

Assessing the Impacts of Tourism Climate Index and Holiday Climate Index on Tourism Demand in Malaysia

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Abstract

This study aims to investigate the impacts of climate change on tourism demand in Malaysia. To date, this is the first study to employ the tourism climate index (TCI) and the holiday climate index (HCI) to examine the linkage between climate variables and tourism demand in Malaysia. Both the TCI and the HCI were constructed by integrating several climatic variables – temperature, humidity, precipitation, cloud cover, duration of sunshine, and wind speed into a single numerical index. The climate indexes were theoretically based on the biometeorological literature to reflect human thermal comfort. This paper utilized the effective temperature to measure human thermal comfort based on the ASHRAE-55 standard and employed monthly data from 2010 through 2020. The weather data were gathered from The Weather Online. Meanwhile, the number of international tourist arrivals to Malaysia was collected from the Ministry of Tourism Malaysia. The empirical outcomes of this study show that both the TCI and the HCI illustrated similar trends with the tourist visitation pattern in Malaysia. These results indicate that the climatic conditions potentially affect demand in Malaysia's tourism industry. Therefore, both the TCI and HCI provide valuable insights to the Malaysian government and key industry players to design tourism policies and products. Lastly, this study also contributes to the literature related to tourism studies.

Keywords: Tourism climate index (TCI), Holiday climate index (HCI), Tourism demand, ASHRAE-55, Thermal comfort, Sustainable growth.

Introduction

The tourism industry is one of the largest and fastest-growing industries around the globe. It plays a crucial role in driving economic development, creating job opportunities, driving prosperity, and empowering various people across the full spectrum of society. The world tourism industry accounted for 10.3% (USD8.9 trillion) of global GDP in 2019 (WTTC, 2020). In 2019, the world tourism industry grew 3.5% globally, as compared to the preceding year. This growth was also higher than the overall GDP growth of 2.5% around the globe, indicating that the tourism industry was performing at a promising rate. Besides that, the world tourism industry has created 330 million job opportunities, which is one in ten jobs around the world (WTTC, 2020). The Asia Pacific region was the fastest-growing region with 5.5% growth, and it contributed USD3.0 trillion of global GDP in 2019. In that year, 360.7 million international tourists visited the Asia Pacific region, which is a 3.5% increase over 2018 (UNWTO, 2020). In addition, the Asia Pacific region was the leader in job creation over the past five years, and it has created 21.5 million new jobs or equivalent to 56% of all new jobs worldwide. The total tourism employment in the region represented 55% (182 million jobs) of all sectors' jobs globally in 2019 (WTTC, 2020). Specifically, Southeast Asia region played a crucial role in the tourism market by accounting for 38.1% (137.4 million tourists) of total international tourist arrivals and 33.3% (USD147.6 trillion) of total international tourism receipts in the Asia Pacific region.

Due to the outbreak of the COVID-19 pandemic, the world tourism industry has been tremendously impacted by ongoing travel restrictions around the globe. In 2020, the world tourism industry suffered a total loss of USD4.5 trillion, and the tourism contribution declined a staggering 49.1% as compared to 2019 (WTTC, 2021). Furthermore, domestic visitor expenditure declined by 45.0% while international visitor spending decreased an unprecedented 69.4% due to restrictions on travel movement. The outbreak of COVID-19 pandemic also caused 62 million or 18.5% of tourism jobs lost globally in 2020. According to UNWTO (2022a), the world tourism industry showed signs of recovery in 2021, with a 4.0% growth of international tourist arrivals around the globe. Although the world tourism industry received 400 million tourist arrivals in 2021, this figure was still 72.0% below the pre-pandemic year of 2019. In January 2022, global tourism enjoyed a significant rebound of 130% more international tourist arrivals as compared to 2021 (UNWTO, 2022b). Thus, the world tourism industry is showing strong momentum of recovery in 2022, thanks to vaccination programs and the easing of travel restrictions around the globe.

Indeed, Malaysia has been ranked as one of the most popular tourism destinations in the Southeast Asia sub-region. In 2019, the Malaysian tourism industry had received 26.1 million international tourist arrivals and generated USD19.8 billion of international tourism receipts in 2019 (WTTC, 2021). According to the Department of Statistics Malaysia (2020), the tourism industry continues to perform with good momentum, and its significant growth has contributed 15.9% of Malaysian's GDP in 2019. In addition, the Malaysian tourism industry has created 3.6 million job opportunities which is equivalent to 23.6% of total job employment in Malaysia. However, the COVID-19 pandemic had a huge impact on Malaysian tourism industry in 2020 and 2021. According to Tourism Malaysia (2022), the number of international tourist arrivals in Malaysia plunged by 83.4% in 2020 and it furthered to 97.0% in 2021. Meanwhile, the Malaysian international tourism receipts declined to USD3.0 billion (-