Faculty of Economics and Business

Impact of Climate Change on Tourism Demand in Selected Asia Pacific Countries

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Impact of Climate Change on Tourism Demand in Selected Asia Pacific Countries

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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 aims to construct the relative tourism climate index (RTCI) and relative holiday climate index (RHCI) to examine their impact on tourism industry in Asia Pacific region. In general, the ten most visited countries in Asia Pacific have been chosen in this study. A detailed analysis of tourism driving forces for each country will be further explored after the selection of targeted countries in Asia Pacific region. The quarterly data spans from 2010 to 2020 will be utilized and analysed using panel Autoregressive Distributed Lag (ARDL) approach in this study. The gravity model has been chosen to formulate the tourism demand models for the ten countries in the Asia Pacific region. The modification has been made on the core gravity model by adding the tourism price and climatic variables to gather more comprehensive tourism information. In general, the climate condition is a significant factor influencing the tourism demand in the Asia Pacific region regardless whether the country is a four seasons or one season country. Besides that, the tourists' income commonly identifies as an important variable affecting their travel decision, however, it is not their main concern in certain case depends on the travel distance between the countries. Besides that, a mixture results of tourism price and transportation cost have been found mainly due to the travel distance between the countries. To conclude, this study highlighted the importance of the climatic impacts on the tourism industry. Other factors are also important depends on the tourists' preferences. Therefore, continuous studies in different perspectives are needed because the demand of the tourists will be changed over the time.

Keywords: Relative tourism climate index, relative holiday climate index, tourism, panel ARDL analysis

Kesan Perubahan Iklim terhadap Permintaan Pelancongan di Negara-negara Asia Pasifik Terpilih

ABSTRAK

Kajian ini bertujuan untuk membina indeks iklim pelancongan relatif (RTCI) dan indeks iklim percutian relatif (RHCI) untuk mengkaji kesannya terhadap industri pelancongan di Asia Pasifik. Secara umumnya, sepuluh negara yang paling banyak dikunjungi di Asia Pasifik telah dipilih dalam kajian ini. Analisis terperinci mengenai daya penggerak pelancongan bagi setiap negara akan diterokai dengan lebih lanjut selepas negara yang disasarkan telah terpilih di Asia Pasifik. Data suku tahunan dari 2010 hingga 2020 akan digunakan dan dianalisis dengan menggunakan pendekatan panel ARDL dalam kajian ini. Model graviti telah dipilih untuk merumuskan model permintaan pelancongan bagi sepuluh negara terpilih di Asia Pasifik. Pengubahsuaian telah dibuat pada model graviti teras dengan menambah harga pelancongan dan pembolehubah iklim untuk mengumpulkan maklumat pelancongan yang lebih komprehensif. Secara umumnya, keadaan iklim merupakan faktor penting yang mempengaruhi permintaan pelancongan di Asia Pasifik tanpa mengira sama ada negara itu adalah negara empat musim atau satu musim. Selain itu, pendapatan pelancong biasanya dikenal pasti sebagai pembolehubah penting yang mempengaruhi keputusan perjalanan mereka, namun, ia bukanlah factor utama mereka dalam kes tertentu bergantung kepada jarak perjalanan antara negara. Selain itu, hasil campuran harga pelancongan dan kos pengangkutan didapati terutamanya disebabkan oleh jarak perjalanan antara negara. Sebagai kesimpulan, kajian ini menekankan kepentingan kesan iklim terhadap industri pelancongan. Faktor lain juga penting bergantung pada pilihan pelancong. Oleh itu, kajian berterusan dalam perspektif berbeza diperlukan kerana permintaan pelancong akan berubah mengikut peredaran masa.

Kata kunci: *Petunjuk iklim pelancongan, indeks iklim percutian, pelancongan, pendekatan panel ARDL*

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LIST OF ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
BCI	Beach Climate Index
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CIA	Daily Comfort Index
CID	Daytime Comfort Index
CIT	Climate Index for Tourism
COVID-19	Coronavirus Disease 2019
CPI	Consumer Price Index
DOLS	Dynamic Ordinary Least Squares
FMOLS	Fully Modified Ordinary Least Squares
GDP	Gross Domestic Product
HCI	Holiday Climate Index
IPCC	Intergovernmental Panel on Climate Change
RP	Relative Price
RHCI	Relative Holiday Climate Index
RTCI	Relative Tourism Climate Index
SDGs	Sustainable Development Goals
SARS	Severe Acute Respiratory Syndrome
SP	Substitute Price
TCI	Tourism Climate Index
UNESCAP	United Nations Economic and Social Commission for Asia Pacific
UNWTO	World Tourism Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction

In recent decades, the tourism industry has emerged as a key driver of global growth and development across the world. Tourism involves individuals traveling to foreign countries or unfamiliar destinations outside their typical surroundings for leisure, business, or professional purposes, encompassing social, cultural, and economic aspects. Today, tourism has expanded to include sport tourism and medical tourism, further diversifying its scope. Irrespective of a country's economic classification, whether low, middle, or high-income, tourism contributes multi-layered and cross-sectoral benefits.

The tourism industry comprises several key players, including the airline industry, accommodation industry, foods and beverages industry, and other supporting industries. Recognizing the substantial benefits of tourism on economic and social development, its economic effects have been increasingly considered in recent years. These advantages encompass rising incomes for governments and communities, foreign exchange earnings, increased job opportunities, redistribution of international wealth, and the sharing of advanced technology and expertise.

Furthermore, open economic policies, relaxed travel restrictions between countries, improved visa facilitation, and various tourism agreements have accelerated the growth of world tourism. The rapid expansion of the airline industry, offering more affordable flight ticket prices, has also played a significant role in boosting tourism by enabling easier travel

between destinations worldwide. The prosperity of the travel and tourism industry has far-reaching effects that benefit nations and societies through its numerous positive impacts.

Governments worldwide recognise the potential of the tourism industry and has launched a series of programmes to further develop and promote it. One such initiative is the Silk Road tourism project, introduced at the World Tourism Organization (UNWTO)'s General Assembly in Indonesia in 1993. The project aims to enhance tourism development and economic impacts by reviving ancient trading routes and fostering cultural exchange among three continents, covering 12,000 km. This exemplifies the UNWTO's commitment to revitalizing and transforming the tourism industry through mutual collaboration among member states and key players fostering new opportunities for healthy and sustainable growth.

Moreover, the tourism industry has become a potential instrument for diversifying economic risks and uncertainties in both developed and developing countries. By expanding and developing the tourism sector, countries can mitigate adverse impacts from external shocks such as economic recessions, oil price slumps, and unexpected events like SARS and the COVID-19 pandemic. Therefore, the country can further diversify its economic risks through tourism expansion and development of the tourism industry.

Tourism expansion is supported by advancements in the airline industry, closer collaboration between countries, developments in the telecommunication industry, and improvements in other related industries. The wealth generated by the tourism industry leads to various benefits for society, including economic development, increased job opportunities, improved living standard, and higher foreign exchange earnings. In addition, tourism revenue received by the country can be reinvested into the tourism industry or other

potential industries to increase the size of the economy. Governments play a crucial role in promoting unique tourism destinations and special products to attract both local and foreign tourist.

The economic and employment contributions of the tourism industry have been extensively quantified for over 70 years. The UNWTO estimated that the number of international tourists was just around 25 million people in 1950. The projection of international tourist arrivals worldwide for leisure, business and other purposes will reach 1.8 billion by 2030 with an average annual growth rate of 3.3% (UNWTO, 2011). The majority of these arrivals are expected to be in emerging countries, constituting 58% of the total.

In 2018, international tourist arrivals grew by 5%, reaching 1.4 billion and exceeding previous predictions for 2020. The growth was mainly driven by the strong global economy, rapid growth of emerging countries, technological advances and visa facilitation. This target was reached two years ahead of UNWTO's long term forecast issued in 2010. At the same time, the world tourism has generated USD 1.7 trillion of international tourism exports, a 4% increase compared to 2017. In the following year, the tourism industry contributed USD 8.8 trillion, accounting for 10.4% of global income, and created 319 million job opportunities, representing one-tenth of all jobs worldwide. In summary, the tourism industry plays a crucial role in improving the lives of millions of people and transforming communities on a global scale.

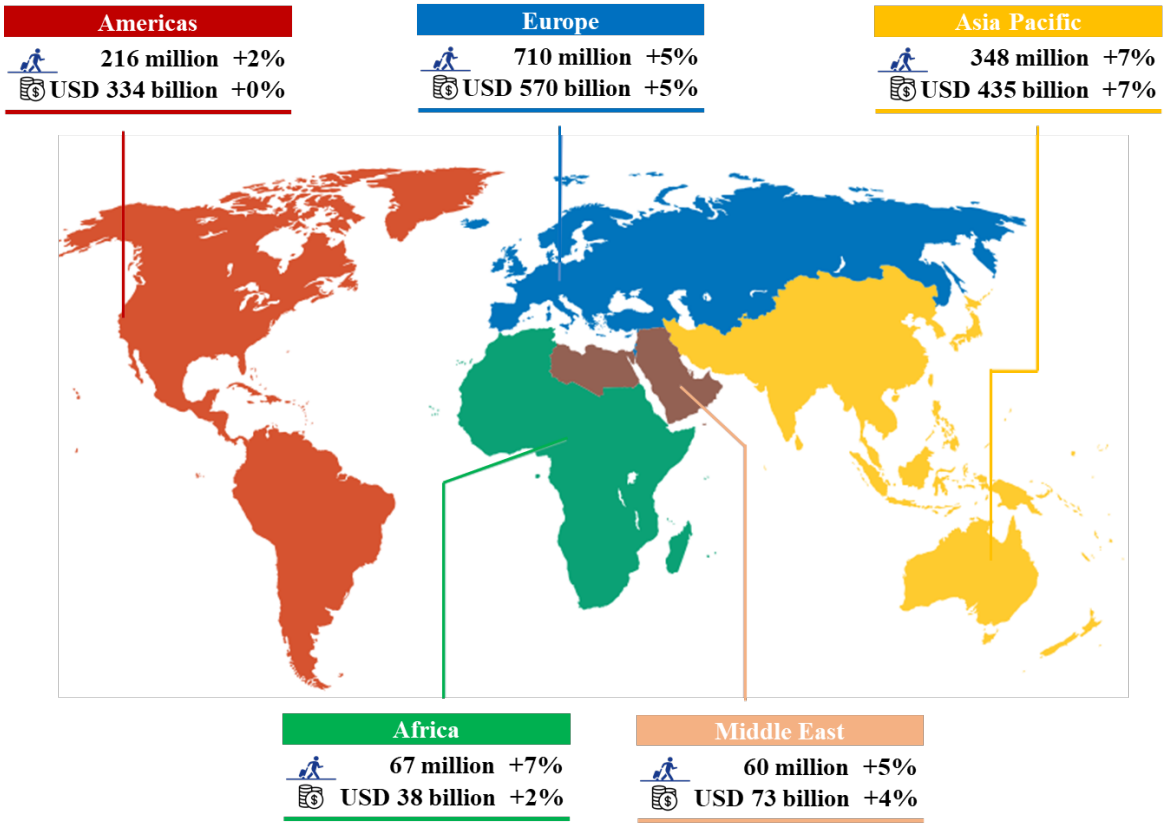

Figure 1.1: International Tourist Arrivals and Tourism Receipts by Region, 2018
(Source: UNWTO, 2019)

Figure 1.1 illustrates the number of international tourist arrivals and tourism receipts for the Americas, Europe, Asia Pacific, Africa and Middle East regions in 2018. Compared to the previous year, the number of international tourist arrivals received in both Asia Pacific and Africa regions has increased by 7%, which is higher than the world's average of 5%. This suggests that the Asia Pacific region's tourism performance outperformed other regions globally. The Asia Pacific region topped the chart in both tourist arrivals and tourism receipts growth. With a 7% increase in both categories compared to the previous year, the Asia Pacific region is demonstrating its strong potential in driving further development and contributing significantly to the world economy through tourism. The robust performance of the region indicates a promising outlook for the future of tourism, making it a crucial area to watch for stakeholders and policymakers in the travel and tourism industry.

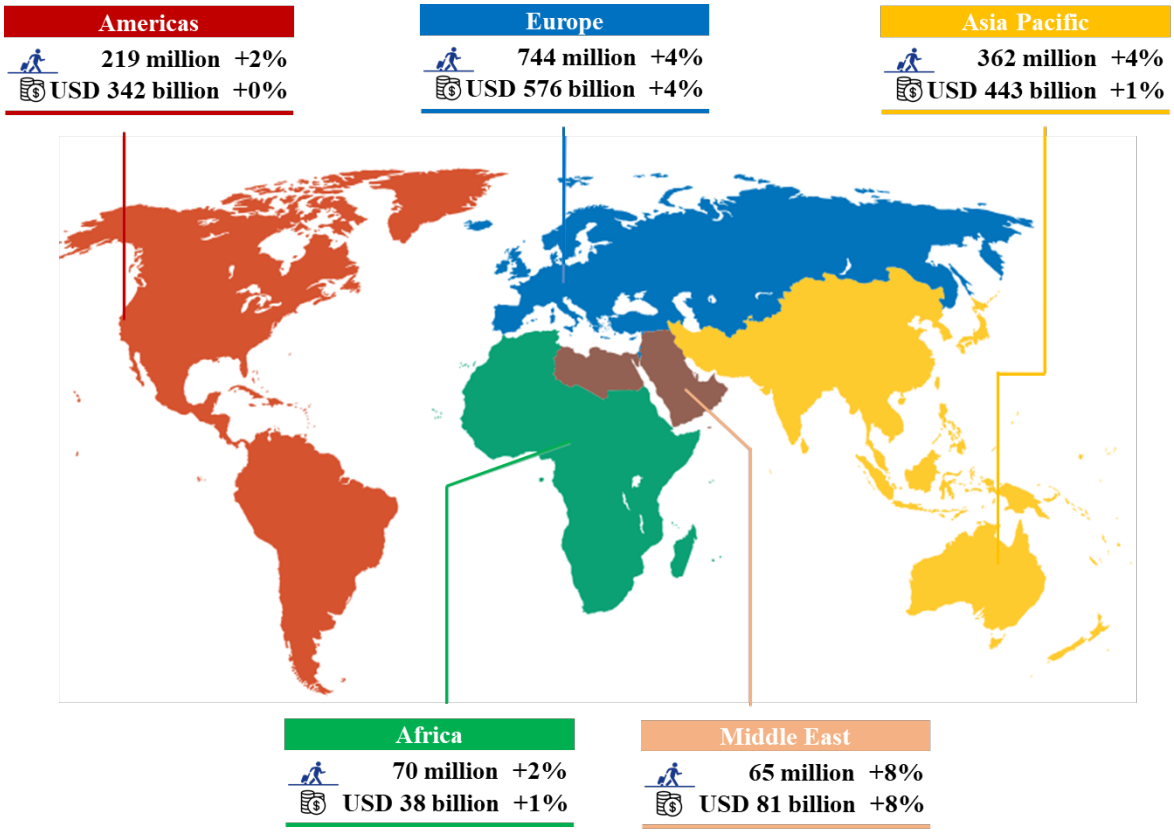

Figure 1.2: International Tourist Arrivals and Tourism Receipts by Region, 2019 (Source: UNWTO, 2020)

The world tourism industry witnessed significant growth in 2019, with 1.46 billion international tourist arrivals generating USD 1,458 billion worldwide (UNWTO, 2020). International tourist arrivals increased by 4% compared to the previous year, while international tourist receipts grew by 3%. Despite this growth, the tourism industry's overall performance in 2019 was weaker than in 2018. The uncertainty surrounding Brexit, the collapse of Thomas Cook's travel group, and the global economic slowdown contributed to this decline. Nonetheless, all regions experienced an increase in international tourist arrivals with the Middle East leading at 8%, followed by Asia Pacific and Europe at 4% each, and the Americas and Africa at 2% growth.

In 2019, the Asia Pacific region emerged as a powerhouse in global tourism, contributing a remarkable 34% (USD 3.0 trillion) to the world's GDP, standing as the foremost contributor among all regions worldwide (WTTC, 2020). Additionally, 182 million job opportunities were created by the region, represented 55% of all sectors' jobs globally in the same year. Notably, the Americas region also made substantial contribution to the world GDP, generating USD 2.5 trillion in tourism revenue and fostering 45.3 million job opportunities. For Europe region, it contributed USD 2.0 trillion to the global GDP and generated 37.1 million job employments. According to WTTC (2020), Germany (USD 347 billion), Italy (USD 260 billion), the United Kingdom (USD 254 billion), France (USD 229 billion), and Spain (USD 198 billion) stood out as the leading contributors to the significant tourism share in European countries for the year 2019 as illustrated in Figure 1.2.

The Middle East region emerged as the second fastest growing region, following closely on the heels of the Asia Pacific. The region demonstrated a robust economic performance, contributed a total of USD 245.5 billion to the global GDP and created 6.7 million job opportunities. Simultaneously, the African region, though contributing comparatively less, still wielded significant economic impact, adding hundreds of billions of dollars to the global GDP. In 2019, it contributed USD 168.5 billion in tourism revenue, fostering 24.6 million jobs. Key contributors within the region included Egypt, South Africa, and Nigeria, collectively accounting 42.8% of the tourism revenue in the region.

Unfortunately, the outbreak of the COVID-19 pandemic at the end of 2019 had a severe impact on the global tourism industry. Movement restrictions and border closures implemented by many countries to control the virus's spread led to a dramatic decline in both international tourist arrivals and revenue worldwide. In 2020, the tourism industry