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Tourism competitiveness and tourism sector performance: Empirical insights from new data

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ABSTRACT

The relevance of the tourism to the prosperity of nations has long been acknowledged. However, there is dearth of studies linking the tourism competitiveness TC to tourism performance. This study considered the global perspective of the nexus between TC and tourism performance. It captures heterogeneity of the countries and measures of both tourism competiveness and performance. Using three-stage least square panel data estimation techniques, the maor findings reveal that TC is a maor driver of the tourism flows and tourism contribution to GDP for all regions and income groups of countries across the world. However, the effects heterogeneous based on the regions and income groups of the countries as well as the measures of the tourism performance. Infrastructure is a universal driver of tourism performance while policy conditions, enabling environment, and Natural and Cultural Resources are also critical determinants of tourism performance. Thus, this study suggest that, for countries around the world to promote the performance of the tourism sector, policymakers and stakeholders in the travel and tourism industry should give adequate attention to the improvement of the TC and factor in the multidimensional nature of the relationship between TC and tourism performance in their policy frameworks. The provide policy recommendation suitable for each region and income groups of countries.

1. Introduction

The contribution of tourism to economic growth and development has long been identified and affirmed. Globally, the tourism industry is one of the key sectors of the world economy that contributes immensely to the creation of jobs, generation huge revenues, and the promotion of economic prosperity. It is also one of the fastest-growing sectors. For instance, the World Travel and Tourism Council (WTTC) reported that in 2018, the tourism sector accounted for 10.4 percent of the world gross domestic product (GDP), created 319 million jobs (10% of total employment) and accounted for about 6.5 percent of total global exports (Manzo, 2019). Moreover, international tourist receipts increased from 811 billion US Dollars in 2005 to 1.65 trillion US Dollars in 2018 while the number of international tourist arrivals increased from 823 billion in 2005 to 1.4 billion tourists in 2018 (World Tourism Organization –UNWTO, 2019). Hence, the tourism industry plays a critical role in the growth and development of economies across the world.

The growing importance of the tourism industry arouses the interest of researchers and policymakers to evaluate the impact of the sector and understand the drivers of its performance over time and across countries and regions. This attracted a great deal of interest in the empirical investigation of the tourism-led growth hypothesis. Most of the studies supported the hypothesis (Belloumi, 2010; Tugcu, 2014; Roudi, Arasli, & Akadiri, 2019). Furthermore, the importance of tourism in propelling economic growth makes it imperative to understand the drivers of the performance of the tourism sector. In light of this, few studies have evaluated the determinants of tourism demand and supply in many countries and regions (see Uysal, 1998; Formica & Uysal, 2006; Song, Li, Witt, & Fei, 2016; Martins, Gan, & Ferreira-Lopes, 2017; Tardieu & Tuffery, 2019; Petrovic & Milićević, 2019; Pompili, Pisati, & Lorenzini, 2019; Gunter, Shafiullah, Okafor and Khalid, 2019; Dogru, Bulut, & Sirakaya-Turk, 2019; Gunter, et al., 2019; Rosselló-Nadal & HE, 2020; Takahashi, 2020).

However, there is a dearth of studies linking tourism competitiveness (TC) to tourism performance. Most of the related studies are narrow in terms of their spatial coverage and the variables considered. They considered specific countries, small groups of countries, or a particular region, ignoring heterogeneity of tourism destination and the global effects (Croes & Kubickova, 2013; Hanafiah, Hemdi, & Ahmad, 2016; Martins et al., 2017). In terms of the determinants, most of the early

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studies focused on the causal relationship between tourism demand and few macroeconomic fundamentals for individual countries and regions (Song et al., 2016). There is no broad-based study on the determinants of tourism sector performance. Thus, the previous studies lack universality and wider applicability of their findings for policymaking becomes difficult if not impossible. Such an attempt could lead to bias conclusions and wrong choice of policy measures to develop the tourism sector across the world.

Ivanov and Webster (2013), Marti and Puertas (2017), and Hanafiah and Zulkifly (2019) are the few studies that examined the relationship between tourism competitiveness and tourism performance. However, the study used cross-sectional data for the years 2011, 2015, and 2017 respectively. Using cross-sectional data limits the sample size precludes the dynamic relationship between the variables over time and make the study outdated. Also, the studies do not capture regional and income heterogeneity of the countries considered. This limits the applicability of the findings of the studies. Consequently, Hanafiah and Zulkifly (2019) themselves, recognized the limitation of their study and suggested that future studies could segment the sample based on the clusters of countries related by destination-specific characteristics such as regions and income groups considered in this study to capture the heterogeneity of the drivers of tourism demand. Even, the travel and TC report 2019 only examine the correlation between the overall TTCI and tourist international arrivals. Currently, no study considers the nexus between the competitiveness and performance of the tourism sector on a global perspective using panel data. This leaves certain research questions that are still begging for pragmatic answers.

First, does the TC fundamentally matters for the performance of the tourism sector? Second, which component (sub-index or pillar) of the tourism competitiveness matters? Third, for which aspect of tourism performance (arrivals or GDP) does the competitiveness matter most? Fourth, does the tourism competitiveness matter more than the macroeconomic fundamentals in driving the tourism sector? Finally, does the effect of tourism competitiveness homogenous across regions and income groups of countries around the world? All these questions are still begging for pragmatic answers. The main contribution of this study is to answer the aforementioned burning questions. Providing empirical answers to these questions will not only bridge the research gap but also offer remarkable policy options for stakeholders aiming at the development of the tourism industry across the countries and regions in the world.

Therefore, this study evaluates the impact of travel and tourism competitiveness on the performance of the tourism sector across the globe. It captures the regional and income heterogeneity of the countries and measures of both tourism competitiveness and performance. The regional and global perspectives of this study enable a comprehensive understanding of the differences in the performance of the tourism industry across countries and regions. It enables researchers, policymakers, and other stakeholders to identify the kind of policies that are crucial for the development of the tourism industry in each region and globally.

The remaining part of the study is divided into the following sections. Section two contains a review of related literature. Section three presents a discussion on data measurement and methodology. Section four contains the presentation and discussion of findings. The conclusion, policy implications, and recommendations are discussed in section five.

2. Literature review

Tourism has been one of the critical sectors of the economy for several countries across the world. Therefore, there is a proliferation of studies on tourism competitiveness. Most studies in the tourism literature are focused on the determinants of tourism competitiveness and few of them considered the drivers of tourism performance (Croes & Kubickova, 2013; Ivanov and Webster, 2013; Marti and Puertas, 2017; Hanafiah et al., 2016; Martins et al., 2017; Hanafiah & Zulkifly, 2019; Shafiullah, Okafor, & Khalid, 2019; Dogru et al., 2019; Gunter, et al., 2019; Rosselló-Nadal & HE, 2020; Takahashi, 2020). There is little or no attention to the impact of the tourism competitiveness on tourism performance across the world. To fill this research gap. The literature review in this study considered the strands of theoretical and empirical literature on the drivers of both tourism competitiveness and tourism performance.

The conceptualization of tourism destination competitiveness has been contentious because the concept is complex, multidimensional and difficult to measure (Crouch & Ritchie, 1999; Dwyer and Kim, 2003; Crouch, 2011; Abreu-Novais, Ruhanen, & Arcodia, 2018). Thus it is difficult to identify a universally acceptable definition of tourism competitiveness. Nevertheless, some popular and comprehensive conceptual definitions are often adopted (see Ritchie & Crouch, 1993; Abreu-Novais et al., 2018).

In line with the conceptualization, models were developed based on Michael Porter's Diamond Model also known as Theory of National Competitive Advantage of Industries (see Porter, 1990). The models compare competitive advantages in resource endowment of the tourism destinations and observed that global and competitive micro environment significantly affect the attractiveness of tourism destination (see Ritchie & Crouch, 1993; Crouch and Ritchie, 1999; Ritchie, Crouch and Hudson, 2001).

Ritchie and Crouch (1993) posit that four categories of factors, namely, core resources and attractors, supporting factors and resources, destination policy, planning and development, and destination management are determining factors shaping the visitors' choice of tourism destination. The core resources and attractors constitute the key motives that urge visitors to choose a destination or another. Supporting factors and resources encompass facilities that supports the development of the tourism industry. This includes infrastructure, lodging, services, accessibility, etc.

Subsequently, Dwyer and Kim (2003) developed the Integrated Model of Destination Competitiveness, which expanded the Ritchie and Crouch (1993) TDC model to include indicators mainly classified into seven groups; endowed resources, created resources; destination management, demand factors, market performance indicators, situational factors and supporting factors. Moreover, Heat (2003) developed TDC models, which follows a house-like structure with four vital elements – "Foundation, Cement, Building Blocks and Roof". The 'foundation' symbolizes factors such as culture, history, climate, security and health, transportation and communication infrastructure, business environment, location and value added of destination, services and equipment for visitors, et cetera.

The 'Cement' includes factors that enables the connection of the diverse dimensions of tourism competitiveness. These factors include transparency and flexibility of communication channels, creation of avenues for corroboration, provision of information, stakeholders' relationship, studies and planning among other factors. The 'Building Blocks' comprises the global strategic marketing management and sustainable development policies, which are the fundamental pillars of the tourism development of a destination. Finally, Heat (2003) describes the 'Roof' as the shared strategic vision for the development of the tourism industry in a destination. In addition to the models discussed, several studies equally contribute to the conceptualization and theorization of the TDC in recent times (see Andrades-Caldito et al., 2014; Cvelbar, Dwyer and Mihalic, 2016; Goffi, 2013).

Following the development of conceptual and theoretical models of TDC, several empirical studies were carried focusing on the measurement of the various indicators and assessment of their effect on the TDC. Assaker, Hallak, Vinzi, and O'Connor (2014) examined the relationship between tourism competitiveness and the economy, natural environment, and infrastructure for a cross-sectional sample of 154 countries using Partial Least Square Path Modeling (PLSPM). The study reveals that infrastructure has a direct positive effect on TDC while the indirect positive impact of the economy on TDC is mediated via the environment

and infrastructure. Similarly, Cvelbar, Dwyer, Koman, and Mihalič (2016) considered a productivity-related measure of TDC for a sample of 159 countries over a period of 200–2011 using six destination competitiveness factors measured by 55 indicators. The study found that infrastructure and destination management (tourism-specific factors) are the fundamental drivers of tourism competitiveness in developing countries whereas the competitiveness of the developed countries in mainly determined by both the tourism-specific and wider economic factors such as general infrastructure, macroeconomic environment, and the business environment. Furthermore, social and technological indicators have a greater impact than human and environmental factors on the TDC (Gooroochurn & Sugiyarto, 2005).

From the demand viewpoint, Andrades-Caldito et al. (2014) evaluated the determinants of TDC and examine their influence on the tourists' choice of destination to visit. The study proposed a structural equation model derived from the theoretical TDC models. The model was tested for a sample of tourists who visited Andalucia, Spain in 2010. The study found that destination management and destination resources are vital determinants of TDC. Tourists perceived that destination management provides better and satisfactory services using destination resources. The study further concluded that core resources are the basis for the development of created resources. Finally, the study revealed that destination management is a significant predictor of tourist's choice of destination and created resources that have the strongest impact on TDC. Other studies such as Goffi (2013), Huang and Peng (2012), Menzanec and Ring (2011) Croes and Kubickova (2013), Mendola and Volo (2017) empirically evaluated the determinants of TDC and came up with similar conclusions.

Another aspect of the tourism literature that received research attention is the evaluation of the determinants of tourist performance. That is, the drivers of tourism demand and supply if you like. The studies in this aspect started with the pioneering work of Morley (1992) who studied the theoretical tourism demand function and evaluated its properties such as homogeneity, asymmetric and adding-up properties. Following this theoretical move, several empirical studies sprang up in the area of the determinants of tourism demand. Among the early studies that applied the Morley theoretical model is Syriopoulos and Sinclair (1993) who tested the model for a sample of Mediterranean countries. The study econometrically estimated the own and cross-price elasticities of tourism expenditure of US and western European countries on Mediterranean countries. The findings reveal the relevance of relative price in determining tourism demand. Consequently, prices, population, exchange rate, and income level have become the focus of researchers as the fundamental determinants of tourism performance (measured by demand and supply variables). The first category of studies in this regard examines the causal relationship between tourism demand and economic growth measured by the growth rate of GDP (see Song, Witt and Fei, 2016; Untong, Ramos, Kaosa-Ard, & Rey-Maquieira, 2015). For example, Sequeira and Campos (2007) and Sequeira and Nunes (2008) assessed the causal association between economic development and international tourism. The studies considered the effect of some macroeconomic variables including real GDP, population investment, trade openness among others on tourist arrivals, tourist receipts. Using panel data techniques, the studies concluded that tourism is a significant determinant of economic development and poor countries benefit more from both tourism demand and receipts, whereas, small countries benefit less from specializing in tourism.

In the same spirit, Odhiambo (2011), using Autoregressive Distributed Lagged (ARDL) Bounds test, submitted that tourism propels economic growth in the short run, but in the long run, growth-led tourism development prevails in the case of Tanzania. Besides, the study observed a bidirectional causality between tourism and the exchange rate in the country. This implies that both tourism demand and exchange rate drives each other in the short run. Harvey, Faruoka, and Munir (2013) using the same approach, ARDL for the case of the Philippine confirmed the importance of economic growth (GDP) for the development of tourism not only in the short but also in the long run. Similarly, Dritsakis (2013) concluded that real effective exchange rates and GDP are strongly related to tourism development in seven Mediterranean countries (Turkey, Cyprus, Greece, Italy, France, Tunisia, and Spain) over the period 1980–2007. Chi (2015) found that world GDP per capita is a crucial determinant of tourism demand and supply for the US and eleven of its main tourism and trade partners over the period 1960–2011. Also, the study finds out that tourism demand is more elastic (sensitive) to changes in income that changes in exchange rates.

Prices and exchange rates are also considered in some literature as important drivers of tourism demand. For instance, Dwyer and Forsyth (2002) as well as Oh and Ditton (2006) in separate studies found that prices and exchange rates are both significant determinants of tourism flows. Exchange rate depreciation and lower inflation rate enhances the price competitiveness of tourism destination, and hence tourism demand. Considering exchange rate volatility, Chang and Mcaleer (2012) use daily exchange rate data for Taiwan over the period covering 1 January 1990 to 31 December 2008 and found that the volatility of the exchange rate can have either positive or negative effect on tourist arrivals depending on the source of the international tourists. The study also found that relative prices and exchange rate volatility tend to have different effects on tourist arrivals. In the same vein, Katircioglu, Katircioğlu, and Altinay (2018) found a significant long-run relationship between financial development and tourism development for Turkey. Considering a South African case, Saayman and Saayman (2013) examined the effect of exchange rate volatility on tourism demand. The study finds that the volatility of the South African Rand has a significant impact on both tourist arrivals and visitors' spending.

Recently, Martins et al. (2017) used three econometric models to examine the relationship between macroeconomic variables and tourism demand measured by tourists' population (inbound) and on-the-ground visitors' expenditure for a panel of 218 countries over the period 1995–2012. The study provided an evidence that increase in world GDP per capita, an increase in exchange rates (depreciation) and lower domestic prices tend to boost tourism demand. Additionally, GDP and relative prices are more important in explaining tourist arrivals and tourist expenditure respectively. The finding was found to be robust across different continents.

Several other studies also evaluated the effect of a couple of macroeconomic variables using different countries and groups of countries across the world. Although the studies made diverse submissions, a recent meta-analysis by Peng, Song, Crouch, and Witt (2015) identified that prices, GDP, exchange rates and population are the fundamental determinants of tourism performance over the times (see Schiff & Becken, 2011; Santana-Gallego, Ledesma-Rodríguez, & Perez-Rodríguez, 2010; De Vita, 2014; Gatt & Falzon, 2014; Chen, Lin, & Chen, 2015; Song et al., 2016).

Now, the relationship between tourism competitiveness and tourism performance begins to receive attention from researchers. Some studies have been identified in that direction. Ivanov and Webster (2013) investigated the impact of tourism competitiveness on tourism contribution to GDP for a sample of 131 countries. Using the travel and tourism competitive index for 2011, the study revealed that tourism competitiveness does not have a significant effect on the contribution of tourism to economic growth. Similarly, Marti and Puertas (2017) employed a gravity model to find out the impact of tourism competitiveness on tourist arrivals of European Mediterranean countries in 2015. The result showed a negative effect of the tourism competitiveness on tourism. Therefore, the study concluded that the destination countries do not take advantage of their tourism potentials and need to design a viable policy framework to boost their tourism performance.

Most recently, Hanafiah and Zulkifly (2019) examined the relationship between TDC and tourism performance. The study evaluated the soundness of the components of the TDC in explain tourism performance for a sample of 115 countries using the WEF 2015 travel and tourism competitiveness index. The study confirmed that core resources, tourism

price, globalization, and complementary conditions are the significant determinants of tourism performance. The findings also revealed a significant impact of the TDC on tourism performance, and the effect on less developed and developed countries is diverse.

While these studies made a significant contribution by relating tourism competitiveness, their shared defect is that they failed to consider the sub-indexes of the tourism competitive index. Moreover, the studies used cross-sectional data and failed to capture the regional and income heterogeneity of the countries. Consequently, the studies failed to account for the dynamic changes and heterogeneity that might be inherent in the tourism competitiveness and performance nexus. Thus, these estimates might be biased resulting in unreliable policy inferences.

Therefore, this study tends to fill the research gap by evaluating the effect of tourism competitiveness on tourism performance from a global perspective. This current study does not only used most recent panel data but also considers the components of the competitiveness as well as regional and income heterogeneity of the countries in the analysis.

3. Methodology

3.1. Data and measurement

Among all the developed indicators and measures, the TTCI of the WEF is widely used because of its methodological superiority, and comprehensiveness in terms of the range of issues captured and the geographical coverage (Hanafiah & Zulkifly, 2019; Marti & Puertas, 2017; Martins et al., 2017).

Hence, we used the 2019 version of the Travel and TC index (TTCI) published by WEF in an interval of two years since 2007 (WEF, 2019). Meanwhile, to ensure wider coverage and exploit the recent methodological improvements of the data, we used a panel data from 2015 through 2019. The previous versions cover a fewer number of countries and have some methodological defects such as giving homogenous (same) weight to all the pillars and sub-indices (Wu, Lan, & Lee, 2012; Hanafiah et al., 2016; Novais et al., 2018). These recent versions of the TTCI remedy the defects of the previous version. Thus, it is most reliable for policy analysis. The TTCI is calculated from four sub-indices composed of 14 pillars which comprised 90 indicators. The indicators are measured based on the WEF Executive Opinion Survey. The responses on each indicator are rated on values ranging from 1 (worst) to 7 (best) (WEF, 2019). The four sub-indices and the issues captured by each are briefly discussed as follows.

Enabling Environment (Sub-index A): This encapsulates issues ranging from the business environment, health and hygiene, security and safety, human resources, and the labor market as well as the availability of information and communication technology. Travel and Tourism Policy and Enabling Conditions (Sub-index B): This measures the prioritization of travel and tourism, international openness, environmental sustainability, and price competitiveness. Infrastructure (Sub-index C): The components included for the calculation of this sub-index are transport (air, land, and port) infrastructure and tourist services infrastructure. Natural and Cultural Resources (Sub-index D): This covers the aspects of natural resources, cultural resources, and business travel.

The TTCI is estimated as an arithmetic means of the sub-indices, which are in turn calculated from the averages of the pillars. The pillars measured by the unweighted averages of the individual indicators. The details of the indicators contained in each of the sub-indices and the aspects (pillars) covered by each are obtainable from the methodology section of the WEF report (WEF, 2019) at http://reports.weforum.org/ttcr. The overall TTCI and the four sub-indices are used in this study to capture TC. This enables the comparison of the various components of the TC across the regions. It captures a wide range of issues and identifies the policy areas in which each region has an advantage and the aspect of the competitiveness that is the most important determinant of TC.

The variables used for the tourism performance are obtained from the hard (non-survey) data of the WEF collected from various sources. The TTCI measures the TC while international tourist arrivals, international tourism receipts, and tourism GDP are used as measures of tourism performance. The use of the three different variables is to ensure the robustness of the impact of the TC on tourism performance. Using only one measure of the tourism performance might becloud the understanding of the nature of the relationship and impact between competitiveness and performance. Also, two control variables, GDP, and population obtained from the World Bank's World Development Indicators (WDI) were included to avoid the problem of omission variable bias. The data is collected for 147 countries across the continents of the world based on data availability.

3.2. Model specification

Following Martins et al. (2017) Marti and Puertas (2017) and Hanafiah and Zulkifly (2019) we specified the models as follows.

The first set of models specified contains the overall index of the TTCI for the three dependent variables.

$$lnITA_{i,t} = \beta_0 + +\beta_1 lnGDP_{i,t} + \beta_2 lnPOP_{i,t} + \beta_3 lnTTCI_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

$$lnTGDP_{i,t} = \beta_0 + \beta_1 lnGDP_{i,t} + \beta_2 lnPOP_{i,t} + \beta_3 lnTTCI_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (2)$$

Equations (1) and (2) represent the models for the effect of overall TTCI on international tourist arrivals and travel and tourism sector GDP respectively.

To estimate the effects of the components of the TC, the four sub-indices are included in the models as specified below.

$$lnITA_{i,t} = \beta_0 + \delta_1 lnGDP_{i,t} + \beta_2 lnPOP_{i,t} + \delta_3 lnEE_{i,t} + \beta_4 lnINFR_{i,t} + \beta_5 lnPC_{i,t} + \beta_6 lnNCR_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (3)$$

$$lnTGDP_{i,t} = \beta_0 + \beta_1 lnGDP_{i,t} + \beta_2 lnPOP_{i,t} + \beta_3 lnEE_{i,t} + \beta_4 lnINFR_{i,t} + \beta_5 lnPC_{i,t} + \beta_6 lnNCR_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (4)$$

Equations (3) and (4) represent the models for the effect of the four components of the TTCI on international tourist arrivals and travel and tourism sector GDP respectively. While the TTCI and its components are the main variables of the focus of this study, GDP and population are included as control variables. The inclusion of the control variables is premised on their identification by previous studies as significance drivers of tourism performance. The GDP is a measure of the level of income and development of the destination. Therefore, it determines the capacity of the destination to provide needed infrastructure for the development of the tourism sector and attraction international tourists. Population is also expected to affect both tourist arrivals and tourism GDP. For instance, Martins et al. (2017) Marti and Puertas (2017); Rossello-Nadal and HE (2020) shows that population is positively related to tourist arrivals. This is because higher population of the destination tends to provide higher density of friends and relatives of the visitors. Conforming to the network theory of migration, people tends to visit places where they have friends and relatives more than where they do not have relatives. The relatedness of travel and tourism to family and friendship ties are even likely to be more in the case of this studies where regions are considered. In addition, destination with higher population tends to be cheaper and will attract more tourists than destination with low population (Takahashi, 2020). Therefore, exclusion of the population in the model will lead to the problem of omission variable bias, which renders regression estimates inconsistent and unreliable for policy inferences.

The slope coefficients of the independent variables for the models with overall TTCI are $\beta_1, \beta_2,$ and β_3 respectively while the constant parameter is β_0. For the models with the components of TTCI, The slope

coefficients of the independent variables are denoted by β_1, $\beta_2 \ldots \beta_6$ while the constant parameter is β_0. In all the country-specific and time-specific intercepts are denoted by μ_i and λ_t respectively. These are included in panel data models to capture time and cross-sectional-specific characteristics in the models (Baltagi, 1995). The subscript i and t represent the individual country and time (year) respectively. The natural log of the variables is indicated by ln. The log is taken to harmonize the units of measurement for easy interpretation, solve the problem of outliers (extremely low or extremely high values), and compare the estimates of the slope coefficients in terms of elasticities. The variables are defined in Table 1.

3.3. Methods of data analysis

The three-stage least square estimator is applied for the estimation of all the regression models. The technique has the advantages of solving the econometric problems of endogeneity, heteroscedasticity, and multicollinearity. These problems are likely to be the features of the panel data used in this study. Therefore, to solve these potential problems and produce consistent (reliable) estimates of the coefficients, the three-stage least square estimator is the most appropriate for this study. It is worthy of note that all the models were estimated for the overall sampled countries, regional and income groups separately. This is to capture the global perspective of the TC-tourism performance nexus and also provide specific policy analysis and inferences based on each region and income group of the countries.

4. Results and discussion

4.1. Interpretation and discussion of regression results

The regression results are presented in Table 2 through Table 5. The estimates are obtained using the overall tourism competitive index and its four components (sub-indices) as independent variables (tourism competitiveness) and international tourist arrivals (ITA) and tourism GDP (TGDP) as dependent variables (tourism performance) for the entire sample of countries, regions and income groups. The estimates of the slope coefficients for each variable are used to examine its significance as a determinant of the tourism performance. In this case, the significance is indicated by the P-values denoted by an asterisk in the output. The fitness of the models is evaluated by their respective coefficients of determination (R-square) statistics. Higher values of the R-square statistics indicate the fitness of the model. However, the estimates of the control variables are not discussed because they are not the focus of this study. All the coefficient estimates are interpreted as elasticities or in percentages because the natural logs of both the dependent and independent variables are used for the estimation.

Table 1
Definition of variables.

Name	Definition	Source
Dependent variables		
ITA	International tourist arrivals in thousands.	WEF hard data
TGDP	Travel and tourism GDP in millions US$	WEF hard data
Independent variables		
TTCI	Overall Travel and TC index	WEF soft (survey) data
EE	Enabling Environment (Sub-index A)	WEF soft (survey) data
INFR	Infrastructure (Sub-index C)	WEF soft (survey) data
PC	Travel and Tourism Policy and Conditions (Sub-index B)	WEF soft (survey) data
NCR	Natural and Cultural Resources (Sub-index D)	WEF soft (survey) data
Control variables		
GDP	Gross Domestic product in US$	World Bank's WDI
POP	Population	World Bank's WDI

Note: WEF=World Economic Forum, WDI = World Development Indicators.

4.1.1. Impact of TC on tourism performance globally and by regions

The estimates for the impact of TC on international tourism arrivals are displayed in Table 2. The upper panel (Panel A) of the table contains the estimates for the effect of the overall tourism competitiveness index while the estimates for the sub-indices are reported in the lower portion of the table (Panel B). The estimates for all the sampled countries and the regions are presented in columns (1–6). The result shows that the overall competitiveness index has a significant positive effect on the international tourist arrivals for the entire sample as well as all the regions considered. The estimated slope coefficient (elasticity) of the competitiveness index is significant for the overall sample ($\beta = 1.06$; $P < 0.01$), Americas ($\beta = 0.75$; $P < 0.05$), Asia ($\beta = 2.44$; $P < 0.01$), Europe ($\beta = 1.16$; $P < 0.01$), MENA ($\beta = 2.67$; $P < 0.01$) and Africa ($\beta = 2.15$; $P < 0.01$).

Higher levels of competitiveness will result in higher tourist arrivals in all the regions and the entire globe. This conforms to the Michael Porter's Diamond Model also known as Theory of National Competitive Advantage of Industries (see Porter, 1990). This finding reflects the fact that the European countries are the most competitive region in terms of tourism as it outscored the global average of in almost all the pillars of the travel and tourism competitiveness index. At the same time, the region recorded the highest international tourist arrivals and tourism GDP and has the largest tourism export economy in the world (WEF, 2019). This shows that the Europe is ahead of other regions in tourism performance because of its focus on the improvement of tourism competitiveness over the years.

Moreover, the results show that tourism competitiveness has the greatest effect on the tourist arrival for the MENA region followed by Asia and Africa while its effect on the Americas is the least. These findings corroborate the conclusion of the WEF report that the TC has a greater influence on the tourism sector of the developing economics than the developed economies (WEF, 2019). Thus, tourism arrivals and tourism GDP in other regions would improve significantly with renew attention to the improvement of competitiveness.

Tourist arrival is elastic to the changes in tourism competitiveness for all the regions except the Americas. This implies that an increase in TC brings about more than a proportionate increase in tourist arrivals for all the regions except the Americas for which an increase in TC results to less than a proportionate increase in tourist arrivals. This finding is similar to the submission of Andrades-Caldito et al. (2014) which shows that tourism destination management significantly determines the tourists' choice of destination. By magnitude, a 1% increase in competitiveness leads to 0.75%, 2.44%, 1.16%, 2.67% and 2.15% rise in tourist international tourist arrivals for America, Asia, Europe, MENA, and Africa respectively. The R-square statistic is high (greater than 0.6) for all the models. It is 0.983 for the global sample. This implies that about 98.3% of changes in the tourist arrivals is explained by the independent variables captured in the model. Thus, the model has a good fit and the estimates are valid for policy inferences.

The coefficient estimates for the four components of the TC index in panel B of Table 2. The output shows that all the components are positively related to international tourist arrivals for the global sample (all countries). However, the coefficient estimates of Enabling Environment ($\beta = 2.15$; $P < 0.01$), Policy and Conditions (($\beta = 3.08$; $P < 0.01$) and Infrastructure ($\beta = 1.70$; $P < 0.01$) are statistically significant while Natural and Cultural Resources ($\beta = 0.27$; $P > 0.05$) is statistically insignificant. This implies that the former has a significant effect on tourist arrivals while the latter does not have a significant impact on tourist arrivals. Considering the regression output for each region, the results demonstrate that the coefficient estimates of Natural and Cultural Resources are not statistically significant for all the regions.

On the other hand, the coefficients of Infrastructure are statistically significant for all the regions except Europe. This suggests that

Table 2
Impact of TC on international tourist arrivals by regions.

	Dependent variable: International tourist arrivals (log)					
Panel A: overall tourism competitiveness						
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
	All countries	Americas	Asia	Europe	MENA	Africa
Tourism competiveness (log)	1.06***	0.75**	2.44***	1.16***	2.67***	2.15***
	(0.33)	(0.32)	(0.60)	(0.36)	(0.27)	(0.27)
GDP (log)	2.08***	0.33**	−0.42	0.24	−0.32***	0.31**
	(0.57)	(0.16)	(0.30)	(0.18)	(0.11)	(0.13)
Population (log)	0.060	0.14	0.66**	0.32**	0.97***	0.18
	(1.24)	(0.14)	(0.26)	(0.16)	(0.10)	(0.11)
Constant	−45.7*	−5.69***	−1.94	−7.42***	−9.15***	−10.6***
	(23.9)	(1.11)	(2.11)	(1.53)	(1.89)	(1.53)
Observations	441	81	69	138	42	111
R-squared	0.982	0.852	0.670	0.709	0.859	0.746
Panel B: Components of TC						
Enabling Environment	2.15***	3.96**	4.69	−0.75	3.32**	3.08***
	(0.64)	(1.65)	(2.79)	(1.97)	(1.56)	(1.09)
Policy and Conditions	3.08***	1.19	2.43	5.42***	1.65	2.06
	(0.73)	(1.18)	(2.10)	(1.83)	(1.38)	(1.34)
Infrastructure	1.70***	1.27**	3.66**	1.68	2.93***	1.45*
	(0.42)	(0.58)	(1.39)	(1.13)	(0.77)	(0.79)
Natural and Cultural Resources	0.27	−0.44	0.39	0.46	0.92	0.91
	(0.27)	(0.36)	(0.93)	(0.68)	(0.95)	(0.63)
GDP (log)	0.13	−0.0045	−0.62*	0.11	−0.42*	0.32**
	(0.090)	(0.24)	(0.35)	(0.24)	(0.22)	(0.14)
Population (log)	0.43***	0.70**	1.04***	0.51*	1.16***	0.21
	(0.093)	(0.27)	(0.37)	(0.27)	(0.25)	(0.13)
Constant	−12.4***	−12.2***	−9.24	−12.0***	−11.9***	−13.6***
	(1.46)	(2.26)	(5.74)	(3.31)	(3.80)	(3.25)
Observations	441	81	69	138	42	111
R-squared	0.983	0.884	0.708	0.741	0.870	0.767

Standard errors in parentheses***, ** and * denote 1%, 5% and 10% level of significance respectively.

infrastructure is a universal determinant of tourist arrivals while natural and cultural resources do not matter for the flow of international tourist arrivals. Furthermore, the coefficients of Enabling Environment are statistically significant and have the highest impact, compared to other components of the TC, on the tourist arrivals for Americas (3.96), MENA (3.32), and Africa (3.08). Comparing by region, the Enabling

Table 3
Impact of TC on tourism GDP. Impact of TC on tourism performance by income groups.

	Dependent variable: tourism GDP (log)					
Panel A: overall tourism competitiveness						
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
	All countries	Americas	Asia	Europe	MENA	Africa
Tourism competitiveness (log)	−0.036	1.35***	1.04***	1.27***	0.67***	1.38***
	(0.16)	(0.27)	(0.28)	(0.18)	(0.16)	(0.17)
GDP (log)	0.44	0.39***	0.43***	0.49***	0.41***	0.63***
	(0.27)	(0.13)	(0.15)	(0.095)	(0.069)	(0.075)
Population (log)	1.51**	0.36***	0.29**	0.22***	0.34***	0.16**
	(0.59)	(0.12)	(0.12)	(0.082)	(0.063)	(0.069)
Constant	−28.9**	−12.7***	−11.3***	−13.3***	−10.1***	−15.6***
	(11.4)	(0.94)	(1.14)	(0.79)	(1.15)	(0.92)
Observations	441	81	69	138	42	111
R-squared	0.997	0.952	0.935	0.943	0.906	0.905
Panel B: Components of TC						
Enabling Environment	−0.40	2.22	1.78	−0.75	−1.16	0.91
	(0.39)	(1.47)	(1.24)	(0.92)	(0.87)	(0.60)
Policy and Conditions	0.86**	0.60	0.66	0.63	1.38*	1.47*
	(0.43)	(1.06)	(0.93)	(0.85)	(0.77)	(0.73)
Infrastructure	2.13***	2.08***	2.27***	2.45***	1.29***	2.21***
	(0.25)	(0.51)	(0.61)	(0.53)	(0.43)	(0.43)
Natural and Cultural Resources	0.26	0.66**	−0.090	0.94***	−0.74	−0.55
	(0.16)	(0.32)	(0.44)	(0.32)	(0.53)	(0.34)
GDP (log)	0.54***	0.19	0.28*	0.45***	0.60***	0.66***
	(0.054)	(0.21)	(0.15)	(0.11)	(0.12)	(0.077)
Population (log)	0.30***	0.65***	0.53***	0.22*	0.33**	0.31***
	(0.056)	(0.24)	(0.16)	(0.12)	(0.14)	(0.073)
Constant	−14.0***	−14.8***	−14.0***	−10.9***	−13.5***	−19.1***
	(0.87)	(2.02)	(2.79)	(1.55)	(2.12)	(1.76)
Observations	441	81	69	138	42	111
R-squared	0.940	0.959	0.949	0.956	0.926	0.928

Standard errors in parentheses***, ** and * denote 1%, 5% and 10% level of significance respectively.

Environment has its greatest significant effect on the tourist arrivals of the American countries and the least in Sub-Saharan Africa (Africa). The result further shows that the parameter estimate ($\beta = 5.42$; $P < 0.01$) of the policy and conditions sub-index is the only component of the tourism competitiveness that is statistically significant only for the European regions. It is not significant for other regions. This implies that desirable policy conditions are the main drivers of the international tourist arrivals in Europe. By magnitude, a 1% rise in the policy and condition sub-index results in about a 5.42% increase in tourist arrivals in the region. This portrays the importance of the right policy framework for the development of tourism in Europe.

The estimates for the model in which the tourism GDP is the dependent variable are presented in Table 3. The presentation of the results is the same as the previous tables. The regression output indicates that the overall TC index is insignificant when the global sample is considered. This is indicated by the coefficient estimate ($\beta = -0.036$) which is statistically insignificant. However, it is highly significant for all the regional samples. The elasticities are greater than one for all the regions except MENA countries. This shows that a rise in the competitiveness index brings about more than a proportionate rise in the tourism GDP in all the regions but MENA.

Like the previous cases, the coefficients of infrastructure are statistically significant across the board with the highest impact on the tourism GDP of Europe. The coefficients of Policy and Conditions sub-index are weakly significant for MENA and Africa while that of Natural and Cultural Resources is highly significant for Americas (($\beta = 0.66$; $P < 0.01$) and Europe ($\beta = 0.94$; $P < 0.01$). Back to the global sample, only the coefficients of Infrastructure and Policy and conditions sub-indices are significant as determinants of tourism GDP. Therefore, TC has a multifaceted positive impact on tourism GDP across the world.

To further capture the heterogeneity of the relationship between TC and tourism performance, the three-stage least squares regression was estimated for different income groups of the countries considered. The countries are were categorized into four different income groups as presented by WEF (2019) reflecting the IMF classification of countries by their level of income. Accordingly, the countries were categorized into low-income countries (LIC), low-middle-income countries (LMIC), upper-middle-income countries (UMIC), and the high-income countries (HIC). The regression outputs for each income group are presented in columns 1 to 4 of Table 4 and Table 5. Notably, the result for the global sample is not repeated alongside the results of the income groups because it is the same as the one presented under the regional groups present above.

In Table 4, the estimate for the evaluation of the effect of TC on tourism arrivals. The estimates indicate that overall tourism has a positive and highly significant effect on tourism arrivals for all the groups. This finding verified the theoretical propositions of Ritchie and Crouch (1993) and Heath (2003). The coefficient of the overall TC is 1.66, 2.16, 1.39, and 1.31 for LIC, LMIC, UMIC, and HIC respectively. This specifies that the increase (decrease) in TC results to more than a proportionate increase (decrease) in tourist arrivals the LMIC benefits most from improvement in TC. Focusing on the impact of the sub-indices of the TC tourist arrivals for each income group, the estimates depict that the coefficients of Enabling Environment and Policy and Conditions are statistically significant for LMIC and HIC while the coefficient of Infrastructure is significant for all income groups but LMIC while the coefficients of Natural and Cultural Resources are statistically insignificant for all the income groups. This shows that the effects of the components of TC on tourist arrivals vary based on the level of income of the countries.

Using the tourism GDP, the results of the impact of TC on tourism GDP by income groups are contained in Table 5. The estimates reveal that the coefficients of the overall TC are positive and highly significant for all the income groups of countries. This implies that TC is an important driver of tourism GDP across all levels of income. Meanwhile, the effect is greatest for the UMIC and least for the LIC. This suggests that the LIC is the least beneficiary of TC in terms of its contribution to GDP. For the sub-indices, the infrastructure sub-index is depicted to be the

Table 4
Impact of TC on international tourist arrivals by income groups.

Dependent variable: International tourist arrivals (log)				
Panel A: overall tourism competitiveness				
Independent Variables	(1) Low-Income Countries	(2) Low-Middle-Income Countries	(3) Upper-middle income countries	(4) High-income countries.
Tourism competiveness (log)	1.66**	2.16***	1.39***	1.31***
	(0.63)	(0.38)	(0.26)	(0.20)
GDP (log)	0.52	0.00085	0.16	0.017
	(0.34)	(0.27)	(0.25)	(0.13)
Population (log)	0.18	0.29	0.28	0.45***
	(0.28)	(0.25)	(0.26)	(0.12)
Constant	−14.2***	−4.96**	−5.57***	−4.68***
	(4.33)	(2.22)	(2.00)	(1.25)
Observations	72	105	108	156
R-squared	0.398	0.568	0.783	0.776
Panel B: Components of TC				
Enabling Environment	−1.53	3.74***	1.05	3.37**
	(1.81)	(1.26)	(0.98)	(1.57)
Policy and Conditions	2.77	3.34*	1.26	3.05***
	(2.18)	(1.70)	(1.23)	(1.08)
Infrastructure	3.82*	1.23	3.02***	1.78***
	(2.05)	(1.03)	(0.54)	(0.61)
Natural and Cultural Resources	0.49	0.44	−0.40	0.27
	(1.22)	(0.67)	(0.37)	(0.37)
GDP (log)	0.27	0.055	0.18	−0.20
	(0.45)	(0.27)	(0.23)	(0.20)
Population (log)	0.46	0.39	0.46**	0.83***
	(0.39)	(0.25)	(0.22)	(0.19)
Constant	−13.1*	−12.1***	−10.6***	−12.4***
	(7.27)	(4.12)	(2.95)	(1.98)
Observations	72	105	108	156
R-squared	0.468	0.607	0.850	0.815

Standard errors in parentheses***, ** and * denote 1%, 5% and 10% level of significance respectively.

Table 5
Impact of TC on tourism GDP by income groups.

	Dependent variable: tourism GDP (log)			
Panel A: overall tourism competitiveness				
Independent Variables	(1) Low-Income Countries	(2) Low-Middle-Income Countries	(3) Upper-middle income countries	(4) High-income countries.
Tourism competiveness (log)	0.84***	1.09***	1.13***	0.92***
	(0.27)	(0.23)	(0.21)	(0.12)
GDP (log)	1.04***	0.59***	0.34	0.48***
	(0.14)	(0.16)	(0.21)	(0.076)
Population (log)	−0.097	0.22	0.49**	0.26***
	(0.12)	(0.15)	(0.21)	(0.070)
Constant	−19.1***	−14.5***	−12.8***	−11.8***
	(1.82)	(1.38)	(1.65)	(0.74)
Observations	72	105	108	156
R-squared	0.833	0.880	0.920	0.942
Panel B: Components of TC				
Enabling Environment	0.21	−0.36	−1.43	1.69*
	(0.85	(0.76)	(0.87)	(0.96)
Policy and Conditions	0.61	1.41	1.60	−1.29*
	(0.88)	(0.98)	(1.10)	(0.66)
Infrastructure	2.17**	2.15***	2.37***	1.82***
	(0.89)	(0.59)	(0.48)	(0.37)
Natural and Cultural Resources	−0.37	0.29	−0.24	1.00***
	(0.50)	(0.39)	(0.33)	(0.23)
GDP (log)	0.92***	0.52***	0.47**	0.33***
	(0.19)	(0.15)	(0.20)	(0.12)
Population (log)	0.16	0.29*	0.50**	0.35***
	(0.16)	(0.14)	(0.20)	(0.12)
Constant	−20.9***	−14.2***	−14.8***	−9.97***
	(3.03)	(2.45)	(2.62)	(1.22)
Observations	72	105	108	156
R-squared	0.865	0.900	0.936	0.948

Standard errors in parentheses***, ** and * denote 1%, 5% and 10% level of significance respectively.

most significant determinant of the tourism determinant for all income groups of the countries sampled. Particularly, all the components of the TC are statistically significant for the HIC but Policy and Conditions exert a negative effect on the tourism GDP. This could be a result of the fact that most economic policies often prioritize other sectors of the economy and are likely to benefit them at the expense of the tourism sector, particularly in the HIC.

5. Conclusion and policy implications

This paper evaluates the impact of TC on the tourism performance of countries across the world. The study focuses on the global perspective and the regional and income diversity of the countries. The relevance of the tourism sector to the prosperity of nations has long been acknowledged. Also, adequate attention has been given to the determinants of TC. However, there is a dearth of studies linking the TC to tourism performance. Few studies that considered the association are limited to the micro-level and failed to capture the heterogeneity of the countries and measures of both tourism competitiveness and performance. This study introduced the global perspective of the nexus between TC and tourism performance.

Using three-stage least square panel data estimation techniques, the major findings reveal that TC has a significant positive effect on tourism performance globally as well as for all regions and income groups of countries across the world. This implies that TC is a major driver of the tourism flows and tourism contribution to GDP across the world. Moreover, the impact of the TC is greater for the developing African and Asian economies than the developed European and American countries. Concerning the income groups, the tourism competitiveness has stronger impact on the tourism performance of the upper-middle income countries (UMIC) than other groups. This finding reveals that the UMIC are more sensitive to the changes in the TC and its component pillars than the rest income groups of countries. The rationale for this finding is probably that the high-income countries are so developed and rich that their economies do not so much depend on the tourism sector as the UMIC economies. Moreover, the low-income countries are so poor that the contribution of the tourism sector to their economies is negligible. Thus, the tourism competiveness do not significantly influence the performance of the tourism industry. However, the question that bothers any inquisitive mind is that, which pillar or component of the tourism competitiveness a particular region or a group of countries should prioritize in order to improve tourism performance?

To provide a discernible answer to this question, we considered the components of the TC. The findings reveal that infrastructure is a universal key driver of tourism performance. By implication, the development of transport infrastructure and technology propels the high performance of the tourism industry in terms of an increase in tourist arrivals and an increase in tourism GDP for all regions (except Europe for which the infrastructure component is significant only for the enhancement of the tourism GDP and not for tourist arrivals) and at all levels of income of the countries. Nonetheless, the insignificance of the infrastructure for Europe portrays the fact that the infrastructure in the region is developed to an extent that its further improvement of the infrastructure does not matter for tourist arrivals anymore. The region has long developed world-class airports, seaports and superb tourism service infrastructure, which surpass that of other regions. Hence, the positive image regarding infrastructure has been created and tourist arrivals is no longer sensitive to further improvement in the infrastructure. Alternatively, infrastructure is no longer the key driver of tourist flows in Europe.

But for other regions, especially Asia, MENA and Africa, infrastructure is the major determinants of the tourism performance both in terms of arrivals and tourism GDP. Practically, these regions needs to prioritize the development of critical infrastructure such as airports, seaports, roads and travel and tourism service infrastructure for the improvement of the performance of the tourism industry.

Furthermore, policy conditions, enabling environment, and Natural and Cultural Resources are also critical determinants of tourism

performance. Policy and enabling conditions including prioritization of travel and tourism, international openness, price competitiveness, and environmental sustainability are most relevant for the improvement of tourism performance. For instance, after slowdown in tourism flows and receipts during 2015–2016 period, Europe refocused on policy conditions such as high degree of market regulatory and travel policy integration centered on European Union and the Schengen area. This reinforces intra-regional travel, which constitutes vast majority of the international tourist arrivals. The Enabling Environment, such as favorable business environment, health and hygiene, safety and security, and availability of ICT have enormous effect on the tourism performance. Natural and cultural resources are also important for tourism performance, especially for the Americas. It is important to note that the natural and cultural resources pillar is the least significant for tourism performance of the low/middle-income regions. This explains the poor performance of the tourism industry in most African countries despite the abundance of natural resources and diverse cultural resources.

Therefore, we conclude that TC has multifaceted and heterogeneous effects on tourism performance based on the regions and income groups of the countries as well as the measures of tourism performance. Thus, this study suggests that, for countries around the world to promote the performance of the tourism sector, stakeholders in the travel and tourism industry should give adequate attention to the improvement of the TC and factor in the multidimensional nature of the relationship between TC and tourism performance in their policy frameworks.

Specifically, policymakers in Europe (as well as other upper/high-income countries) sustain commitment to the enactment of favorable travel policies and environmental sustainability to maintain the leadership of the region in the development of the tourism industry. In the case of other regions (Africa, Asia, Americas), concerted efforts aimed at developing critical transports and tourism service infrastructure are necessary for improving the performance of the tourism industry. In addition, Americas should enhance the performance of the tourism industry by leveraging on the greatest advantage the region has over other regions in terms of cultural and natural resources given the abundance of UNESCO natural and heritage sites. Adoption of these policy recommendations will enable each region to maximize the welfare-enhancing benefits, such as job creation, higher incomes and poverty reduction, accruable from the better performance of the tourism industry.

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