors for Malaysia. Beyond ASEAN, tourist arrivals from China and India will remain an important influence throughout the forecast period (2008-2012).

ii. The promotion of Education Tourism will continue to be expanded to expedite the development of Malaysia as a preferred destination for international students. The projected foreign exchange earnings from this potential source of growth are estimated at RM 900 Million by 2010.

iii. It is expected that expenditure by international tourists in Malaysia will increase at a Compound Annual Growth Rate (CAGR) of 6.63% during the forecasted period.

iv. Increasing disposable income in Malaysia will open the opportunities for both outbound and domestic tourism.

According to the latest RNCOS report, Malaysian Tourism Industry Forecast to 2012, international tourist arrivals in Malaysia will grow at a CAGR of around 9% during 2009-2012, and tourism receipts from overseas tourists are expected to rise at a CAGR of around 10% to RM 70 Billion (US$ 19.6 Billion) in the same period. This study conducted with the motivation to identify the impact of Visit Malaysia Year 2007 (VMY 2007) campaign contributions in attracting visiting countries to Malaysia, further investigated the pre and post differences of global recessions in the year 2008. The interaction between VMY 2007 and global recessions is also of interest. In addition, the change of Malaysia Tourism revenue has been studied from the macroeconomic indicators perspective.

Literature Review

Visit Malaysia Year Campaign

The Visit Malaysia Year (VMY) 2007 campaign was launched on 31st December 2005. The VMY 2007 campaign is held in conjunction with the golden jubilee of the nation's independence. Shareef and M. McAleer (2007), this campaign prioritized and designed to make Malaysia a top-of-mind destination; this year long campaign comprises various promotions and marketing strategies. Tourists were being prompted to plan their visit to Malaysia through information about the country's wealth of holiday destinations and diversity of attraction throughout the year 2006. According to Lee, Song and Mjelde, (2008), the calendar of events, detailing major events in Malaysia and other related activities for VMY 2007 include the installation of the new king in January 2007 and the country's much anticipated 50th Independence Day celebrations in late August 2007. The VMY 2007 campaign was the third following two previous campaigns that were successfully held in 1990 and 1994.

Tourism is one of the powerhouses of many a national economy. However, against the backdrop of confrontation, the sightseeing industry is experiencing global warming, sky-rocketing fuel prices, terrorism and the health concerns of the H1N1 swine flu scare. Malaysia is making gargantuan waves in the industry. Kuo, (2007) stated that the 'Malaysia-Truly Asia' market branding of Malaysia has given birth to an immense brand awareness to attract tourists in large number to fulfil their expectations. Dharmaratne, (1995), statistics speak loud than words whereby in year 1999 Malaysia had eight million tourists annually but barely eight years later, in 2008, 22.05 million tourist set foot in Malaysia. The proceeds generated from tourism moved from RM12 billion (US43.16 billion) in 1999 to RM49.56 billion (US$13 billion) receipts in 2008. The Visit Malaysia 2007 campaign and a series of high-profile events celebrating the 50th anniversary of independence held throughout the year saw Malaysia welcome some 20.97 million tourists in 2007. This was a very strong performance, representing an increase of 19.5% year on year (y-o-y) and just beating our own expectations for the year. The total tourism receipts for this special promotion year 2007 stood at RM46.1 billion according to Malaysia Tourism.

Global Recession 2008

Salleh, Othman and Ramachandran (2007) remarked that the economic recession is a business cycle contraction and a general slowdown process in economic activities. During recessions, many macroeconomic indicators vary in a similar way. Lim

and McAleer (2002) stated that production is measured by gross domestic product (GDP), employment, investment spending, capacity utilization, household incomes, business profits, and inflation all fall, while bankruptcies and the unemployment rate rise. Cortes, Ramesh and Manuela (2009) stated that recessions are generally occur when there is a widespread drop in spending, often following an adverse supply shock or the bursting of an economic bubble. Governments usually respond to recessions by adopting expansionary macroeconomic policies, such as increasing money supply, increasing government spending and decreasing taxation. Cho, (2001), a recession has many attributes that can occur simultaneously and includes declines in component measures of economic activity (GDP) such as consumption, investment, government spending, and net export activity. These summary measures reflect underlying drivers such as employment levels and skills, household savings rates, corporate investment decisions, interest rates, demographics, and government policies.

Song and Li, (2008), as anticipated, the year 2007 was a challenging year for many Malaysian manufacturers and also certain sectors such as technology in particular. Lean, Tang (2010), escalating fuel costs, a weakening US dollar (USD) and volatile commodity prices all exerted downward pressure on the overall credit quality of many sub-sectors of the domestic manufacturing and services industries. Nonetheless, not all was doom and gloom - plantations as well as oil and gas enjoyed another bumper year amid rising prices for crude palm oil (CPO) and crude oil price (COP). According to Chu, (2008), despite fears of a global economic slowdown led by the United States (US) due to the sub-prime credit debacle and inflationary pressures, consumer sentiment as reflected by private consumption was relatively robust in the year 2007 (KLCI Report, 2009).

ARIMA Model

According to Percival, Donald and Andrew, (1993), the acronym ARIMA stands for "Auto-Regressive Integrated Moving Average." According to Mills and Terence (1990), lags of the differenced series appearing in the forecasting equation are called "auto-regressive" terms, lags of the forecast errors are called "moving average" terms, and a time series which needs to be differenced to be made stationary is said to be an "integrated" version of a stationary series. Random-walk and random-trend models, autoregressive models, and exponential smoothing models (i.e., exponential weighted moving averages) are all special cases of ARIMA models. Referring to Box, Jenkins, and Reinsel, (1994), an ARIMA model does not have a priori for forecasting model before model identification takes place. ARIMA helps us to choose a 'right model' to best fit of the time series as given below:
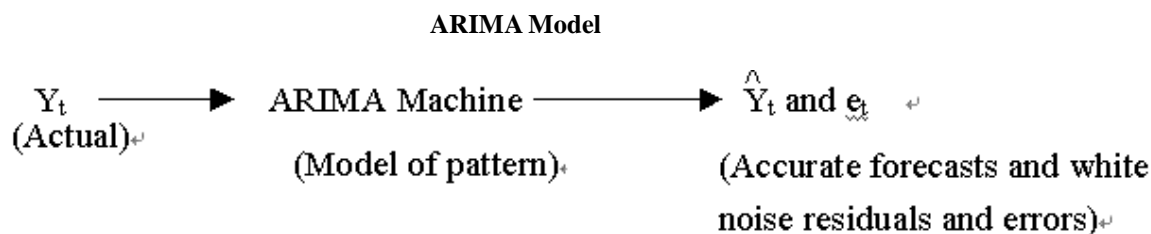
ARIMA Model

Morley, Clive (2009), a non-seasonal ARIMA model is classified as an 'ARIMA (p,d,q)' model, where:
- **p** is the number of autoregressive terms,
- **d** is the number of non-seasonal differences, and
- **q** is the number of lagged forecast errors in the prediction equation.

Cook (2006) suggested to identify the appropriate ARIMA model for a time series, we begin by identifying the order(s) of differencing needing to stationarize the series and remove the gross features of seasonality, perhaps in conjunction with a variance-stabilizing transformation such as logging or deflating. According to Jose, Delluer, Yevjerich and Lane (1980), an approach to the estimation of the parameters follow the heuristic justification of the multiplicative models. An ARMA (p,q) model would be fitted to each season after D seasonal differencing. These model would be averaged across the seasons to obtain the ARIMA (p,d,q) model.

Finally, the residuals of this model would be fitted by an ARIMA (p,d,q)(p,d,q) model.

Research Methodology

This study includes the monthly time series data from Jan'02 to Dec'10 and the data is on the average monthly international tourism arrivals, tourism revenue and macroeconomic indicators. The details on the macroeconomic indicators of Malaysia were provided by the Malaysian Department of Statistics, Bursa Malaysia, Ministry of internal trade, corporation and consumers and National Petroleum reports while the tourism data were collected from the Malaysia Tourism research unit. In the present article, the impact of eight factors including six macroeconomic factors, Visit Malaysia Year 2007 (VMY 2007) and Global Recession 2008 (GR 2008) on the Malaysia tourism revenue (RM million) have been studied. The six macroeconomic factors considered in the study are Inflation Rate (IR), Crude Oil Price (COP), Money Supply (MS), Industrial Production Index (IPI), Kuala Lumpur Composite Index (KLCI) and Exchange Rate (ER). Jayaraman et at., (2010) studied the similar model without considering VMY 2007 and GR 2008, further the earlier study was conducted from January 2002 till Dec 2008. However, the current study emphasises more on the tourism campaign conducted by Malaysia government as their marketing promotional tool and the implication of global recession in the year 2008. The objective of this study is to test the influence of these eight factors on the tourism revenue for Malaysia and also for the revenue generated from top five visiting countries (Singapore, Indonesia, Thailand, Brunei and China) to Malaysia.

The measurements of the factors included in Fig.1 are given as follows:
1. The six economic indicators have been measured on monthly averages.
2. VMY 2007 is assumed as Dummy 1 whereby, the pre VMY 2007 months take value 0 from January 2002 till December 2006 and value 1 for the succeeding period.
3. GR 2008 is assumed as Dummy 2 whereby, the pre GR 2008 months take value 0 from January 2002 till December 2007 and value 1 for the succeeding period.

The international tourist arrivals and receipts into Malaysia for the years from 2002 to 2010 are provided in Appendix. The tourism revenue depends on the international tourist arrivals into Malaysia and the inbound domestic tourism revenue has not been included. The Malaysian tourism revenue is reported by Tourism Research Unit, KL, at the end of every calendar year and since all the indicators are expressed monthly, the yearly revenue is transformed into monthly tourism revenue using the formula:

Tourism revenue for January = (Revenue$_i$ / 12) x Seasonal index for January

where *i=2002, 2003,…,2010,*

In the same way, the revenue for the rest of the months for each year has been computed. Total yearly revenue =$\sum$Revenue$_j$, j=1, 2, 3,…,12

It is known that, the tourism revenue of a country is not directly positively correlated to the tourist arrivals. Hence, in Fig. 1, tourism revenue is considered as a dependent variable rather than tourist arrivals.
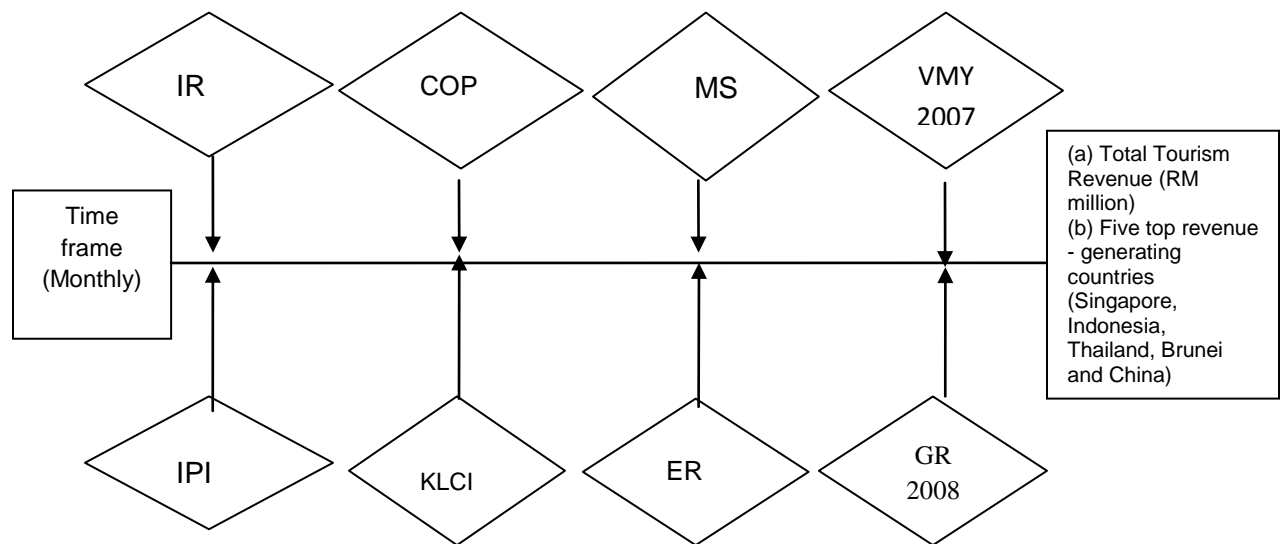

Figure. 1: Research Framework

Findings

Table 1 provides the best time Series Forecasting Model elicited using SPSS 18 version and it indicates that ARIMA Model (0,1,1) is highly statistically significant for the monthly average Malaysia tourism revenue (in RM million) considered from January 2002 to December 2010. The Stationary R-square and R-square values were found to be highly significant. The Ljung-Box test statistic is 13.213, $p > 0.05$ and the mean absolute percentage error (MAPE) converging to 0 (0.967) further implies that the fitted ARIMA model with the specified parameters is well suited for the data. Hence, the overall tourism revenue could be described by ARIMA model and is useful in predicting future revenue of Malaysia tourism Industry.

Table 1: Statistical Significance of the fitted ARIMA Model (0,1,1) for Malaysia Tourism Revenue (in RM million): 2002 (Jan) – 2010 (Dec)

Model	Model Fit Statistics								Ljung-Box Statistic		
	Stationary R-squared	R-squared	RMSE	MAPE	MAE	MaxAPE	MaxAE	Normalized BIC	Statistics	DF	Sig.
Monthly Total Revenue (in RM million)	0.83	0.99	54.98	0.97	35.24	10.10	280.51	8.280	13.213	16	0.66

Table 2 reveals the macroeconomics factors that are significantly influencing Malaysia tourism revenue (in RM million). Out of eight economic indicators considered in Fig. 1, two factors were found to be statistically significant namely Industrial Production Index (IPI) and Visit Malaysia Year 2007 (VMY 2007). The IPI is taken as proxy for GDP since GDP in Malaysia is computed quarterly whereas IPI is computed monthly. In Malaysian economy, 11 % of GDP is due to tourism revenue (Economic Watch, 2010) and therefore GDP's importance is highly realized over the last nine years through the findings of this study (t=15.881, $p < 0.001$). The Malaysia government through Tourism Malaysia as their marketing promotion unit strategies VMY 2007 campaign and the success of this campaign is clearly visible from the outcome of this study as it is found to be highly statistically significant (t=9.856, $p < 0.001$). Although, global recession in year 2008 affected tourism industry all over the world, Malaysia is an exceptional country as VMY 2007 promotional tourism campaign really reaches the mass. Further, there is no interaction between the campaign VMY 2007 and Global recession 2008 since Global recession 2008 was not found to be statistically significant on Malaysia tourism revenue.

Table 2: Macro Economic Factors Influencing Malaysia Tourism Revenue (in RM million): 2002 (Jan) – 2010 (Dec)

					Estimate	SE	t-value	Sig.
Monthly Total Revenue in million RM- Model_1	Monthly Total Revenue in million RM	Natural Log	Difference		1			
			MA	Lag 1	0.268	0.122	2.193	0.031
			AR, Seasonal	Lag 1	0.712	0.078	9.094	0.000
			Seasonal Difference		1			
	Industrial Production Index (IPI)	Natural Log	Numerator	Lag 0	0.260	0.016	15.881	0.000
				Lag 12	-0.092	0.020	4.674	0.000
			Difference		1			
			Seasonal Difference		1			
	VMY 2007 (Dummy 1)	No Transformation	Numerator	Lag 0	0.100	0.010	9.856	0.000
			Difference		1			
			Seasonal Difference		1			

The ARIMA model fits well for the Malaysia Tourism revenue data and is clearly evinced from the Residual Autoregressive Correlation Function (ACF) and Residual Partial Autoregressive Correlation Function (PACF) graphs given in Figure 2 (Appendix). The variations between the observed and fitted values are well within $\pm$ 0.5 and are negligible. The results hold good for the tourism revenue with Lag time is taken to be 12 months periodicity.

The month wise average revenue for Malaysia is displayed in Figure 3 (Appendix). It includes the best fitted ARIMA model, the 95% confidence limits with lower and upper confidence values and the projected values till Dec'2010. It is worthwhile to mention that the original tourist revenue and the fitted values are closer to each other and indicates the robustness of the fitted model.

The Global Recession 2008 does not affect tourist arrivals from Singapore to Malaysia due to consistent 48% of tourist arrivals from Singapore on the average every year. More Singaporeans visit Malaysia due to internal and external factors like business transactions relating to MICE Tourism and also to visit their relatives and close friends. The business transactions include shopping in big malls, KLCI share markets dealings and real estate business. Furthermore, gambling activities are also rated among the top 10 reasons for Singaporeans to visit Malaysia.

Table 3 reveals that the macroeconomic factors significantly influencing Malaysia tourism revenue (in RM million) from Singapore tourists' expenditure in Malaysia during their stay. ARIMA model fits well for Singaporean visitors to Malaysia with Ljung-Box Q statistic value is 12.407, $p > 0.05$. Out of the eight economic indicators considered in

Figure. 1, three factors were found to be statistically significant namely Kuala Lumpur Composite Index (KLCI), Industrial Production Index (IPI) and Global Recession 2008 (Dummy 2). Singaporeans are the market players in Bursa Malaysia KL Stock Exchange. According to Khoon

and Mah-Hu, (2010), the GDP factor has been influenced in this case because the IPI Index of Malaysia is much lower than Singapore. Hence, Singaporeans find Malaysia as a productive business partner for their economic growth. The factor global recession 2008, although, has less impact on Malaysia but resulted on positive impact in Singapore because Singaporeans have more business associates globally and Singapore currency has been rapidly improving. The macroeconomic factors that are significantly influencing Malaysia tourism revenue (in RM million) from Indonesian visitors are IPI and Global Recession 2008. Indonesia has been ranked second followed by Singapore in terms of tourist arrivals into Malaysia.

Moreover over the decades, Indonesia has been worst affected due to natural climates and in turn reflected on world global recession. Majority of the Indonesians employed in Malaysia have semi skilled jobs particularly in industries like service (servant maids), construction and housekeeping. ARIMA model fits well for Indonesian visitors to Malaysia with Ljung-Box Q statistic value is 22.234, $p > 0.05$. The macroeconomic factors that are statistically significantly influencing Malaysia tourism revenue (in RM millions) are IPI and VMY 2007 from Thailand tourists' expenditure in Malaysia during their stay. ARIMA model fits well for Thailand visitors to Malaysia with Ljung-Box Q statistic value is 26.324, $p > 0.05$. The macroeconomic factors that are significantly influencing Malaysia tourism revenue (in RM million) from Brunei tourists' expenditure in Malaysia during their stay is IPI. ARIMA model fits well for Brunei visitors to Malaysia with Ljung-Box Q statistic value is 3.476, $p > 0.05$. The macroeconomic factors that are significantly influencing Malaysia tourism revenue (in RM million) from China tourists' expenditure in Malaysia during their stay are IPI and VMY 2007. ARIMA model fits well for China visitors to Malaysia with Ljung-Box Q statistic value is 19.171, $p > 0.05$.

Table 3: Forecasting models for Top five revenue generating countries to Malaysia: 2002 – 2010

	Singapore	Indonesia	Thailand	Brunei	China
Industrial Production Index (IPI)	t= 15.317, p<0.001	t= 12.997, p<0.001	t= 6.237, p<0.001	t= 8.729, p<0.001	t= 18.957, p<0.001
Inflation Rate (IR)	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Kuala Lumpur Composite Index (KLCI)	t= 2.808, p<0.01	Insignificant	Insignificant	Insignificant	Insignificant
Crude Oil Price (COP)	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Exchange Rate (ER)	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Money Supply (MS)	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Visit Malaysia Year 2007 and 2008 (Aug): Dummy 1	Insignificant	Insignificant	t= 2.680, p<0.01	Insignificant	t= 6.453, p<0.01
Global Recession 2008: Dummy 2	t= 10.737, p<0.001	t= 16.858, p<0.001	Insignificant	Insignificant	Insignificant
Number of Predictors	3	2	2	1	2
Stationary R square	0.704	0.856	0.786	0.448	0.821
Ljung-Box Q statistic value	12.407	22.234	26.324	3.476	19.171
p–value	0.775	0.176	0.069	1.000	0.319
Model type	ARIMA (0,1,0)(1,1,0)	ARIMA (0,1,0)(1,0,0)	ARIMA (0,1,0)(1,0,0)	ARIMA (0,1,0)(1,0,0)	ARIMA (0,1,0)(1,1,0)

Conclusions

The tourism revenue has been consistently increasing in Malaysia and there is really no pre-post difference of Global recession 2008 in terms of international tourist arrivals and receipts to Malaysia. However, the impact of the campaign 'Visit Malaysia Year 2007 (VMY 2007)' has been clearly visible as the Malaysia tourism revenue (in RM million) has improved quite considerably during the post campaign period 2008-2010. The campaign VMY 2007 was an encouraging move to promote tourism in different states of West and East Malaysia and the scheme was extended up to August 2008. The outcome of VMY 2007 is highly influenced on the Malaysia Tourism revenue. There is a dynamic relationship between the macroeconomic factors industrial production index (Proxy for GDP) and the campaign VMY 2007 on Malaysia tourism revenue. There is no interaction between the campaign VMY 2007 and Global recession 2008 since Global recession 2008 was not found to be statistically significant on Malaysia tourism revenue.

The global recession 2008 does not affect tourist arrivals from Singapore to Malaysia since Singapore contributes for 48% of tourist arrivals on the average every year. Out of the eight economic indicators considered in the study, three factors were found to be statistically significant namely Kuala Lumpur Composite Index (KLCI), Industrial Production Index (IPI) and Global Recession 2008 for Singaporeans contributing to Malaysia Tourism revenue. Singaporeans are the market players in Bursa Malaysia KL Stock Exchange. Also, Singaporeans find Malaysia as a productive business partner for their economic growth. The factor global recession 2008, resulted in a positive impact in Malaysian revenue from Singapore because Singaporeans have more business associates globally and Singapore currency is quite impressive. The macroeconomic factors that are significantly influencing Malaysia tourism revenue from Indonesian visitors are IPI and Global Recession 2008. Indonesia has been worst affected by natural calamities and in turn reflected on global recession 2008. The factors IPI and VMY2007 were influencing Malaysia tourism revenue from Thailand tourists' expenditure to Malaysia during their stay. The Industrial Production Index (IPI) is found to be statistically significant for all the top 5 visiting countries to Malaysia namely Singapore, Indonesia, Thailand, Brunei and China.

Acknowledgment

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Appendix

Table: Tourist Arrivals and Receipts to Malaysia from year 2002 to 2010

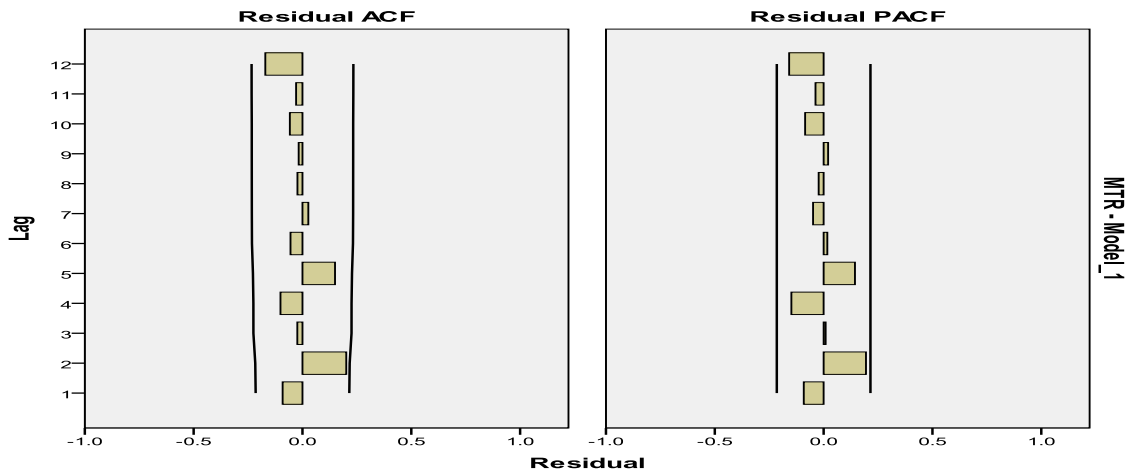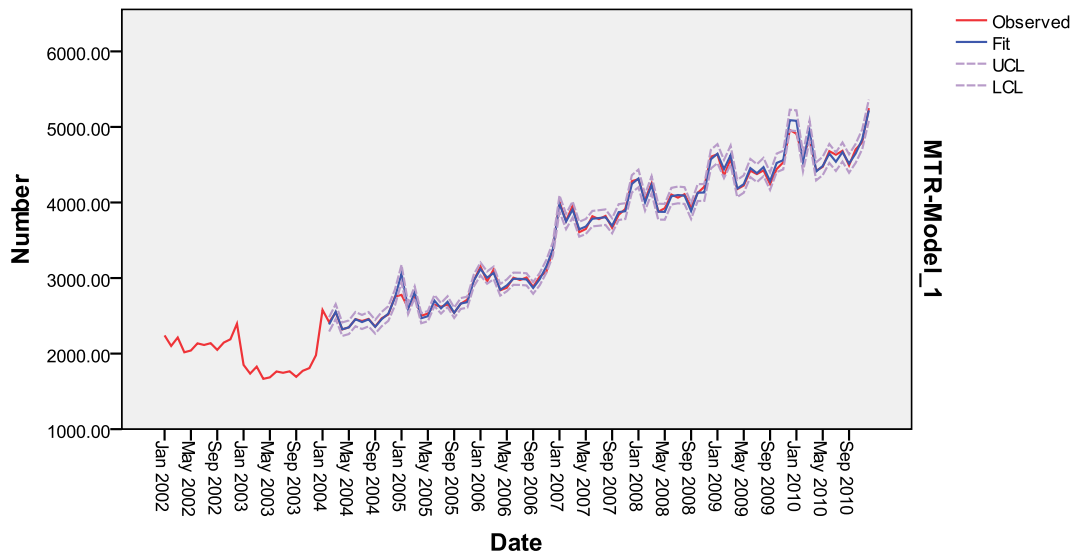| Year	Tourist Arrivals (in millions)	Receipts (in RM billions)
2002	13.2	25.8
2003	10.5	21.3
2004	15.7	29.7
2005	16.4	32.0
2006	17.4	36.3
2007	20.9	46.1
2008	22.0	49.6
2009	23.6	53.4
2010	24.6	56.5

Figure. 2: Residual Plots

Figure. 3: Confidence limits for Malaysia Tourism revenue