"Tourist destination competitiveness and ESG performance in the airline industry"

AUTHORS	Juan Dempere (iD)
	R
	Kennedy Modugu (iD)

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Juan Dempere, Ph.D., Assistant Professor, Department of Business, Faculty of Business, Higher Colleges of Technology, UAE. (Corresponding author)

Kennedy Modugu, Ph.D., Lecturer, Department of Business, Faculty of Business, Higher Colleges of Technology, UAE.

Juan Dempere (UAE), Kennedy Modugu (UAE)

TOURIST DESTINATION COMPETITIVENESS AND ESG PERFORMANCE IN THE AIRLINE INDUSTRY

Abstract

The relevance of corporate environmental, social, and governance performance (ESG) has increased significantly during the last few years. The airline industry is susceptible to such environmental, social, and governance practices, which explains its selection for the analysis purposes in this study. This paper analyzes the influence of the Travel & Tourism Competitiveness Index and its constituent factors on environmental, social, and governance performance variables in a sample of leading airline companies worldwide with historical data available from 2013 to 2019. The study required analyzing panel data using a panel-corrected standard error model. The results suggest that airlines headquartered in countries with ideal conditions for operating businesses and outstanding information and communication technology readiness show excellent environmental, social, and governance performance. However, the findings also imply that airline companies headquartered in countries with heavy government influence on the airline industry sector measured by the government prioritization of the domestic travel and tourism sector have poor environmental, social, and governance performance. Similarly, the analysis provided evidence that countries well positioned to join national air service arrangements and subscribe to regional trade agreements have airline companies with excellent environmental, social, and governance performance metrics. The reported results can be priceless for policymakers designing national travel and tourism policies to enhance domestic airline firms' environmental, social, and governance performance.

Keywords	destination competitiveness, competitiveness index, travel and tourism, environmental, social, governance, ESG, corporate social responsibility
JEL Classification	Q56, Q58, L84, Z32, R49

INTRODUCTION

The year 2021 became the year of environmental, social, and governance (ESG) investing. ESG practices, including corporate social responsibility (CSR), are critical non-financial performance dimensions in many industry sectors, particularly the airline segment. The compounding reasons are the relevance of climate change as a crucial global problem facing governments worldwide and aviation's contribution to global warming.

For this reason, domestic aviation emissions have been included in the Paris Agreement – a legally binding international treaty on climate change adopted by 196 nations in 2015 – through national pledges. Similarly, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), subscribed to by 192 countries in 2016 through the United Nations (UN) International Civil Aviation Organization (ICAO), aims to offset international aviation's CO_2 emissions through international credits. In addition, some airline companies make significant ESG-related investments to achieve their

strategic goals while dealing with the abovementioned challenges. The benefits of such investments depend on each airline company's strategic objectives.

The study focuses on how national travel and tourism (T&T) policies can enhance ESG efforts of airline companies, which may result in improved short, medium, and long-term corporate performance and value creation while addressing material ESG risks. One of the critical drivers for ESG business practices in the aviation sector includes the growing regulatory and compliance pressures, briefly summarized above. Another sensitive ESG programs' driver in the T&T sector is a growing demand for alignment between corporate and individual values assessed with relevant ESG metrics and business performance. The paper shows whether a strong ESG strategy allows airline companies to tap into new markets and increase their presence in existing ones. Similarly, those airlines associated with environmental or social wrongdoings may lose customers and face shutdowns, fines, and poor community and labor relationships. The study aims to explain whether national T&T policies positively or negatively influence corporate ESG metrics in the aviation sector in a sample of leading airline companies from different countries. The analysis includes the panel-corrected standard error (PCSE) model proposed by Beck and Katz (1995).

1. LITERATURE REVIEW

The Travel & Tourism Competitiveness Index (TTCI) can be defined as a benchmarking index that provides a unique perspective on the strengths and weaknesses of each country regarding its domestic T&T industry. As such, TTCI determines emerging trends and threats associated with the T&T industry, allowing policymakers to better design their T&T policies and strategies. However, there is no previous research studying the impact of such national T&T policies on ESG performance in the global aviation sector. Therefore, this exploratory study uses the TTCI and its constituent sub-indexes and pillars to examine the influence of national T&T policies' dimensions on selected metrics assessing corporate ESG performance.

A relevant theme in the academic ESG-related literature includes studies about the relationship between financial performance and ESG scores with mixed results (Duque-Grisales & Aguilera-Caracuel, 2021). Some articles found a non-significant relationship between these two factors (Weston & Nnadi, 2021), while others showed a negative correlation (Brammer et al., 2006). There is also evidence reporting a positive impact of ESG activities on firm market value, but they need more consensus about which ESG factors have the most significant influence (Chen et al., 2021). In the specific case of the airline industry sector, there are mixed results on the relationship between financial performance and ESG scores (Kuo et al., 2021).

The analysis of the association between ESG and financial performance has included companies in the travel and tourism sector with mixed results, too (Ionescu et al., 2019).

One area in the ESG literature relevant to the present study is the risk prevention role of ESG practices. For example, Koh et al. (2014) found that corporate social performance is adequate insurance against litigation risk adding two to four percent to firm value. Equally, Shiu and Yang (2017) showed that corporate CSR long-term continuous engagement provides insurance-like effects on both stock and bond prices when facing adverse events. Correspondingly, Jia et al. (2020) noted that the risk reduction effect of corporate CSR engagements results from insurance-like protection. In the same way, Vural-Yavaş (2021) stated that companies engage in ESG practices to reduce corporate risk-taking during periods of high uncertainty.

Another area in the ESG literature is the impact of the COVID-19 crisis on corporate ESG performance. For example, Koutoupis et al. (2021) showed that organizational resilience and the scope of corporate CRS practices convey perceived job security among hospitality managers affecting their organizational commitment during the COVID-19 crisis. Similarly, Broadstock et al. (2021) found that high-ESG portfolios mostly outperform low-ESG portfolios during the pandemic. Equally, Mukanjari and Sterner (2020) noted that

companies with high carbon emissions experienced significant stock price declines during the COVID-19 crisis. In the same way, Bae et al. (2021) found no evidence that CSR performance affected stock returns during the COVID-19 crisis. Finally, Koutoupis et al. (2021) provide a more comprehensive literature review of COVID-19 and ESG.

Previous research has considered the TTCI to differentiate the T&T competitive factors among countries (Javed & Tučková, 2019). The TTCI's sub-indexes, pillars, and indicators can also provide relevant information on various national policies to enhance the local T&T sector. For example, Ferreira and Castro (2020) analyzed a TTCI factor of 46 European countries and concluded that three TTCI metrics could explain 76.54% of the whole variation affecting T&T competitiveness.

In a comparable study, Kayar and Kozak (2010) examined 13 TTCI metrics of 28 European countries. They found that the most relevant TTCI metrics affecting their sample of nations' T&T competitiveness are air transport infrastructure, natural and cultural resources, ground transport infrastructure, and H&H. In the same way, Popescu et al. (2018) investigated 16 Central and Eastern Europe (CEE) nations joining the 16+1 platform organized by China in 2011. They found that tourism infrastructure is a critical factor in T&T's competitiveness. Correspondingly, Nazmfar et al. (2019) studied the TTCI using a sample of Middle East nations with data from 2015 to 2017. It was evidenced that the United Arab Emirates, Turkey, and Saudi Arabia have the most robust T&T competitive performance.

Some previous studies have also considered the TTCI's sub-indexes, pillars, and metrics as independent variables for analytical purposes. Indeed, Terzić (2018) studied the effect of the TTCI on the Gross Domestic Product (GDP) growth rate among selected European nations. Using correlation analysis, he finds that GDP growth depends on an enhanced T&T environment, superior T&T competitiveness, new business opportunities, and government support. Likewise, Petrova et al. (2018) analyzed some leading macroeconomic metrics of the T&T industry for all the nations included in the TTCI. They noted a lack of a significant relationship between a national strategy

supporting the domestic T&T sector and the efficiency of the local T&T market. Equally, Webster and Ivanov (2014) applied a cross-sectional analysis to a sample of 131 nations and found no statistically significant relationship between TTCI and economic growth.

Finally, the TTCI has been criticized as an effective measure of T&T's competitiveness. Indeed, Salinas Fernández et al. (2020) proposed an alternative synthetic T&T index using the 2017 TTCI's variables but applying a different methodology. They aimed to fix the TTCI's aggregation of calculated factors using different scales, subjective weighting, and information duplicity. They stated that the most significant factors in T&T's competitiveness are air transport infrastructures, cultural resources, and information and communication technology (ICT) readiness.

This study tries to explain the influence of TTCI and its constituent factors on corporate ESG metrics in the aviation sector using a sample of leading airline companies from different countries. PCSE models were applied in this study to provide insight into the impact of national T&T policies and strategies measured by the TTCI's sub-indexes and pillars at influencing the corporate ESG performance of such airline companies. The central theoretical assumption is that the TTCI and its constituent sub-indexes and pillars represent dimensions of national T&T policies, which can directly affect corporate ESG performance variables in the airline industry. This exploratory study provides valuable information on whether such national T&T policies have been beneficial or detrimental to the ESG performance of foremost airline companies. No previous research measured the explanatory power of the TTCI and its constituent factors over corporate ESG performance.

2. METHODOLOGY

The analyzed sample consisted of 21 airline companies with historical ESG data available from 2013 to 2019, including Korean Air Lines Co., China Southern Airlines, Air Canada, Air New Zealand Limited, AirAsia Group (Malaysia), Air France KLM-SA, COPA Airlines (Panama), and Cathay Pacific Airways Ltd (Hong Kong SAR).

The sample also includes Delta airlines (US), EasyJet PLC (U.K.), Gol Linhas Aereas Inteligentes SA (Brazil), Interglobe Aviation Ltd (India), Japan Airlines, Deutsche Lufthansa AG (Germany), LATAM Airlines Group SA (Chile), and Qantas Airways Limited (Australia). Lastly, the sample also comprises Ryanair Holdings plc (Ireland), SAS AB (Scandinavian Airlines System, Sweden), Thai Airways International PCL (Thailand), Turk Hava Yollari AO (Turkey), and Wizz Air Holdings PLC (Switzerland).

The ESG data were retrieved from the Thomson Reuters Eikon Refinitiv® (TRER) database. The TRER groups ESG scores into environmental, social, and corporate governance pillars. The general ESG score is a relative sum of the pillars' weights, which vary according to the company's industry. The environmental pillar (EPS) includes resource use, emissions, and innovation metrics. The social pillar (SPS) includes human rights, workforce, community, and product responsibility metrics. The corporate governance pillar (GPS) includes metrics linked to management, shareholders, and the corporate social responsibility (CSR) strategy. The TRER calculates the general ESG score and its constituent pillars using hundreds of data points from company public disclosures.

This study's independent variables comprise the TTCI's constituent sub-indexes and pillars. Historical data on the TTCI was retrieved from the World Economic Forum (2019). The TTCI's sub-indexes include the enabling environment sub-index (SI1), the T&T policy and enabling conditions sub-index (SI2), the infrastructure sub-index (SI3), and the natural and cultural resources sub-index (SI4). The enabling environment sub-index assesses the conditions required for conducting business operations in a country. This sub-index is calculated based on the following five pillars: the business environment pillar (P11) based on twelve metrics, the safety and security pillar (P12) based on five metrics, the health and hygiene pillar (P13) based on six metrics, the human resources and labor market pillar (P14) based on nine metrics, and the ICT readiness pillar (P15) based on eight metrics.

The business environment pillar measures the impact of the existing national regulatory environment on firms to engage in business operations.

The twelve metrics include but are not limited to taxes, property rights, time and cost to start a business, and time and cost to get construction permits. The safety and security pillar evaluates the degree of a country's safety and security as a T&T destination. The five metrics used in calculating this pillar include but are not limited to business costs of terrorism, crime, and violence, reliability of police services, and national homicide rates. Finally, the health and hygiene pillar assesses the coverage and quality of healthcare services available to tourists and travelers. The six metrics that determine this pillar include the national physician density, basic sanitation and drinking water use, hospital beds available, human immunodeficiency virus occurrence, and malaria prevalence.

The human resources and labor market pillar estimates the national human resources' quality and availability, including the existing education and training programs and the efficiency of the local labor market. The nine metrics employed in determining this pillar include but are not limited to ease of recruiting skilled employees and foreign labor, hiring and firing practices, and pay and productivity. Finally, the ICT readiness pillar captures the nature of a modern ICT hard infrastructure and the capacity of businesses and people to provide and receive benefits from online services. The eight metrics used to calculate this pillar include but are not limited to Internet-based transactions, quality of power utility supply, broadband Internet subscriptions, and mobile network coverage and subscriptions.

The T&T policy and enabling conditions sub-index measures the national policies and strategies directly affecting the T&T industry sector. This sub-index includes four pillars: the prioritization of T&T pillar (P21), based on six metrics, the international openness pillar (P22), based on three metrics, the price competitiveness pillar (P23), based on four metrics, and the environmental sustainability pillar (P24), based on nine metrics.

The prioritization of the T&T pillar measures the degree to which a country prioritizes the T&T sector by channeling project development funds and resources necessary to develop this industry. This pillar's six metrics include but are not limited to the effectiveness of national T&T marketing

promotions and country brand, and government T&T spending. The international openness pillar assesses the degree of a country's T&T openness and facilitation. Its three metrics include the government's openness to joint national air service arrangements, the number of subscribed regional trade agreements, and visa requirements. The price competitiveness pillar evaluates the cost attractiveness of a national T&T destination. The four metrics used to determine this pillar comprise domestic fuel prices, national purchasing power parity, hotel price index, and ticket taxes and airport charges. Finally, the environmental sustainability pillar appraises the effectiveness of existing national policies and factors supporting ecological sustainability. The nine metrics needed to determine this pillar include but are not limited to stringency and enforcement of national environmental regulatory framework, threatened domestic species, and wastewater treatment.

The infrastructure sub-index measures the quality and availability of each country's physical infrastructure and includes three pillars. These three pillars are the air transportation infrastructure pillar (P31), based on six metrics, the ground and port infrastructure pillar (P32), based on seven metrics, and the tourism service infrastructure pillar (P33), based on four metrics.

The air transportation infrastructure pillar evaluates each country's international T&T air connectivity. The six metrics required to determine this pillar include quality of air transportation infrastructure, domestic and international available seat kilometers, national aircraft departures, airport density, and operating airlines. The ground and port infrastructure pillar appraises the accessibility and efficiency of domestic land and sea transportation infrastructure. The seven metrics needed to estimate this pillar include but are not limited to quality and densities of roads and railroads, quality of port infrastructure, and efficiency of ground transportation. Finally, the tourist service infrastructure measures the availability and quality of national accommodation and entertainment infrastructure resources. The four metrics included in the calculation of this pillar are the number of available hotel rooms, the quality of tourism infrastructure, the availability of car rental services, and the automated teller machines per capita.

The natural and cultural resources sub-index captures the main reasons for selecting a particular T&T destination grouped into two pillars. These two pillars are the natural resources pillar (P41) and the cultural resources and business travel pillar (P42), both based on five different metrics. The natural resources pillar reflects the attractiveness of a country's natural assets, including the beauty of its landscapes, fauna diversity, and available national parks and natural reserves. The five metrics involved in calculating the natural resources pillar include but are not limited to the attractiveness of domestic natural assets, the total domestic species and protected areas, and the natural tourism digital demand. The cultural resources and business travel pillar assesses a country's cultural-based T&T competitive advantage and business travel-related attractiveness. The five metrics used to calculate this pillar include but are not limited to the total sports stadiums, international association meetings, the national cultural and entertainment T&T digital demand, and the total of oral and intangible cultural heritage expressions. Regarding the methodology, the study required analyzing panel data using a PCSE because its standard error estimates are robust to heteroscedasticity, contemporaneous cross-sectional correlation, and autocorrelation problems.

3. RESULTS

Table 1 shows the summary statistics of dependent and independent variables. The results show that the sample's average ESG score is 44.24, with a maximum of twice this value and a minimum of about 15 percent of this value. Similar proportions between averages, maximums, and minimums can be verified for the EPS, SPS, and GPS scores. Regarding independent variables, the average SI1 score is 5.3, with a maximum of about 17 percent higher than this value and a minimum of nearly half. In addition, comparable proportions between averages, maximums, and minimums can be observed for the SI2-SI4 scores. Not surprisingly, the variability of dependent variables measured by the coefficient of variation (CV) is higher than that of independent variables.

Table 2 shows the PCSE regression models' results using the analyzed dependent variables (the ESG scores and its three pillars: EPS, SPS, and GPS) regressed against the TTCI's sub-indexes. Table 2

Table 1. Summary statistics

Statistic	ESG	EPS	SPS	GPS	SI1	SI2	SI3	SI4
Mean	44.24	46.38	53.82	51.87	5.301	4.444	4.84	4.328
Maximum	83.56	88.02	90.6	96.07	6.2	5.15	6.16	6.19
Minimum	6.79	0	4.24	7.33	3.626	3.09	3.5	2.7
Std. Dev.	16.96	25.79	19.47	24.84	0.584	0.38	0.711	1.06
C.V.	38.34%	55.61%	36.18%	47.89%	11.02%	8.55%	14.69%	24.49%

Note: Std. Dev. denotes the standard deviation, and C.V. refers to the coefficient of variation.

Table 2. Panel corrected standard errors (PCSE) results for ESG's Pillars versus TTCI' Sub-indexes

	C	SI1	SI2	SI3	SI4
ESG					
Coefficient	36.51496	9.03456	1.272912	−12.18134	3.031349
t-sta.	1.94	2.16	0.40	−3.33	2.24
p-val.	(0.052)*	(0.031)**	(0.691)	(0.001)***	(0.025)**
EPS					
Coefficient	−33.01557	17.71573	1.882418	−7.108539	2.675065
t-sta.	−1.64	2.94	0.92	−1.42	1.18
p-val.	(0.101)	(0.003)****	(0.356)	(0.155)	(0.238)
SPS					
Coefficient	25.86389	5.162035	1.51985	−1.229435	0.1017765
t-sta.	1.56	1.47	0.52	−0.43	0.06
p-val.	(0.118)	(0.143)	(0.601)	(0.667)	(0.949)
GPS					
Coefficient	32.57509	19.63857	−3.402709	−21.44496	7.990349
t-sta.	1.29	4.05	−1.10	−5.58	3.41
p-val.	(0.196)	(0.0)****	(0.271)	(0.0)****	(0.001)****

Note: ****, ***, **, and * denote statistical significance at the 0.1%, 1%, 5%, and 10% significance levels, respectively. The table contains *z*-statistic and their corresponding *p*-values below in brackets. The number of observations: 147. Companies: 21. Number of years: 7 (2013–2019).

shows a significant positive relationship between the dependent variables (ESG, ESP, and GPS) except SPS and the enabling environment sub-index (SI1). Similarly, it shows a negative and significant relationship between only two dependent variables (ESG and GPS) and the infrastructure sub-index (SI3). Likewise, Table 2 contains evidence of a positive and significant relationship between the natural and cultural resources sub-index (SI4) and the same two dependent variables (ESG and GPS).

Table 3 shows the results for the PCSE regression models for its dependent variables (the ESG scores and its three pillars: EPS, SPS, and GPS) regressed against the TTCI's pillars. It shows positive and significant relationships between the dependent variables (ESG, ESP, SPS, and GPS) and the ICT readiness pillar (P15), except for GPS and P15, whose relationship is marginally significant at a ten percent confidence level. Similarly, Table 3 contains evidence of negative and significant associations between the dependent variables and the prioriti-

zation of the T&T pillar (P21), except for the relationships between ESG and P21 and ESP and P21, which are also marginally significant at a ten percent confidence level. Likewise, Table 3 shows positive and significant relationships between three of the analyzed dependent variables (ESG, ESP, and SPS) and the international openness pillar (P22).

Table 3 shows negative and significant relationships between three dependent variables (ESG, ESP, and GPS) and the ground and port infrastructure pillar (P32). Finally, it contains results supporting positive and significant relationships between two of the analyzed dependent variables (ESG and GPS) and the cultural resources and business travel pillar (P42). Table 3 also shows significant relationships between isolated variables: positive between GPS and P11 and between GPS and P12, but negative between SPS and P24. The remaining associations are marginally significant at a ten percent confidence level (ESG and P13, EGS and P41, and SPS and P23) or insignificant.

Table 3. Panel corrected standard errors (PCSE) results for ESG's Pillars versus TTCI' Pillars

Years	ESG	EPS	SPS	GPS
C	**69.52847**	13.75811	**75.94993**	**96.79471**
z–sta.	**3.16**	0.40	**2.85**	**3.00**
p–val.	**(0.002)*****	(0.690)	**(0.004)*****	**(0.003)*****
P11	0.8847904	−1.024093	1.679248	**4.854728**
z–sta.	0.32	−0.45	0.74	**2.36**
p–val.	(0.748)	(0.652)	(0.461)	**(0.018)****
P12	0.9178482	−1.838955	−1.804857	**15.14913**
z–sta.	0.30	−0.43	−0.53	**3.80**
p–val.	(0.764)	(0.669)	(0.599)	**(0.0)*******
P13	−6.035847	2.131072	−4.410232	−6.250685
z–sta.	−1.78	0.45	−1.06	−1.06
p–val.	(0.075)*	(0.649)	(0.287)	(0.291)
P14	4.900854	−0.0540541	−1.406032	0.9875271
z–sta.	1.04	−0.01	−0.23	0.26
p–val.	(0.297)	(0.993)	(0.819)	(0.797)
P15	**9.771241**	**14.89923**	**9.418278**	5.431593
z–sta.	**3.93**	**5.97**	**3.75**	1.86
p–val.	**(0.0)*******	**(0.0)*******	**(0.0)*******	(0.063)*
P21	−8.982973	−9.915547	**−14.43606**	**−14.60376**
z–sta.	−1.75	−1.80	**−2.63**	**−2.73**
p–val.	(0.079)*	(0.072)*	**(0.009)*****	**(0.006)*****
P22	**5.526868**	**8.379511**	**6.084167**	−3.03274
z–sta.	**2.53**	**4.62**	**2.22**	−0.91
p–val.	**(0.011)****	**(0.0)*******	**(0.027)****	(0.361)
P23	0.279513	0.2105699	1.64373	−1.757578
z–sta.	0.24	0.21	1.66	−1.00
p–val.	(0.809)	(0.831)	(0.097)*	(0.316)
P24	−2.648072	−1.522585	−3.33934	2.421002
z–sta.	−1.57	−0.89	−1.97	1.13
p–val.	(0.117)	(0.374)	(0.05)*	(0.257)
P31	0.7675106	1.887878	3.71859	0.0556466
z–sta.	0.31	0.60	1.58	0.02
p–val.	(0.759)	(0.550)	(0.115)	(0.984)
P32	**−10.2765**	**−6.758299**	−2.462292	**−17.25113**
z–sta.	**−3.85**	**−2.06**	−0.95	**−6.66**
p–val.	**(0.0)*******	**(0.04)****	(0.343)	**(0.0)*******
P33	−0.7996334	−1.641941	3.531934	−1.959416
z–sta.	−0.31	−0.46	1.31	−0.70
p–val.	(0.759)	(0.642)	(0.191)	(0.486)
P41	−3.036587	−0.4899158	−3.520723	−3.105681
z–sta.	−1.70	−0.19	−1.65	−0.85
p–val.	(0.090)*	(0.853)	(0.100)	(0.396)
P42	**3.684603**	2.548032	1.672018	**7.850688**
z–sta.	**3.48**	1.52	1.14	**3.78**
p–val.	**(0.001)*****	(0.13)	(0.253)	**(0.0)*******

Note: ****, ***, **, and * denote statistical significance at the 0.1%, 1%, 5%, and 10% significance levels, respectively. The table contains *z*-statistic and their corresponding *p*-values below in brackets. The number of observations: 147. Companies: 21. Number of years: 7 (2013–2019).

4. DISCUSSION

4.1. Interpretations of results

The positive and significant relationship in Table 2 between the airline companies' ESG scores and the SI1 sub-indexes of their respective headquarters' countries seems to be driven by positive and significant relationships between this sub-index and the companies' EPS and GPS pillars since the association between SI1 and SPS is also positive but insignificant. The positive and significant relationship between SI1 and ESG in Table 2 suggests that airline companies headquartered in countries with excellent conditions for operating business-es (SI1) exhibit a top corporate ESG performance. Similarly, Table 2 also shows a positive and significant relationship between the airline companies' EPS scores and their SI1 sub-indexes, which suggests that firms headquartered in countries with favorable conditions for conducting business operations, exhibit a high caliber environmental business performance measured by their resource use, emissions, and innovation. Lastly, the positive and significant relationship between GPS and SI1, also shown in Table 2, suggests that airline companies operating in nations with favorable business conditions have a first-class corporate governance performance measured by their management governance, shareholders' treatment, and CSR strategy.

One possible interpretation of these results requires assuming the business environment pillar as a valid proxy for the degree of information asymmetry. According to Table 3, the association between EPS and SI1 is driven by the positive and significant relationship between EPS and the P15 pillar. This same significant result is verified between P15 and the remaining pillars of ESG, SPS, and GPS, although the association with GPS is marginally significant at a ten percent confidence level. According to these results, airline companies headquartered in countries with superior ICT readiness (P15) also have robust corporate ESG performance. These results suggest that airline companies headquartered in countries with high P15 scores characterized by a high volume of Internet-based transactions operate in economies where a low ESG performance can be quickly informed to many stakeholders. These countries

with high ICT readiness (P15) also enjoy an extensive broadband Internet and mobile subscription base and comprehensive mobile network coverage. In this environment, airline companies with low ESG performance take the risk of having a negative perception among customers, investors, and other appropriate stakeholders. This risk may be a relevant driving force for these companies to avoid inferior ESG performance, which explains the reported positive and significant results.

Table 3 also shows positive and significant associations between GPS and P11 and GPS and P12. Indeed, airline companies operating in countries with a favorable business environment (P11) will be enticed to improve their ESG performance. Equally, these economies enjoy a fair FDI regulatory framework, which may constitute a driving force to foster ESG performance and enhance the airline's investment attractiveness. Additionally, these nations have government policies to ensure making them safe and secure T&T destinations (P12). For these countries, T&T safety and security are sensitive issues and a government priority, which positions airline companies with superior corporate governance at an advantage when operating in such environments.

Table 3 also shows a negative and significant relationship between SPS and P21 and GPS and P21. However, the relationships between EGS and P21 and EPS and P21 are marginally significant at a ten percent confidence level. These results suggest that airline companies headquartered in countries whose governments make the T&T industry sector a national priority (P21) have poor ESG performance, verified by their low EPS, SPS, and GPS scores. One possible interpretation requires assuming that the prioritization of the T&T pillar (P21) is a valid proxy for national government influence in the domestic airline industry. Government influence can be measured indirectly by the level of state ownership.

Another interpretation of these results suggests that airline companies headquartered in countries with heavy government influence exhibit deficient ESG performance since their managers do not have enough incentives to improve metrics associated with their GPS pillars. These metrics include but are not limited to shareholder rights policies, organization and independence of board commit-

tees, corporate policies on board functions, CSR strategy, etc. Similarly, these companies will have low incentives to improve metrics associated with their SPS pillars, like the corporate handling of its workforce, human rights, or product responsibility.

Table 3 also shows a positive and significant relationship between ESG and P22, EPS and P22, and PS and P22. These results suggest that airline companies headquartered in countries with superior international openness (P22) also have a high-caliber ESG performance, verified by their high environmental pillars' (EPS) and social pillars' (SPS) scores. Indeed, countries well-positioned to join national air service arrangements and subscribe to regional trade agreements (P22) must also count on domestic airline companies with excellent ESG-related metrics, particularly social and environmental performance. The relevance of ESG practices in the aviation industry for international agreements has been highlighted in this paper.

Table 2 also shows a negative and significant association between the airline companies' ESG scores and their corresponding headquartered countries' SI3 sub-indexes. This result is driven by the negative and significant relationship between this SI3 sub-index and the companies' GPS pillar since the associations between SI3 and EPS and SI3 and SPS are also negative but insignificant. However, the negative and significant relationship between this SI3 sub-index and the GPS pillar seems to be driven by the negative and significant relationship between GPS and P32 reported in Table 3. This result is also consistent with the negative and significant relationship between ESG and P32 and between EPS and P32. In other words, the ground and port infrastructure pillar (P32) has a negative and significant association with all analyzed dependent variables, except SPS. The P32 pillar is a valid proxy for national government spending on alternative transportation systems competing directly with airline companies. Top-quality and densities of roads and railroads, excellent port infrastructure quality, and excellent ground transportation efficiency require massive government investments. These results suggest that airline companies operating in countries whose governments heavily invest in alternative transportation infrastructures other than air transportation have a low incentive to deliver a first-rate ESG performance.

The positive and significant relationship between the airline companies' ESG scores and their corresponding headquarter countries' SI4 sub-indexes in Table 2 is explained by the positive and significant relationship between this SI4 sub-index and the companies' GPS pillars since the association between SI4 and EPS and between SI4 and SPS are also positive but insignificant. This positive and significant relationship between the SI4 sub-index and the GPS pillar suggests that airline companies headquartered in countries with first-class natural and cultural resources (SI4) also enjoy a more advanced corporate governance (GPS) performance. This significant association is driven by the positive and significant relationship between the airlines' GPS and P42 pillars shown in Table 3, since the relationship between their GPS and P41 pillars is negative and insignificant.

Indeed, a country's business travel attractiveness is one of the major drivers behind the cultural resources and business travel pillar (P42). When airline companies are headquartered in countries rated as top business travel destinations, these firms have a solid incentive to exhibit a high corporate governance performance as measured by their GPS pillar scores. For these companies, a significant proportion of their customer base may be sensitive to GPS metrics like its board cultural and gender diversity, shareholders' rights policy, or CSR strategy. The risk of airline companies losing these business customers may explain these results.

4.2. Contrasts with previous research

The assumption of the business environment pillar as a valid proxy for the degree of information asymmetry is supported by previous studies. Indeed, Singhania and Saini (2021) suggested implementing national ESG disclosure policies that are convenient, credible, and comparable but flexible enough to face unexpected challenges like those posed by the COVID-19 crisis. The aim of such policies should be to minimize the information asymmetry problem, which arises primarily when ESG regulations are non-mandatory. Similarly, Baker et al. (2021) studied the impact of a country's performance on ESG issues measured by national government ESG ratings over the level of domestic IPO underpricing. They found that higher ESG ratings can reduce information asym-

metry for IPO firms. The proposed interpretation reinforces these reported associations between ESG scores and information asymmetry.

The interpretation of airline companies headquartered in nations with effective ICT readiness (P15) also exhibiting robust corporate ESG performance is consistent with previous research. Indeed, Vo et al. (2019) showed that airlines with significant CSR performance enjoy more positive than negative Twitter-based word-of-mouth. Likewise, Lee et al. (2022) evidenced that firms signal ESG information directly and interactively through social media for brand valuation. Similarly, this interpretation is consistent with Reverte (2009), who claims that media exposure is the most critical factor influencing Spanish-listed firms' variation in CSR ratings. Correspondingly, Klassen and McLaughlin (1996) found significant positive abnormal stock returns following positive environmental events and negative returns for ecological crises. Equally, Capelle-Blancard and Petit (2019) analyzed the stock market impact of ESG news. They found that firm market value decreases during a window of 3 days around the publication of negative ESG news by about 0.1% on average. In the same way, Flammer (2013) showed that firms with a responsible/irresponsible environmental CSR performance record experience a significant stock price increase/decrease resulting from the announcement of corporate ecological news.

The results of airline companies operating in countries with a favorable business environment and a fair FDI regulatory framework are consistent with Schaltegger and Hörisch (2017), who find that legitimacy-seeking goals primarily drive large companies' ESG practices. Similarly, Bertrand et al. (2020) claimed that domestic companies with foreign CEOs require superior CSR performance than firms with national CEOs to improve their corporate legitimacy. Equally, Schaltegger and Hörisch (2017) concluded that legitimacy-seeking goals rather than profit-oriented ones primarily drive large companies' ESG practices.

The interpretation of considering prioritization of the T&T pillar (P21) as a valid proxy for national government influence in the domestic airline industry based on the level of state ownership is consistent with the characteristics of the analyz-

ed sample. Indeed, several airline companies in this study's sample are state-owned companies (e.g., China Southern Airlines, Air New Zealand Limited, Thai Airways International PCL, and Turk Hava Yollari AO). The sample also includes companies where national governments have a significant direct shareholder equity investment (e.g., Air France KLM-SA and SAS AB) or indirect equity investment through government-owned subsidiaries as relevant investors in these companies (e.g., Cathay Pacific Airways Ltd). The government influence can also be verified by the financial support these companies receive during difficult times, like the case of Air Canada getting a $5.9 billion financial assistance package (about 6.4% ownership) from the Canadian government to deal with the COVID-19-induced economic crisis (Byers, 2021). Similarly, the German government offered Deutsche Lufthansa AG a €9 billion bailout (about 20% ownership) to deal with the same pandemic challenge (Posaner, 2020). The government influence can also be explained by the extent to which an airline's revenue comes from government contracts, like the case of Korean Air Lines, which operates an aerospace business that develops military and crewless aircraft.

The results supporting the notion that countries with substantial government influence show a deficient ESG performance due to a lack of incentives for managers to improve their GPS and SPS pillars' metrics are consistent with Hu et al. (2018). They studied 459 Chinese CSR-reporting firms and found that SOEs are more likely to provide CSR information when required by a stock exchange's regulations. Otherwise, SOEs' managers tend to neglect reporting CSR information. Similarly, Singhania and Saini (2021) researched several institutional policies implemented by developed and developing countries to promote ESG disclosure practices and concluded that a country's lack of commitment to environmental policies is critical in explaining low corporate ESG scores.

When governments make substantial investments in their national T&T marketing promotion, country brand, and other relevant T&T expenses (P21), the national T&T industry's performance improves, particularly in the domestic aviation sector. The government's influence in this sector will determine whether most

T&T government investments will benefit public or private recipients. The negative relationship verified by the results may be adequately explained when considering the P21 pillar as a valid proxy of government influence in the airline industry. Kao et al. (2018) found a negative relationship between firm performance and CSR for Chinese state-owned enterprises (SOEs). Similarly, they noted no significant relationship between SOEs' CSR investment and firm performance, suggesting CSR investment is inefficient for state-owned companies. Chen et al. (2017) showed that government ownership has a negative U-shaped relationship with the performance of six Chinese airlines over the 1994–2011 period measured by profitability, market share, solvency, and operating efficiency. Therefore, the results suggest that airline companies headquartered in countries with heavy government influence in the airline industry sector determined by the government prioritization of the domestic T&T industry have poor ESG performance verified by low EPS, SPS, and GPS scores.

The results about airline companies operating in nations with heavy government support for competing transportation infrastructures exhibiting low-grade ESG performance are consistent with Martins (2022), who found that firms' ESG practices decrease because of increased competition. Finally, the results about airline companies' risk of losing business customers sensitive to GPS metrics are consistent with Park (2019), who analyzed 967 airline customers' surveyed answers using structural equation modeling and found that higher CSR-related metrics result in superior customer attitude and satisfaction.

4.3. Limitations and future research prospects

A limitation of this study constitutes the TTCI's weaknesses identified by Salinas Fernández et al. (2020). These weaknesses include the TTCI's aggregation of calculated factors using different scales, subjective weighting, and information duplicity. This limitation also shows an exciting research extension to validate the results based on the synthetic alternative T&T index proposed by Salinas Fernández et al. (2020).

CONCLUSION

This paper analyzes the influence of the Travel & Tourism Competitiveness Index and its constituent factors on corporate environmental, social, and governance performance in a sample of leading airline companies worldwide. The analyzed sample includes airline companies with historical data from 2013 to 2019. The study involved analyzing data with panel-corrected standard error models. The results suggest that airline companies headquartered in countries with excellent conditions for operating businesses and outstanding information and communication technology readiness exhibit a high caliber of environmental, social, and governance performance. Similarly, the findings imply that airlines headquartered in countries whose governments significantly influence the aviation sector experience poor environmental, social, and governance performance. Likewise, the results also provide evidence that countries well positioned to join national air service arrangements and subscribe to regional trade agreements have airline companies with excellent environmental, social, and governance performance. Equally, the results suggest that government investment in the local ground and port infrastructure negatively and significantly influences all analyzed environmental, social, and governance performance metrics.

The results support the following conclusions: countries will benefit from superior airline environmental, social, and governance performance when implementing national policies to improve their domestic information and communication technology readiness and business environment. Similarly, nations with significant government influence on aviation will experience poor airline environmental, social, and governance performance. Lastly, governments should consider the negative impact on domestic airlines' environmental, social, and governance efforts associated with policies to support competing transportation ground and port infrastructure investments. Government investment in the local land and port infrastructure must complement rather than compete with the national air transportation system, like in the case of Maldives, Greece, or the Philippines.

AUTHOR CONTRIBUTIONS

Conceptualization: Juan Dempere, Kennedy Modugu.
Data curation: Juan Dempere, Kennedy Modugu.
Formal analysis: Juan Dempere, Kennedy Modugu.
Funding acquisition: Juan Dempere, Kennedy Modugu.
Investigation: Juan Dempere, Kennedy Modugu.
Methodology: Juan Dempere, Kennedy Modugu.
Project administration: Juan Dempere, Kennedy Modugu.
Resources: Juan Dempere, Kennedy Modugu.
Software: Juan Dempere, Kennedy Modugu.
Supervision: Juan Dempere, Kennedy Modugu.
Validation: Juan Dempere, Kennedy Modugu.
Visualization: Juan Dempere, Kennedy Modugu.
Writing – original draft: Juan Dempere, Kennedy Modugu.
Writing – review & editing: Juan Dempere, Kennedy Modugu.

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