

# Tourism Sustainable Competitiveness Indicator in Malaysia: Construct and Forecasting Ability

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# Tourism Sustainable Competitiveness Indicator in Malaysia: Construct and Forecasting Ability

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### DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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### ABSTRACT

This study constructed the Tourism Sustainable Competitiveness Indicator (TSCI) to assess the vulnerability of the tourism market in Malaysia and its forecasting ability. The study has been motivated by a growing importance of sustainable tourism practices and the need for accurate indicators to measure both sustainability and competitiveness. The constructed TSCI comprises five main dimensions including human capital, market conditions, policy environment and enabling conditions, physical environment, and technology and innovation. The core framework of the constructed TSCI was selected based on a rigorous variable importance assessment using random forest algorithm. Each dimension has an indicator to represent various aspects of sustainable competitiveness in tourism. A total of nine individual indicators with leading attributes was established with an overall accuracy of 81.65 percent in prediction. The selected indicators comprised employment in travel and tourism sector, new business, capital investments in travel and tourism sector, government debt, total natural resources rents, energy use per capita, carbon dioxide emissions, individuals using the internet and trademarks. Markov switching regression was done to establish the relationships between the identified variables and Malaysian tourism demand. Empirical estimation revealed that all nine selected variables were found to be statistically significant at a 5 percent significance level for both contraction and expansion regimes, proving that the selected indicators significantly impacted Malaysian tourism. The aggregation of the nine individual indicators was determined using two indicator construction approaches: the arithmetic-based approach and the dynamic approximate factor model (DAFM) approach. Both successfully dated more than ten tourism vulnerabilities within two decades since 2000 for the Malaysian tourism cycle, addressing economic crises, environmental crises, societal and political crises, health-related crises, and technological

crises. The constructed TSCI was tested for its forecasting ability using actual tourism performance as benchmark, to assess the accuracy, sensitivity, and specificity of both the constructed TSCIs. Findings indicate than both are robust indicators to assess tourism sustainable competitiveness in Malaysia, with the DAFM approach achieving a higher accuracy rate of 82.94 percent compared to the arithmetic-based approach which scored 77.38 percent. The Multivariate Diebold-Mariano forecasting evaluation analysis was done to further evaluate and compare the forecasting ability of both TSCIs, before proceeding to the wavelet coherence analysis. The same finding was validated when five out of seven forecasting evaluation criteria, which had lower values, favoured the TSCI constructed Using the DAFM approach. The wavelet coherence analysis revealed that the constructed TSCI plays a leading role towards tourism market and economic development in Malaysia. The findings contribute to the concept of sustainable competitiveness, offering valuable insights for decision-making and strategy formulation in the tourism sector. This can assist policymakers, tourism stakeholders and authorities to make informed decisions, formulate strategies, and monitor risks to enhance competitive and sustainable tourism practices.

**Keywords:** Sustainability, competitiveness, Malaysian tourism, monitoring tool, indicator construction

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### Petunjuk Daya Saing Pelancongan Mampan di Malaysia: Pembinaan dan Keupayaan Ramalan

#### ABSTRAK

Kajian ini membina Petunjuk Daya Saing Pelancongan Mampan (TSCI) untuk menilai kerentanan pasaran pelancongan di Malaysia dan keupayaannya dalam meramal. Kajian ini dimotivasikan oleh peningkatan minat terhadap pelancongan mampan dan keperluan petunjuk yang tepat untuk mengukur kelestarian dan daya saing. TSCI yang dibina terdiri daripada lima dimensi utama: modal insan, keadaan pasaran, persekitaran dasar dan penyertaan, persekitaran fizikal, dan teknologi dan inovasi. Kerangka TSCI dibina berdasarkan penilaian pentingnya pemboleh ubah menggunakan algoritma hutan rawak. Setiap dimensi menggunakan penunjuk untuk mewakili pelbagai aspek daya saing mampan dalam pelancongan. Keseluruhan, terdapat sembilan penunjuk individu dengan atribut utama, mencapai ketepatan keseluruhan sebanyak 81.65 peratus dalam meramal. Indikator yang dipilih terdiri daripada pekerjaan dalam sektor perjalanan dan pelancongan, perniagaan baru, pelaburan modal dalam sektor perjalanan dan pelancongan, hutang kerajaan, pendapatan sumber semulajadi keseluruhan, penggunaan tenaga per kapita, pelepasan karbon dioksida, individu yang menggunakan internet, dan cap dagangan. Regresi peralihan Markov telah dilakukan untuk menjalin hubungan antara pembolehubah yang dikenalpasti dan permintaan pelancongan Malaysia. Kajian empirikal menunjukkan kesemua sembilan pembolehubah terpilih signifikan secara statistik pada tahap 5 peratus untuk rezim penyusutan dan pengembangan, membuktikan kesan yang signifikan terhadap sektor pelancongan Malaysia. Pengumpulan kesemua penunjuk individu ditentukan menggunakan dua pendekatan pembinaan penunjuk: pendekatan berdasarkan aritmetik dan pendekatan model faktor hampiran dinamik (DAFM). Kedua-dua berjaya mengenal pasti

lebih dari sepuluh kerentanan pelancongan dalam dua dekad sejak tahun 2000 di Malaysia, termasuk krisis ekonomi, alam sekitar, sosial-politik, kesihatan, dan teknologi. TSCI yang dibina diuji untuk keupayaannya meramal dengan menggunakan prestasi pelancongan sebenar sebagai penanda aras, untuk menilai ketepatan, kepekaan, dan kekhususan keduadua TSCI yang dibina. Penemuan menunjukkan kedua-dua petunjuk itu kukuh dalam menilai daya saing pelancongan mampan di Malaysia, dengan pendekatan DAFM mencapai ketepatan lebih tinggi pada 82.94 peratus berbanding pendekatan aritmetik pada 77.38 peratus. Analisis penilaian ramalan Multivariate Diebold-Mariano telah dilakukan untuk menilai dan membandingkan keupayaan meramal kedua-dua TSCI sebelum melanjutkan kepada analisis koherens wavelet. Penemuan yang sama disahkan apabila lima daripada tujuh kriteria penilaian ramalan, dengan pendekatan DAFM yang mempunyai nilai yang lebih rendah. Analisis koherens wavelet mengungkapkan bahawa TSCI yang dibina memainkan peranan utama terhadap pasaran pelancongan dan pembangunan ekonomi di Malaysia. Penemuan ini menyumbang kepada konsep daya saing mampan, menawarkan pandangan berharga bagi pembuatan keputusan dan formulasi strategi dalam sektor pelancongan. Ini dapat membantu pembuat dasar, pemangku kepentingan pelancongan dan pihak berkuasa dalam membuat keputusan yang berinformasi, merumuskan strategi, dan memantau risiko untuk meningkatkan amalan pelancongan yang berdaya saing dan mampan.

*Kata kunci:* Kelestarian, daya saing, pelancongan Malaysia, alat pemantauan, pembinaan petunjuk

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# LIST OF ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
GDP	Gross Domestic Product
IMF	International Monetary Fund
ITU	International Telecommunication Union
IUCN	International Union for Conservation of Nature
MAE	Mean Absolute Error
MAPE	Mean Absolute Percentage Error
ME	Mean Error
MICE	Meetings, Incentives, Conferences, Exhibitions
MPs	Malaysia Plans
MPE	Mean Percentage Error
NTP	National Tourism Policy
RMSE	Root Mean Square Error
SDGs	Sustainable Development Goals
SME	Small and Medium-sized Enterprises
TSCI	Tourism Sustainable Competitiveness Indicator
TTCI	Travel and Tourism Competitiveness Index
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	World Tourism Organization
WEF	World Economic Forum
WTTC	World Travel and Tourism Council

### **CHAPTER 1**

#### **INTRODUCTION**

#### 1.1 Study Background

Tourism is a multifaceted economic activity that involves various operating sectors, making it crucial for the development of a country. To accelerate the growth of the tourism industry, it requires labour-intensive industry as the supporting backbone. This is because tourists have diverse needs when travelling to a different country or place outside their usual environment for various purposes such as business, medical, leisure, or visiting friends and relatives. The tourism value chain, which encompasses transportation, accommodation, food and beverage, handicrafts, tourism assets, leisure activities, excursions and tours, and support services, plays a significant role in making travel arrangements. Given the complexity of the tourism sector, it is essential to provide proper recognition and support in terms of trade, investment, and business development to fulfil its role as one of the key contributors to a nation's economy.

According to the International Tourism Highlights 2019 by the World Tourism Organization (UNWTO), international tourism continues to outpace the global economy. In 2019, there were 1.4 billion international tourist arrivals, contributing USD 1.7 trillion from total international tourism exports, which include tourism receipts and passenger transports. Despite occasional shocks, tourism has shown resilience and continuous expansion, with a 5 percent increase in total international tourist arrivals, surpassing UNWTO's forecast by two years. Tourism plays a vital role in diversifying the export of goods and services for both developing and developed countries. In 2019, it contributed 6.8 percent of overall exports and accounted for 28.3 percent of global services exports. This substantial contribution allows tourism to help reduce trade deficits and compensate for weaker export revenues in other sectors. Factors such as a robust global economy, digital technologies shaping travellers' experiences, favourable business models, cost-effective travel expenses, and enhanced visa facilitation have contributed to the growing importance of tourism exports. However, with this increased significance comes the obligation to ensure effective destination management.

The World Travel and Tourism Council (WTTC) reported that travel and tourism had a direct, indirect, and induced impact of USD 8.9 trillion on the world's Gross Domestic Production (GDP) in 2019, accounting for 10.3% of global GDP. Furthermore, tourism contributed to 330 million jobs, representing one in every ten jobs globally. Capital investments in travel and tourism reached USD 948 billion, accounting for 4.3 percent of total investment. The remarkable growth of international tourism highlights its essential role as a drive for economic growth, job creation and wealth creation. Despite facing various external shocks, such as health concerns and natural disasters, the tourism industry has consistently demonstrated its vulnerability and ability to recover. This resilience showcases the sector's distinctive attributes and its inherent capacity to bounce back. Although the tourism industry has faced significant challenges over the years, including the 9/11 attack in 2001, the impact of SARS in 2003, and the global financial crisis is 2009, the subsequent rapid recoveries from these crises have fostered resilience across all economies, solidifying the importance of the tourism sector.

The tourism sector, along with related industries and employment, has experienced an unprecedented crisis due to the Covid-19 pandemic. The pandemic's widespread effects have had substantial impacts across global regions since late 2019. The first quarter of 2020 saw a significant 22 percent decline in international tourist arrivals, according to the UWTO reports. UNWTO further highlighted potential scenarios of annual decreases ranging from 60 percent to 80 percent, depending on the pace at which travel restrictions were eased. Governments have swiftly imposed remedial measures, especially in promoting job retention and providing discal relief and financial support to small and medium-sized enterprises (SMEs) and self-employed workers. Due to being one of the most severely impacted industries, governments worldwide are implementing targeted measures to address specific challenges. It is crucial to actively involve stakeholders in strengthening policies that support tourism, especially in countries where tourism plays a significant role in the national economy. Tourism not only contributes to GDP, but also generates millions of jobs. As a result, an increasing number of countries are resuming tourism activities while adhering to safety protocols.

One notable feature of tourism is its ability to stimulate broad-based economic activity by creating linkages among different sectors. These stronger linkages catalyze multiplier effects, generating benefits such as employment opportunities and local poverty reduction. While the adverse impact of the pandemic may be temporary, managing tourism in a sustainable manner is crucial for long-term policy planning. Embracing tourism as a means to achieve the Sustainable Development Goals (SDGs) require both destination countries and companies to remain competitive for the economic prosperity of the nation. Assessing the consolidation of sustainability and competitiveness in tourism is critical, as tourism is an important pillar of the national economy. Malaysia is home to a population of 33.57 million as of 2021 and covers a land area of 328,657 square kilometres. Located in the continent of Asia, Malaysia shares its borders with three neighbouring countries which inclusive of Thailand, Brunei Darussalam, and Indonesia. The country lies north of the Equator and is comprised of two non-contiguous regions known as West Malaysia and East Malaysia, with Kuala Lumpur serving as its capital city. The northern part of Peninsular Malaysia shares a land boundary of approximately 300 miles (480 kilometres) with Thailand, while the southern part is connected to the island republic of Singapore by a causeway and a separate bridge. To the southwest, across the Malacca Strait, lies the island of Sumatra in Indonesia. East Malaysia consists of two large states, Sarawak and Sabah, which are separated from Peninsular Malaysia by 400 miles (640 kilometres) of the South China Sea. The northern part of the Borneo island shares a land boundary with Kalimantan, Indonesia, while Brunei Darussalam is a small coastal country surrounded by Sarawak. Inland water covers approximately 265 square miles of the total area of the nation, with Peninsular Malaysia accounting for 40 percent and East Malaysia comprising the remaining 60 percent.

Initially, the economy of Malaysia is heavily dependent on the agriculture sector and commodity-based industry mainly petroleum products, tin, rubber, and palm oil. However, Malaysia economy suffered from a rubber price crisis which caused a total loss of USD 231 million in year 1967. Since attained independence in 1957, Malaysia successfully diversified its economy to manufacturing and services sectors instead of reliant on agriculture sector. The robustness of the manufacturing sectors thrusted Malaysian economy to become a leading exported of electrical appliance and electrical components. After the worldwide boom in 1980 and the collapse of primary commodity prices, Malaysia recognized tourism sector as the potential revenue generation. Besides, Malaysia held a trade to gross domestic

product (GDP) ratio averagely over 140.0 percent since 2010 and thus it is regarded as one of the most open economies globally. The practice of international trade openness and encouraged investment have been beneficial for employment creation and income growth of the nation. At that moment, there was approximately 40.0 percent of the jobs in Malaysia was linked to the export activities. With the GDP of Malaysia is accounted for USD 314.5bn in 2017 with growth of 9.9 percent, the contribution of services sector occupied 60.0 percent out of the total GDP, followed by manufacturing sector (23.2 percent), construction sector (10.1 percent), agriculture sector (4.9 percent), mining and quarrying sectors (1.8 percent). The service sector remained as a key driver towards the Malaysian economy growth. In this context, the travel and tourism industry solely contributed 13.4 percent out of total GDP in 2017 and 13.19 percent out of total GDP in 2019.

However, the GDP growth rate of Malaysia recorded at negative 5.5 percent in 2020 following the unprecedented falls in the first half of the year due to Covid-19 containment measures. Regarding to Department of Statistics Malaysia, Malaysia's economy regained its momentum in 2021, with a 3.1 percent growth from the previous year. The growth of GDP was driven by the services and manufacturing sectors which contributed 81.3 percent of total GDP for the recovery process of Malaysia' economy. Thus far, the tourism sector in Malaysia is recognized as the second largest foreign exchange income earner after the manufacturing industry. The total contribution of travel and tourism to Malaysia's GDP and employment is displayed in Table 1.1. The total contribution of travel and tourism to Malaysia's GDP is recorded at 12.8 percent in 2000, reach highest of 16.4 percent in 2017 over the past two decades. The negative growth of 83.6 percent is due to the movement control order (MCO) implemented in Malaysia starting from 18 March 2020 due to the Covid-19 pandemic. The travel restrictions have caused a complete shutdown of tourism

activities and most of the economic activities. The economy of Malaysia has regained its momentum in 2021 upon the re-opening of the country.

Year	Share of Total GDP (%)	Growth (%)	Share of Total Employment (%)	Growth (%)
2000	12.75%	4.94%	10.77%	-1.10%
2001	15.08%	18.27%	12.95%	20.24%
2002	14.35%	-4.84%	12.33%	-4.79%
2003	12.65%	-11.85%	10.81%	-12.33%
2004	13.06%	3.24%	11.32%	4.72%
2005	13.14%	0.61%	11.46%	1.24%
2006	13.68%	4.11%	11.87%	3.58%
2007	16.43%	20.10%	14.75%	24.26%
2008	12.69%	-22.76%	11.32%	-23.25%
2009	13.33%	5.04%	12.07%	6.63%
2010	13.11%	-1.65%	11.79%	-2.32%
2011	12.77%	-2.59%	11.14%	-5.51%
2012	12.88%	0.86%	11.16%	0.18%
2013	13.72%	6.52%	11.97%	7.26%
2014	14.20%	3.50%	12.13%	1.34%
2015	13.43%	-5.42%	11.75%	-3.13%
2016	13.77%	2.53%	12.10%	2.98%
2017	13.38%	-2.83%	11.80%	-2.48%
2018	13.29%	-0.67%	11.77%	-0.25%
2019	13.19%	-0.75%	11.73%	-0.34%
2020	2.16%	-83.62%	11.81%	0.68%

Table 1.1: Travel and Tourism Total Contribution to Malaysia's GDP and Employment

Source: World Travel and Tourism Council (WTTC) Data Gateway, 2022.

Over the past two decades, the travel and tourism sector in Malaysia has consistently made a significant contribution to employment, with an average of more than 10 percent each year. The tourism sector was found to have contributed approximately 341,470 jobs, accounting for 10.8 percent of total employment in Malaysian since 2000. However, the Covid-19 pandemic had a severe impact on employment in 2020, resulting in a negative

growth rate. According to the World Travel and Tourism Council (WTTC), the contribution of employment to Malaysia's workforce in 2020 was 714,610 jobs or 11.8 percent of total employment. Despite a significant decline in the share of total GDP in 2020, the share of total employment increased compared to previous years. It is important to acknowledge that the global economic environment was profoundly affected by the COVID-19 pandemic. However, the growth in employment can be attributed to the implementation of government policy measures aimed at safeguarding jobs and supporting the labor market during the pandemic. These policies encompassed furlough schemes, direct financial assistance to individuals and businesses, and various forms of unemployment benefits. The objective of these measures was to prevent mass layoffs and maintain employment levels even when economic activity faced severe disruptions.

Furthermore, it is worth noting that the economic statistics are susceptible to shortterm fluctuations. The drastic decline in GDP in 2020 might be attributed to the abrupt and unprecedented nature of the pandemic, while the increase in employment could be a response to the immediate needs of businesses to adapt to the new circumstances. The pandemicinduced crisis led to job losses and reduced income for many individuals, as the demand for tourism products and services significantly declined during the Malaysian movement control order (MCO). It is crucial to effectively mitigate and manage these risks to minimize their impact on society and the economy.



Figure 1.1: Malaysia Tourist Arrivals and Tourism Receipts, 2000-2020 (Source: UNWTO Tourism Statistics Database, 2021)

Figure 1.1 illustrates the evolution of tourist arrivals and tourism receipts in Malaysia from 2000 to 2020. During this period, both tourist arrivals and tourism receipts showed steady growth. In 2000, Malaysia welcomed 10.2 million tourist arrivals, generating USD 5.9 billion in tourism receipts. The number of tourist arrivals peaked at 27.4 million in 2014, with tourism receipts amounting to USD 24.5 billion, equivalent to 7.2 percent of Malaysia's grow national product (GNP). Although there was a slight drop in 2015, the growth of the Malaysian tourism sector continued until 2019, with 26.1 million tourist arrivals and USD 22.2 billion in tourism receipts, accounting for 6.1 percent of GNP), according to the World Tourism Organization. Meanwhile, the receipts per tourist varied over the years, ranging from a minimum of USD 575 in 2020 to a maximum of USD 905 in 2013 for arrivals in Malaysia. However, due to the outbreak of the Covid-10 pandemic, there was a significant

downturn in 2020 There is a significant downturn in 2020 with 4.3 million tourist arrivals and USD 3.39 billion of tourism receipts due to the outbreak of Covid-19 pandemic.



Figure 1.2: Malaysian Tourism Cycle, 2000M01-2020M12 (Source: own elaboration)

Figure 1.2 demonstrates the fluctuations in the Malaysian tourism cycle from 2000 to 2020, which showed influence by various factors such as global economic conditions, geopolitical events, travel trends, and government initiatives. Several significant downturns can be observed during the years 2003, 2008, 2015 and 2019. In 2003, the tourism cycle experienced a decline due to the outbreak of the SARS epidemic and Avian influenza. These health-related crises led to a decrease in tourist arrivals as travellers altered their behaviour and became more cautious about their health and safety. The relatively steady growth of