Article

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Impact of tourism development on inclusive growth: A panel vector autoregression analysis for African economies

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Abstract
The persistent debate among policy makers and academics around combating the high rates of poverty and income inequality can be further illuminated by understanding how tourism contributes to inclusive growth, especially in developing economies. Tourism sector can be regarded as one of the key contributors to inclusive growth and where it has the capacity to generate prospects for productive employment. The goal of this article is thus to investigate the link between inclusive growth and tourism in the African context. To do this, we utilized a recent panel vector autoregression (pVAR) and data for 45 African countries spanning the period 1995 to 2019. Thus, by the error variance decomposition and impulse response functions, our results showed a weak positive effect of international tourism arrivals and the composite tourism indicator on inclusive growth, while tourism receipts and tourism expenditure insignificantly decreases inclusive growth in the sampled African economies. Our result is further supported by the panel system generalized method of moments (GMM). We provide some policy implications from our findings.

Keywords
Tourism, tourism composite indicator, inclusive growth, panel data analysis, panel vector autoregression, system generalized method of moments, Africa

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Introduction

It is widely acknowledged that the tourist industry contributes significantly to the attainment of the Sustainable Development Goals (SDGs) by way of eco-friendly and economic benefits (Saarinen et al., 2011; Lee & Jan 2019; Lee, 2019; Surinach and Wober, 2017). In addition, the tourism industry aids in the generation of foreign exchange, the creation of jobs, and the stimulation of investments in the services sector of emerging and developing economies (Xu et al., 2018). In this line of reasoning, Fossati and Panella (2000) documented tourism's involvement in achieving steady long-term economic growth and its contributions to the growth evolution, while Brau, Lanza & Usai (2008) documented tourism's role in the framework of sustainable development. Since the late 1950s, when civil air transportation sector was introduced, the tourism sector has become among the most lucrative and fastest developing industries globally (Sahni et al., 2020). For the seventh time until the year 2018, tourism exports recorded significantly higher growth than retail exports. Furthermore, sub-Saharan Africa outperformed all other regions in terms of tourist arrivals and revenues, surpassing global norms (World Economic Forum, 2019). For several economies, Africa inclusive, the tourism sector offers ample gains, including the prospect for job opportunities, the generation of foreign exchange, reduction in poverty and inequality, a significant contribution to tax incomes for the government and the enhancement of physical infrastructure and human capital development (Bulut et al., 2020; Tang, 2018). To this end, there has been renewed awareness and political attention to harnessing the development potentials of tourism products on the continent of Africa. In light of this, the current research looked into the link between tourism development and inclusive growth in Africa.

Moreover, for tourism-dependent countries in Africa to reap the gains associated with trans-national tourism, much priority need to be given to strengthening the linkage between tourism development and social inclusion indicators, namely, job creation, inequality, and poverty, jointly referred to as inclusive growth. Broadly, inclusive growth is a situation whereby the poorest quartile of the population benefits the more from economic growth (this definition has lately been used in the Global South to characterize tourism expansion) (Hampton and Jeyacheya, 2020). The attainment of inclusive growth resulting from tourism development has two major components when managed effectively. First, it fosters linkages to the rest of the domestic economy (Hampton and Jeyacheya, 2015, 2020; Hampton et al., 2018); and second, inclusive growth reduces economic leakage by way of enhancing domestic ownership and creating robust networks between domestic suppliers. Also, inclusive growth is concerned with programs that engage citizens from diverse groups, including social, religious, ethnic, gender, and through sectors, such as services, manufacturing industry, and agriculture, by contributing to and profiting from economic growth (De Haan, 2015). In several emerging countries, mostly African economies, tourism is seen as a means to promote job growth and thus enhance the welfare of the society (Twining-Ward, 2010; Snyman, 2012).

Following the aforementioned arguments, the current study is motivated in distinct ways as follows. First and foremost, given that Africa is not competitively diversified in comparison to other parts of the world, the tourism sector constitutes key bedrock for the socio-economic transformation of the African continent. For the majority of African economies, the tourism sector is considered the second largest foreign exchange earner (United Nations Conference on Trade and Development, UNCTAD, 2010). Considered as a labor intensive industry, the tourism sector generates large percentage of jobs and employment prospects for semi-skilled, and low skilled workers, mainly for the poor, young and female workers (UNCTAD, 2010). It is further reported that about 70% of tourism work force is made up of female, while more than 50% of tourism workers are at most 25 years; and is regarded as a key source of employment for a lot of unemployed youths, thus reducing poverty levels (UNWTO and International Labour Organization (ILO), 2014; UNCTAD, 2010).

Secondly, considering the issues surrounding “African Rising,” that is, Africa has been outperforming other regions in terms of gross domestic product (GDP) growth rate. But, one may ask, is this growth inclusive and beneficial to all citizens? In the last two decades, the tourism sector has maintained a consistent expansion and has experienced more growth than other industries in both advanced and least-developed economies (Benkraiem et al., 2020). This is also confirmed in Lanza and Pigliaru (2000), who showed that countries have made conscious efforts to enhance their specialization in the tourism sector. According to Benkraiem et al. (2020), these countries have modest revenue-generating economies with rapidly rising average per capita incomes. According to the World Travel and Tourism Council’s annual report for 2018, the tourism industry grew at a rate of roughly 2.8% in 2018, compared to 2.3% for the global economy in 2015. Also, tourism industry generated roughly 284 million employment and 7.2 trillion dollars, accounting for around 9.8% of global GDP. This type of macroeconomic fact demonstrates that the tourism industry helps countries improve their balance of payments. International tourism activity, for example, provided around 7% of global exports in goods and services (yearly report of the UNWTO, 2016). Furthermore, tourism offers several economic gains, including taxation incomes, household earnings, employment generation, and so on (Dwyer et al., 2004; Durbarry, 2002; Santana-Gallego et al., 2010; Repetti and Roe, 2018; Addessi et al., 2018; Benkraiem et al., 2020).

Therefore, the goal is to examine the contribution of the tourism sector to inclusive growth and vice versa, in African countries. First, our study offers a complete evidence of the dynamic relationship between multiple tourism measures (international tourist arrivals, receipts, and expenditures) and inclusive growth in the context of Africa. Extant studies have employed these measures to examine the link between economic growth and tourism (Antonakakis et al., 2015; Brida et al., 2015; Aslan, 2016; Benkraiem et al., 2020; Sahni et al., 2020, among others), without considering growth inclusiveness. Growth itself is good, but growth that is not beneficial to all citizens is not good enough. The “inclusiveness” of tourism advancement procedures is gradually becoming a subject that is closely scrutinized by the academics and policy makers (Butler and Rogerson, 2016). Discussions around “inclusion” and “inclusive economic growth” have been debated in the last one and half decades concerning the place of tourism in reducing poverty and around pro-poor tourism tactics in stimulating local progress in the global south (Scheyvens, 2011; Rogerson, 2006, 2014; Truong, 2014; Butler and Rogerson, 2016). For example, Hampton and Jeyacheya (2013) contend that growth is inclusive when it is based on wide-ranging growth across every industry of the economy; it is inclusive of the lower and middle quartile income classes, and is distributed with the purpose of income inequality reduction.

Second, we investigate this relationship in a large panel of 45 African countries (see Appendix for list of countries). Prior empirical researches in this line of study are mostly country-specific. For example, Bakker et al. (2020) for North Macedonia, Glocker and Haxton (2020) for South Africa, Hampton and Jeyacheya (2020) for Small Island Developing States and Blue Economy, Hampton et al. (2018) for Vietnam. Our approach in this study is broad and gives us a wide-ranging view of the relationship between tourism development and inclusive growth. Panel data approaches and techniques are assumed to provide effective and impartial results for the tourism-inclusive growth nexus (Bulut et al., 2020).

Third, divergent from previous studies that employed different individual tourism indicators in their models, our present study adopts a composite indicator for the African tourism development. The construction of the composite indicator followed the use of principal component analysis (PCA) similar to Shahzad et al. (2017). A fourth contribution is to investigate this relationship within a dynamic panel vector autoregressive (pVAR) model. Extant literature on the tourism development-inclusive growth nexus is basically descriptive (e.g., see Bakker and Messerli, 2017; Bakker, 2019;

Bianchi and De Man, 2021 among others). Also, numerous studies examining panel data in the tourism-inclusive growth literature have not captured the effects of shocks and explanations for cross-sectional dependence (CD) across the economies involved in their samples. Failure to examine this however has led to the omission of key information that perhaps affects the association among series captured in the model for analysis (Bulut et al., 2020). Hence, we employed 2nd-generation panel unit root test, which is robust to CD and the pVAR model that accounts for both own and cross shocks. Following the estimations, our results showed a weak positive effect of international tourism arrivals and the composite tourism indicator on inclusive growth, while tourism receipts and tourism expenditure insignificantly decrease inclusive growth in the sampled African economies. Our result is further supported by the panel system GMM. Therefore, after the introductory section, the rest of the paper is structured as follows: relevant empirical literature in section two; section three contains the methodology, which includes panel vector autoregressive model; the empirical results and discussion are presented in section four; and finally section five houses concluding remarks and some policy recommendations.

Literature review

It has been documented that the tourism industry is among the most contributory factors to employment generation, inequality and poverty reduction, sustainable human development, and economic development (John and Chelat, 2013; Hampton and Jeyacheya, 2020). For majority of African economies, the tourism sector is another key greater earner of net foreign exchange (UNCTAD, 2010). Considered as a labor intensive industry, the tourism sector generates large percentage of jobs and employment prospects for semi-skilled and low skilled workers, mainly for the poor, young, and female workers (UNCTAD, 2010). It is further reported that about 70% of tourism work force is made up of female, while more than 50% of tourism workers are at most 25 years; and is regarded as a key source of employment for a lot of unemployed youths, thus reducing poverty levels (UNWTO & ILO, 2014; UNCTAD, 2010). The tourism–economic growth relationship has been examined by numerous authors for both developed and developing economies. This relationship has been categorized into four strands in the empirical literature (see Dogru and Bulut, 2018)—four hypotheses—tourism-led growth (TLGH), growth-led tourism (GLTH), feedback, and neutrality.

Tourism development leads to increased economic growth, according to studies that used the TLG hypothesis. Tourism, in other words, serves as opportunities for job creation; tax revenue generation; human and physical capital developments, and technology stimulation; brings about efficient operation of domestic firms as a result of competition; and expedites the utilization of economies of scale (see Lee and Chang, 2008; Samimi et al., 2011; Tugcu, 2014; Shahzad et al., 2017; Benkraiem et al., 2020; Sahni et al., 2020). For example, Lee and Chang (2008) examined the long-run correlation and economic growth–tourism development causality link under a heterogeneous panel co-integration model with data from OECD and non-OECD economies for the 1992–2002 period. After confirming co-integration between the variables, they found that tourism development affected the economic growth of non-OECD economies more than the OECD members. In addition, tourism receipts appear to have impacted economic growth more in sub-Saharan Africa than in other regions. Finally, they claimed that in the case of the OECD, there is one-way causality effect from tourism development to economic growth, but non-OECD economies have feedback causality.

Further, Samimi et al. (2011) evaluated the economic growth–tourism development relationship for a group of developing countries, using a panel VAR technique from 1995 to 2009. After a thorough investigation, they concluded that there is unidirectional effect running from tourism development to economic growth, and not vice versa. Tugcu (2014) examined the effect of tourism activities on economic growth on the African, Asian and European countries, with panel data running between 1998 and 2011. By adopting Dumitrescu and Hurlin (2012)'s panel Granger causality technique, the study confirmed the existence of TLGH especially for the European economies. Similarly, with the aid of the Sim and Zhou (2015)'s quantile-on-quantile technique, Shahzad et al. (2017) tested the cogency of the tourism-led growth proposition for ten highly visited countries, globally. After a detailed quantile analysis, they confirmed that tourism development promotes economic growth for the sampled markets, but with irregular outcomes across economies and quantiles in each market. Also, Benkraiem et al. (2020) using quantile autoregressive distributed lag model assessed the effect of tourism development on economic growth in top termini for world tourism and found that development in the tourism sector has asymmetric influence on economic growth in some of the economies, including France, Italy, Mexico, and Spain, while both simultaneous and lagged asymmetric relationship was documented in the cases of China and Germany. Sahni, Nsiah & Fayissa (2020) assessed the relationship between tourism receipts and economic growth in Africa. By employing a quantile regression and threshold analysis methods, they documented that there exists a threshold in the economic growth–tourism receipts relationship. Also, they argued that the effects are stronger at the lower level of the threshold than at the higher level; and tourism receipts are more beneficial at the worse phases (lower quantiles) of economic growth than at boom phases (upper quantiles).

Furthermore, the GLTH on the other side of the debate argues that the advancement in tourism is dependent on the growth and development of the economy at large. This hinges on the grounds that improvement in economic growth causes the demand for tourism to rise and vice versa (Narayan, 2004; Sari Hassoun et al., 2021). This conservation hypothesis has been analyzed and verified by several studies, including Sari Hassoun et al. (2021) for Algeria; Aratuo and Estienne (2019) for the United States; Phiri (2016) for South Africa; Bouzahzah and Menyari (2013) for Morocco and Tunisia; Ivanov and Webster (2013) for a worldwide investigation; Lee (2012) for Singapore; and Oh (2005) for Korea. Oh (2005) explored the tourism development–economic growth nexus in Korea using the Engle-Granger 2-stage technique and a VAR model. Accordingly, there was no co-integration between the series, and there was a one-way causality, where economic growth impacted tourism development, but not vice versa. For the period 1980 to 2007, Lee (2012) explored the short- and long-run dynamic link between tourism development and economic growth in Singapore. The Granger causality test verified the GLTH, implying that economic growth in Singapore boosts tourism development. In addition, Ivanov and Webster (2013) found that tourism contributes to economic growth in Africa, Asia, the Caribbean, and Latin America, but detracts from economic growth in Europe, North America, and Oceania countries in their study of the contribution of tourism to economic growth for 174 economies. And the effect is amplified in countries where tourism accounts for a large portion of their gross productivity. Bouzahzah and Menyari (2013) considered the tourism development–economic growth relationship using annual data between 1980 and 2010. Their findings, which were based on co-integration, an error correction model, and Granger causality tests, verified the TLGH in the short run while supporting the GLTH in the long run. Phiri (2016) investigated the link between multiple metrics of tourism development and economic growth in South Africa using both symmetry and asymmetry co-integration structures. The GLTH for the number of tourist arrivals was validated by the linear framework's result. On the other hand, using sectoral data, Aratuo and Etiene (2019) examined how economic growth is affected by the six sectors related to tourism activities. By Granger causality, the study finds that economic growth promotes investments in the tourism industry and further increased tourism activities. Lastly, Sari Hassoun et al. (2021) recently confirmed the hypothesis that tourism development is driven by economic growth.

The third strand of empirical literature suggests a bidirectional or feedback relationship between tourism and economic growth, implying that tourism is dependent on economic growth just as much as economic growth is dependent on tourism activities (Katircioglu, 2009a). Studies supporting the feedback causality include Rasool et al. (2021) for BRICS economies; Shakouri et al. (2017) for economies in Asia; Perles-Ribes et al. (2017) for the Spanish economy; Dogru and Bulut (2018) for seven European markets; Yazdi et al. (2017) for Iran; Wu, Liu, Hsiao & Huang (2016) for selected economies in Australia and Asia; Tang, Tiwari and Shahbaz (2016) for India; Phiri (2016) for South Africa; Tugcu (2014) for selected economies in Asia and Europe; Seetanah (2011) for small Island countries; Samimi et al. (2011) for 20 emerging market; Narayan, et al. (2010) for four South Pacific Ocean Islands, including Fiji, Papua New Guinea, Solomon Islands, and Tonga) and Kim and Chen (2006) for Taiwan. For example, Samimi et al. (2011) find that developments in the tourism sector promote economic growth in the long-term, with strong causality running from both directions. Also, Kim and Chen (2006) examined the correlation between economic development and tourism expansion in Taiwan following a Granger causality approach. The study confirmed that long-term equilibrium exists and that there is feedback hypothesis between the variables. Katircioglu (2009a) analyzed the tourism-led growth with data from Malta, following the adoption of Granger causality test and bounds test for co-integration; they reported that both the GLT and TLG hypotheses were confirmed in the case of Malta. Seetanah (2011) employed data for 19 island countries to analyze the relationship between the tourism sector and economic growth, with the aid of generalized method of moment from 1990 to 2007. The results confirmed that development in the tourism industry improves economic growth as much as economic growth promotes tourism development; thereby validating the two-way reactions between tourism development and economic growth. Similarly, in another study on panel data, Wu et al. (2016) scrutinized the growth–tourism nexus based on the asymmetric and time-varying causality approach. By panel smooth vector error correction, they find bidirectional causal link, thereby confirming the two-way response hypothesis. In a study for India, Tang et al. (2016) also confirmed the positive correlation between economic growth and tourism development, but the effect is more substantial from tourism to growth than from growth to tourism. Shakouri, Yazdi et al. (2017) examined the international tourism–economic growth relationship for a group of Asian economies over the 1995 to 2014 period of time. With the implementation of panel Granger causality and variance decomposition approach, they found positive co-movement between the two variables. Dogru and Bulut (2018) also find the feedback relationship linking tourism development and economic growth, with the use of the causality technique proposed by Dumistrecu and Hurlin (2012), indicating the growth–tourism interrelationship. Recently, Rasool et al. (2021) also confirmed the two-way response hypothesis between economic growth and tourism development.

Furthermore, another crop of scholars present the neutrality argument, which argues that no relationship exists between tourism development and economic growth. Showing that increased growth in the economy does not always translate into increased demand for tourism and the reverse is also true (Katircioglu, 2009b). This neutrality explanation is supported by studies such as Phiri (2016) for South Africa; Tugcu (2014) for selected economies in Africa; Georgantopoulos (2013) for India; Jackman and Lorde (2010) for Barbados and Ozturk and Acaravci (2009) for Turkey. For example, Georgantopoulos (2013) analyzed the whether tourism expenditure impacts economic growth in India for the period between 1988 and 2011, and documented that even though there exists long-term equilibrium association, no significant connection was establish between the variables. Also, following the work of Katircioglu (2009a), Katircioglu (2009b) revisited the TLGH proposition in the case of the Turkish economy with the aid of bounds tests and Johansen co-integration approach for the period 1960 to 2006. However, contrary to the findings in Katircioglu (2009a) and other previous studies for Turkey, there was no connection among the variables in the long-term and no causality between the variables, thereby confirming the neutrality hypothesis. In a similar study for Turkey, Ozturk and Acaravci (2009) examined the TLGH for the 1987 to 2007 period, with the use two methodologies—VECM and the ARDL. In line with Katircioglu (2009b), no long-run association was confirmed between the variables, and no causal links. This confirmed the neutrality hypothesis. To test the Keynesian proposition of positive connection between international tourist arrivals and the increase in private expenditure under the multiplier effect, Jackman and Lorde (2010) examined the tourism development–economic growth relationship in the short- and long-terms for Barbados; they found no causality between the variables, which corroborates the neutrality hypothesis.

Recently, other studies present the T-DIGD (Tourism-Driven Inclusive Growth Diagnostic) framework (see Bakker, 2019). Driving inclusive growth, tourism sector need to generate productive employment opportunities, which are equally available to all individuals in an economy (Bakker, 2019). For example, Bakker et al. (2020) deepened the hypothetical and real-world explanations of inclusive growth–tourism nexus by assessing T-DGID framework in the case of North Macedonian tourism industry. This was confirmed to be a promising approach that helps in identifying the most likely requisite restraints that limits the tourism sector from driving inclusive growth from a long list of likely driving causes. Generally, a good amount of empirical studies have been conducted to determine whether tourism development promotes inclusive growth (these include Bakker et al., 2020; Glocker and Haxton, 2020; Bakker, 2019; Hampton et al., 2018; Butler and Rogerson, 2016; Hampton and Jeyacheya, 2020, 2013; Hedrick-Wong, 2016; Jones, 2013; John and Chelat, 2013). For example, Hampton et al. (2018) examine whether tourism promotes inclusive growth in Ha Long Bay, Vietnam, by interrogating the effects of tourism on inclusive growth through ownership, employment, supply channels, expenditure and linkages or outflows in the economy. Drawing from fieldwork in Vietnam and given the fast growing tourism sector with unequal economic gains for domestic communities, their findings suggested lack of evidence of the effect of tourism on inclusive growth in the Ha Long Bay.

The goal of this article is therefore to examine the contribution of the tourism sector to inclusive growth and vice versa, in African countries. This study deviates from previous studies such as Hampton et al. (2018); Hampton and Jeyacheya (2013); Jones (2013); Butler and Rogerson (2016) in the following senses: first, contrary to other studies that are based on country specific, we examine tourism-inclusive growth relationship by employing a recent panel methodology, the pVAR model, in a large panel of forty-five African countries. Second, we employed multiple measures of tourism activities, which include tourism arrivals, tourism expenditures and tourism receipts. This was necessary to enable us determine which of the measures is most relevant in influencing inclusive growth in the African region. Third and lastly, this study constructed and employed a tourism composite indicator, which combines tourism arrivals, tourism receipts and tourism expenditure using the principal component analysis (PCA).

Materials and methods

Panel VAR methodology

In order to accomplish the goals of this study, we employed a panel VAR methodology, which was necessitated by the existence of endogenous series in our specification. Given this fact, an estimator that captures the endogenous variables with stationarity and individual heterogeneity that is not observable was recommended by Love and Zicchino (2006). Therefore, we employ a k-variable standardized pVAR model of order p with panel-specific fixed effects denoted in equation (1)

$$\begin{aligned}&\mathbf{Y}_{it} = \mathbf{Y}_{it-1}\mathbf{D}_1 + \mathbf{Y}_{it-2}\mathbf{D}_2 + \ldots + \mathbf{Y}_{it-p+1}\mathbf{D}_{p-1} + \mathbf{Y}_{it-p}\mathbf{D}_p + \mathbf{X}_{it}\mathbf{W} + \mathbf{v}_i + \boldsymbol{\varepsilon}_{it}\\ &i = 1, 2, 3, \ldots, N; \quad t = 1, 2, 3 \ldots, T_i\end{aligned} \tag{1}$$

From equation (1), endogenous variables are represented by $\mathbf{Y}_{it}$, which is a $(1 \times k)$ vector, independent covariates are denoted by $\mathbf{X}_{it}$, $(1 \times l)$ vector, while $\mathbf{v}_i$ and $\boldsymbol{\varepsilon}_{it}$ are, respectively, $(1 \times k)$ vectors of endogenous series with fixed effects of the panel and random disturbance terms. The parameters to be estimated, $\mathbf{D}_1, \mathbf{D}_2, \ldots, \mathbf{D}_{p-1}, \mathbf{D}_p$ are the $(k \times k)$ matrices and $\mathbf{W}$ is the $(l \times k)$ matrix, and where p is the fixed effects of the specific panel lag length order. The assumptions of the shocks or innovations are characterized by: $\xi(\boldsymbol{\varepsilon}_{it}) = 0, \xi(\boldsymbol{\varepsilon}'_{it}\boldsymbol{\varepsilon}_{it}) = \sum$, and $\xi(\boldsymbol{\varepsilon}'_{it}\boldsymbol{\varepsilon}_{iq}) = 0 \; \forall \; t > q$.

Moreover, it is also assumed that the cross-sectional elements have similar data generating process (DGP), with the parameters of the reduced-form $\mathbf{D}_1, \mathbf{D}_2, \ldots, \mathbf{D}_{p-1}, \mathbf{D}_p$ and $\mathbf{W}$ shared among them (Holtz-Eakin et al., 1988).

Characteristics of data employed

In this present paper, we focus on the developments in the tourism sector and inclusive growth in African economies. The dataset employed for this study includes a balanced panel of 45 countries in Africa.[1] The sample covers the period 1995–2019, and was determined by the availability of data on tourism indicators (1995 was the year with the first observation on tourism development), and sourced from the World Bank (World Development Indicators, WDI, 2020). Data on inclusive growth was proxied by gross domestic product (GDP) per person employed (constant 2017 PPP $). We choose the log of GDP per person employed, similar to the explanations presented in Oyinlola et al. (2020), Oyinlola and Adedeji (2019) and Raheem et al. (2018). This indicates the labor productivity (i.e., output for every element of labor input).[2] GDP per person denotes the rise in the accessibility and distribution of common opportunities to the populace. Next, the tourism sector was proxied by three indicators, including expenditures by tourists (in US dollars), receipts from tourists (in US dollars) and international tourism demands (number of arrivals). For ease of analysis and to decrease non-normality, all series were specified in their natural logarithmic forms. In addition, we perform cubic spline interpolation where there are missing data for our variables. Also, to capture activities in the tourism sector, we construct a composite indicator using PCA, which captures three proxies for tourism indicators—tourism arrivals, tourism receipts, and tourism expenditure.

Theoretically, other factors can also influence growth, one of which is capital stock—a natural determinant of growth. This was captured in our model with gross capital formation as a share of GDP. Further, we included other relevant theoretical control series such as human capital—proxied as government expenditure on education, share of GDP; and current health expenditure, share of GDP. Lastly, foreign direct investment (FDI) net inflows was employed as a control variable, which can impact economic growth positively or negatively subject to the industry that benefits from the net inflows (Fowowe and Shuaibu, 2014; Oyinlola et al., 2020). A complete detail of the series, including sources, measurements, and symbols, is displayed in Table 1.

Table 1. Nature of data.

S/N	Symbols	Variables	Measurement	Source
1	GDPPPE	Inclusive growth	GDP per person employed (constant 2017 PPP $)	WDI (2020)
2	ITA	Tourist arrivals	International tourism, number of arrivals	WDI (2020)
3	ITE	Tourism expenditures	International tourism expenditures (current, US$)	WDI (2020)
4	ITR	Tourism receipts	International tourism receipts (current US$)	WDI (2020)
5	TDA	Tourism activity	Tourism activity index, using principal component analysis (PCA)	–
6	GFCF	Capital stock	Gross fixed capital formation as a share of GDP	WDI (2020)
7	GEX	Human capital	Government expenditure on education, total as a share of GDP	WDI (2020)
8	HEX	Human capital	Current health expenditure as a share of GDP	WDI (2020)
9	FDI	Foreign investment	Foreign direct investment, net inflows as a share of GDP	WDI (2020)

Source: compiled by authors.

Table 2. Summary statistics and cross-sectional dependence.

Variable	Obs	Mean	Std. Dev.	Min	Max
LGDPPPE	1125	9.0862	1.0095	6.9376	11.3701
L_ITE	1125	18.8227	1.5841	12.6443	23.3049
L_ITA	1125	12.6593	1.7405	7.6350	16.4582
LITR	1125	18.6590	2.0686	11.5129	23.3358
TDA	1125	1.19×10^{-9}	1.5856	−4.3741	3.7869
GFCF	1125	20.8389	8.7272	−2.4244	79.4618
GEX	1125	4.3317	3.5455	0.5223	41.6596
HEX	1125	5.3952	2.4324	0.4253	20.4134
FDI	1125	3.1828	4.7082	−8.7031	42.0928
DLGDPPPE	1080	0.0171	0.0629	−0.9835	0.7918
DL_ITE	1080	0.0580	0.3604	−2.7319	2.4398
DL_ITA	1080	0.0695	0.2581	−1.3270	2.3575
DLITR	1080	0.0749	0.4703	−6.1181	3.7612
DTDA	1080	0.0651	0.2254	−1.9757	1.4198
DGFCF	1080	0.1313	4.0317	−43.5299	33.3313
DGEX	1080	−0.0120	0.8564	−17.1758	6.9657
DHEX	1080	0.0654	0.6544	−3.9585	8.1597
DFDI	1080	0.0835	3.8113	−35.3011	38.9524

Note: see Table 1 for definition of variables.

Table 3. Tests of cross-sectional dependence and panel unit root (cross-sectionally augmented IPS).

	CD				CIPS	
Variables	CD test	*p*-value	corr	abs (corr)	Without trend	With trend
LGDPPPE	57.80	0.000	0.367	0.650	−2.413***	0.259
L_ITE	95.66	0.000	0.608	0.641	−4.316***	−2.788***
L_ITA	105.95	0.000	0.673	0.716	−3.874***	−3.258***
LITR	82.79	0.000	0.526	0.614	−6.103***	−4.538***
TDA	120.02	0.000	0.763	0.763	−4.198***	−2.632***
GFCF	15.17	0.000	0.096	0.395	−2.147**	0.933
GEX	6.27	0.000	0.040	0.408	1.803	3.164
HEX	27.64	0.000	0.176	0.487	0.262	−0.654
FDI	19.64	0.000	0.125	0.253	−4.862***	−2.852***
DLGDPPPE	2.80	0.005	0.018	0.182	−9.854***	−9.279***
DL_ITE	7.69	0.000	0.050	0.171	−13.560***	−11.621***
DL_ITA	8.10	0.000	0.053	0.167	−13.319***	−11.215***
DLITR	9.91	0.000	0.064	0.184	−14.438***	−11.756***
DTDA	12.56	0.000	0.081	0.188	−12.316***	−10.810***
DGFCF	2.26	0.024	0.015	0.168	−11.715***	−9.898***
DGEX	−0.40	0.686	−0.003	0.173	−10.770***	−7.860***
DHEX	5.22	0.000	0.034	0.191	−10.381***	−7.492***
DFDI	1.04	0.299	0.007	0.185	−14.966***	−11.609***

Note: see Table 1 for definition of variables. *** and ** indicate 1% and 5% significance levels.

Empirical results and discussion

Preliminary analysis

To appreciate the features of our variables and their cross-sections, we evaluated the summary statistics and the stationarity of the series. Table 2 contains the summary statistics. Further, we conducted Pesaran cross-sectionally augmented IPS (CIPS) and cross-sectional dependence (CD) tests in order to examine the existence of CD and the level of integration of the series. Table 3 displayed both CIPS and CD tests results. Based on the Pesaran CD test results (Pesaran, 2004), it can be submitted that there exists CD in every series, when we consider their logarithmic and first-differenced forms, therefore, indicating the presence of a correlation between our variables across these economies. Hence, given the confirmation that CD exists among all our series, and since the first-generation panel unit root test are unreliable in this phenomenon, only the 2nd-generation panel unit root test was conducted (i.e., the CIPS test developed by Pesaran (2007)).

Our results from the CIPS test shows that some of the series, particularly GDP per person employed, gross fixed capital formation, hover around the I(0) and I(1) level of integration; government expenditure on education and current expenditure on health are integrated at first difference, when we consider their natural logarithms, however, all the other series are stationary in their levels—at I(0), with or without trend, confirming the suitability of the panel VAR estimation. Further, we also determined that collinearity and multicollinearity do not portend any challenge to our investigation by conducting the correlation analysis and the variance inflation factor (VIF). The VIF statistics and correlation analysis results are presented in Table 4. Following the small values of

Table 4. Correlation analysis and variance inflation factor measurements.

	LGDPPPE	L_ITE	L_ITA	LITR	GFCF	GEX	HEX	FDI	TDA
LGDPPPE	1.0000								
L_ITE	0.4575	1.0000							
L_ITA	0.4460	0.7571	1.0000						
LITR	0.4536	0.7215	0.7920	1.0000					
GFCF	0.2540	0.3344	0.2985	0.3354	1.0000				
GEX	0.1121	0.0811	0.3002	0.1447	0.0120	1.0000			
HEX	−0.0926	−0.1748	0.0271	−0.0302	−0.2335	0.3529	1.0000		
FDI	−0.0356	−0.0658	−0.0314	−0.0140	0.2685	0.0098	0.0899	1.0000	
TDA	0.4940	0.9011	0.9295	0.9156	0.3524	0.1927	−0.0637	−0.0403	1.0000
VIF		2.88	3.87	3.04	1.36	1.32	1.31	1.14	
Mean VIF	1.97								
	DLGDPPPE	DL_ITE	DL_ITA	DLITR	DGFCF	DGEX	DHEX	DFDI	DTDA
DLGDPPPE	1.0000								
DL_ITE	0.0537	1.0000							
DL_ITA	0.1297	0.0567	1.0000						
DLITR	0.0645	0.1413	0.1426	1.0000					
DGFCF	0.0369	−0.0549	0.1060	0.0629	1.0000				
DGEX	−0.0117	−0.0594	−0.0202	−0.0014	−0.0411	1.0000			
DHEX	−0.1232	−0.0045	−0.0360	−0.0276	0.0716	−0.0401	1.0000		
DFDI	0.0387	−0.0682	−0.0024	−0.0115	0.0977	−0.0444	0.0321	1.0000	
DTDA	0.1184	0.6775	0.5011	0.7183	0.0460	−0.0426	−0.0325	−0.0468	1.000
VIF		1.04	1.03	1.04	1.04	1.01	1.01	1.07	
Mean VIF	1.03								

Note: see Table 1 for definition of variables.

Table 5. Lag length selection measures.

Lag	CD	J	J-pvalue	MBIC	MAIC	MQIC
1	−1.690933	129.3776	0.4492968	−741.3289	−126.6224	−361.4447
2	−0.3212214	79.24703	0 0.0948774	−356.1062	−48.75297	−166.1641
3	0 0.7015812					

correlation, VIF and mean VIF, it can be stated that there is no problem of collinearity and multicollinearity.

Finally, we performed the last pre-estimation test before the panel VAR model analysis, which is the lag length selection criteria, with results in Table 5. Following that the Hansen's J test is satisfied, the best lag is whichever has the minimum information criterion. Table 5 shows that all the information criteria are smaller when lag one is selected, hence the modified Akaike information (MAIC) criterion was chosen following Serena and Perron (2001) to estimate a first-order panel VAR. Despite the fact that it is commonly agreed that the VAR estimator is best suited for high frequency data, our current study employed a panel with yearly series since only annual data is available for most of our variables. Given the intrinsic nature of our data, it stands to reason that

Table 6. Results from the pVAR estimations.

ITE model

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	DLGDPPPE	L_ITE	DGFCF	DGEX	DHEX	FDI
L.DLGDPPPE	0.4021***	−0.6943***	−59.8663***	0.6500***	3.2200***	5.9538***
	(0.1118)	(0.2507)	(12.4143)	(0.2439)	(0.6476)	(1.8114)
L.L_ITE	**−0.0026**	0.9530***	−0.6614	−0.0183	0.0120	0.6341**
	(0.0040)	(0.0273)	(0.4661)	(0.0502)	(0.0405)	(0.2935)
L.DGFCF	0.0003	0.0028	0.0014	0.0053	0.0017	0.0487
	(0.0003)	(0.0025)	(0.0862)	(0.0052)	(0.0053)	(0.0425)
L.DGEX	0.0021	0.0166	0.0188	−0.2217***	0.0587**	0.7833***
	(0.0017)	(0.0130)	(0.1744)	(0.0443)	(0.0242)	(0.2669)
L.DHEX	−0.0058	−0.0083	0.6972**	−0.0636**	0.0566	−0.6512***
	(0.0046)	(0.0193)	(0.2887)	(0.0310)	(0.0460)	(0.1658)
L.FDI	0.0003	0.0022	0.0976	0.0090	−0.0222***	0.4560***
	(0.0005)	(0.0039)	(0.0914)	(0.0107)	(0.0083)	(0.0880)
OBS	990	990	990	990	990	990

ITA model

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	DLGDPPPE	L_ITA	DGFCF	DGEX	DHEX	FDI
L.DLGDPPPE	0.4515***	−1.7396***	−76.8173***	0.4377*	3.9239***	19.9522***
	(0.1177)	(0.3526)	(15.2552)	(0.2267)	(0.7557)	(4.4383)
L.L_ITA	**−0.0018**	0.9207***	−0.6115	−0.0138	0.0048	0.6025**
	(0.0040)	(0.0194)	(0.4978)	(0.0507)	(0.0386)	(0.2774)
L.DGFCF	0.0003	0.0006	0.0135	0.0073	0.0005	0.0002
	(0.0003)	(0.0022)	(0.0940)	(0.0053)	(0.0057)	(0.0450)
L.DGEX	0.0013	−0.0147**	0.0714	−0.2272***	0.0682***	0.5157*
	(0.0018)	(0.0067)	(0.2011)	(0.0456)	(0.0258)	(0.2636)
L.DHEX	−0.0058	−0.0118	0.7546**	−0.0595*	0.0724	−0.6126***
	(0.0047)	(0.0112)	(0.3334)	(0.0329)	(0.0476)	(0.1609)
L.FDI	0.0000	0.0023	0.1261	0.0056	−0.0244***	0.4049***
	(0.0005)	(0.0025)	(0.0985)	(0.0108)	(0.0084)	(0.0885)
OBS	990	990	990	990	990	990

ITR model

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	DLGDPPPE	LITR	DGFCF	DGEX	DHEX	FDI
L.DLGDPPPE	0.3538***	−3.2449***	−53.0952***	1.1145***	2.0670***	3.6141**
	(0.1100)	(0.8035)	(11.7815)	(0.3194)	(0.4528)	(1.4654)
L.LITR	**−0.0039**	0.9134***	−0.5316	−0.0020	0.0048	0.3328
	(0.0032)	(0.0314)	(0.3585)	(0.0398)	(0.0296)	(0.2447)
L.DGFCF	0.0003	0.0066*	−0.0265	0.0073	0.0018	0.0307
	(0.0003)	(0.0036)	(0.0846)	(0.0053)	(0.0052)	(0.0438)

(continued)

Table 6. (continued)

L.DGEX	0.0019	0.0182	0.0149	−0.2308***	0.0618***	0.7159**
	(0.0018)	(0.0153)	(0.1647)	(0.0450)	(0.0220)	(0.2870)
L.DHEX	−0.0044	0.0103	0.7229***	−0.0710**	0.0604	−0.6303***
	(0.0044)	(0.0267)	(0.2790)	(0.0345)	(0.0460)	(0.1771)
L.FDI	0.0003	0.0008	0.0732	0.0043	−0.0230***	0.4741***
	(0.0005)	(0.0047)	(0.0876)	(0.0096)	(0.0075)	(0.0914)
OBS	990	990	990	990	990	990

Tourism index model

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	DLGDPPPE	TDA	DGFCF	DGEX	DHEX	FDI
L.DLGDPPPE	0.4874***	0.8171***	−88.3940***	−2.3802***	4.0161***	22.1970***
	(0.1650)	(0.2016)	(21.5363)	(0.6685)	(0.9217)	(5.8766)
L.TDA	−**0.0086**	0.9400***	−0.0334	−0.0098	−0.0985	0.3694
	(0.0063)	(0.0236)	(0.8885)	(0.0718)	(0.0782)	(0.4903)
L.DGFCF	0.0003	0.0003	0.0753	0.0106*	0.0044	0.0334
	(0.0004)	(0.0018)	(0.1038)	(0.0057)	(0.0053)	(0.0465)
L.DGEX	0.0005	−0.0039	0.3883	−0.2248***	0.0035	0.3441*
	(0.0016)	(0.0053)	(0.2915)	(0.0459)	(0.0386)	(0.1892)
L.DHEX	−0.0019	0.0025	0.5820	−0.0638**	0.0492	−0.6696***
	(0.0054)	(0.0118)	(0.4283)	(0.0321)	(0.0468)	(0.1680)
L.FDI	−0.0006	0.0001	0.1979	0.0120	−0.0352***	0.2996***
	(0.0005)	(0.0024)	(0.1284)	(0.0105)	(0.0103)	(0.0887)
OBS	990	990	990	990	990	990

Note: see Table 1 for definition of variables. ***, ** and * indicate 1%, 5% and 10% significance levels. Standard errors in parentheses.

smaller values in terms of the lag length are better (see Santiago et al., 2019). This is particularly important as it helps to minimize loss of information in the data that may arise from reductions in degrees of freedom.

Results and discussion

We begin with the panel VAR estimation employing one lag and following the *gmmstyle* option (Holtz-Eakin et al., 1988). This approach has the capability to generate added effective analysis and also replaces omitted values with zeroes. Table 6 presents the panel VAR results with first-order lag length. The results are presented in four models for the different tourism indicators and a composite tourism indicator. Further, we confirmed stability of the four panel VAR models given that all the eigenvalues lie within the unit circle. This result is displayed in Table 7 and 8, which also signifies the stationarity of all the series (Lütkepohl, 2005).

Forecast error variance decomposition (FEVD)

To gain more information about our variables of study, we conducted the FEVD. The results from the FEVD provide us with indications about the percentage of error variance that a variable accounts for in other series which have experienced any form of variation, innovation or shock. It further provides the period of time required for a variable to attain a steady state and how each variable have contributed to achieving that equilibrium. In our current study, we employed the FEVD following Cholesky decomposition with 200 Monte Carlo simulations for ten years. Table 9 presents the results for the FEVD.

Starting with the model for tourism arrivals and considering inclusive growth, it can be seen that its FEVD is majorly accounted for by own shocks/innovations, with 85% from periods one to ten. However, we found that innovations to international tourism arrival account minimally for the variation in inclusive growth with about 0.1% in the first period, through to the tenth period. This supports the opinion that international tourism arrival has the capacity albeit weak to positively affect inclusive growth in these African countries. In terms of control variables, the results show that government expenditure on education and health similarly have insignificant contribution to the variations in inclusive growth with 0.1% from periods one to ten in the case of expenditure on education, while it is 0.8% in the case of expenditure on education. Net inflows of FDI contributes around 0.2% to the variation in inclusive growth from the first period to the tenth period, while gross fixed capital formation has substantial contribution in explaining the variations in inclusive, with 13% in period one, then dropped to 12% in periods two to ten.

Further, considering the model for tourism expenditure, the results show that shocks to international tourism expenditure, another indicator of tourism activity, appear to also exert very low influence on accounting for the variation in inclusive growth, which accounted for just around 0.01% in period one, 0.03% in the second, 0.12% and 0.22% in the fifth and tenth periods, respectively. Similar to the tourism arrivals model, the control variables have insignificant influence on inclusive growth, with the exception of gross fixed capital formation which provides around 8% to the variations in inclusive growth in periods one to ten. Similarly, the results for tourism receipts model shows that innovations to international tourism receipts (the third measure for tourism activity) seem to have very negligible effects on the explanation of the inclusive growth forecast error variance, which indicates only about 0.1% in periods one and two, 1.4% and 1.7% in periods five and ten, respectively.

Lastly, we consider the results for the tourism composite model. Inclusive growth accounts for around 80% of its variations in period one and increased slightly to around 81% in periods two through ten. In terms of cross shocks, innovations to the tourism composite indicator accounts for around 1.7% of the variations in the first period, 1.5% in the second period, 1.7% in the fifth period and increased to around 2.2% in period ten. In terms of control variables, the results show that the proxies for human capital and net inflows from FDI have negligible influence for explaining the variations in inclusive growth, whereas similar to the other models, gross fixed capital formation provides substantial explanation to the variations to inclusive growth, with about 16% in the first period and slightly reduced to around 15% in period two, five and ten, respectively. Given these outcomes, it can be established that the individual indicators for tourism activity, that is, tourism arrivals, tourism expenditure, and tourism receipts have not translated to inclusive growth in the sampled African economies. These outcomes are in tandem with prior empirical findings in Hampton and Jeyacheya (2013); Butler and Rogerson (2016); Hampton et al. (2018). However, our result from the composite indicator (which captures the three different tourism indicators) presents an improved outcome than when the variables are included in separate models. This is in line with prior studies, such as Osinubi and Osinubi (2020).

The impulse response functions (IRFs)

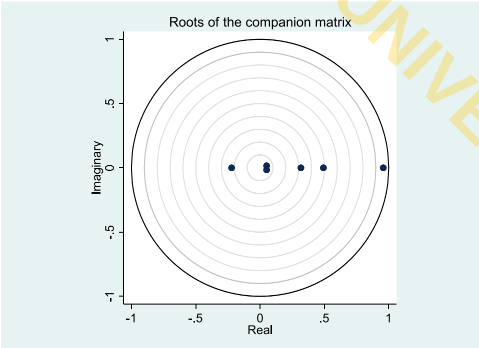
Results from the IRFs depict how one variable react to changes or fluctuations in other variables. They also have the capability to indicate the period required for a series to revert to their steady states

Table 7. Eigenvalue stability condition.

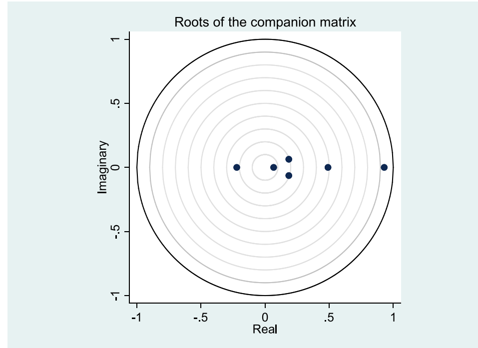
ITE model Eigenvalue		
Real	Imaginary	Modulus
0.9575682	0	0.9575682
0 0.4921577	0	0.4921577
0 0.3172281	0	0.3172281
−0.2211981	0	0.2211981
0.0507783	−0.0160541	0.0532557
0.0507783	0.0160541	0.0532557
ITA model Eigenvalue		
Real	Imaginary	Modulus
0.9293406	0	0.9293406
0.4905512	0	0.4905512
−0.2210774	0	0.2210774
0.1851356	0.0636587	0.1957744
0.1851356	−0.0636587	0.1957744
0.0667444	0	0.0667444
ITR model Eigenvalue		
Real	Imaginary	Modulus
0.9325713	0	0.9325713
0.5167649	0	0.5167649
0.2472147	0	0.2472147
−0.221349	0	0.221349
0.0513801	0	0.0513801
0.0178332	0	0.0178332
Tourism index model Eigenvalue		
Real	Imaginary	Modulus
0.9250484	0	0.9250484
0.3965941	−0.031406	0.3978356
0.3965941	0.031406	0.3978356
−0.2370959	0	0.2370959
0.1547652	0	0.1547652
−0.009291	0	0.009291

Source: compiled by authors.

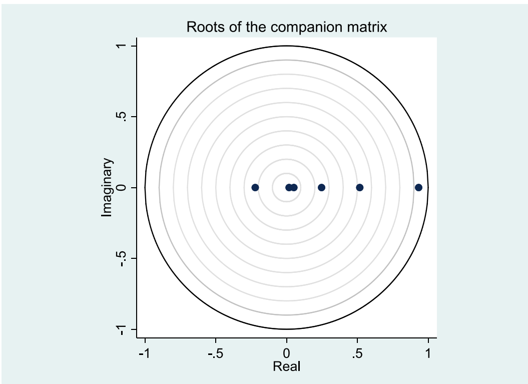
Table 8. Stability graphs.



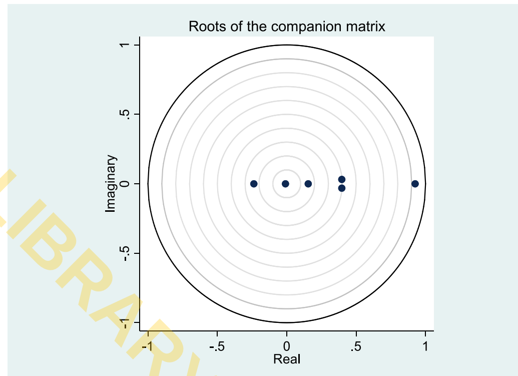
Stability graph for the ITE model



Stability graph for the ITA model



Stability graph for the ITR model



Stability graph for the TDA model

Note: see Table 1 for definition of variables.

Table 9. Forecast error variance decomposition (FEVD).

ITE model							
		Impulse variables					
Response variable	Forecast horizon	GFCF	GEX	HEX	FDI	ITE	GDPPPE
GFCF	**1**	1	0	0	0	0	0
	2	0.6701	0.0002	0.0107	4.18×10^{-8}	0.0008	0.3183
	5	0.6417	0.0002	0.0123	0.0002	0.0015	0.3441
	10	0.6412	0.0002	0.0123	0.0002	0.0022	0.3439
GEX_EDU	**1**	0.0075	0.9925	0	0	0	0
	2	0.0087	0.9841	0.0026	0.0019	0.0001	0.0026
	5	0.0087	0.9831	0.0027	0.0022	0.0001	0.0033
	10	0.0087	0.9830	0.0027	0.0022	0.0002	0.0033
HEX	**1**	0.0055	0.0025	0.9920	0	0	0
	2	0.0120	0.0060	0.8812	0.0074	0.0000	0.0934
	5	0.0129	0.0065	0.8635	0.0091	0.0003	0.1077
	10	0.0129	0.0065	0.8628	0.0091	0.0010	0.1077
FDI	**1**	0.0012	0.0003	0.0005	0.9980	0	0
	2	0.0014	0.0229	0.0114	0.9518	0.0030	0.0095
	5	0.0039	0.0223	0.0149	0.9286	0.0194	0.0107
	10	0.0049	0.0217	0.0145	0.9008	0.0449	0.0131
ITE	**1**	0.0030	0.0063	0.0017	0.0030	0.9861	0
	2	0.0105	0.0038	0.0020	0.0024	0.9725	0.0087
	5	0.0198	0.0026	0.0014	0.0017	0.9374	0.0370
	10	0.0234	0.0022	0.0011	0.0015	0.9216	0.0503
GDPPPE	**1**	0.0825	0.0004	0.0037	0.0076	**0.0001**	0.9057
	2	0.0780	0.0007	0.0083	0.0086	**0.0003**	0.9040
	5	0.0773	0.0007	0.0092	0.0098	**0.0012**	0.9018
	10	0.0772	0.0007	0.0092	0.0098	**0.0022**	0.9009
ITE model							
		Impulse variables					
Response variable	Forecast horizon	GFCF	GEX	HEX	FDI	ITE	GDPPPE
GFCF	**1**	1	0	0	0	0	0
	2	0.6299	0.0006	0.0097	0.0010	0.0014	0.3575
	5	0.5958	0.0006	0.0117	0.0014	0.0017	0.3889
	10	0.5957	0.0006	0.0117	0.0014	0.0018	0.3888
GEX_EDU	**1**	0.0066	0.9934	0	0	0	0
	2	0.0097	0.9861	0.0022	0.0009	9.08×10^{-6}	0.0011
	5	0.0097	0.9840	0.0023	0.0010	0.0000	0.0030
	10	0.0096	0.9840	0.0023	0.0010	0.0000	0.0030
HEX	**1**	0.0209	0.0026	0.9765	0	0	0
	2	0.0323	0.0063	0.8309	0.0052	0.0002	0.1252
	5	0.0323	0.0067	0.8117	0.0066	0.0003	0.1424
	10	0.0324	0.0067	0.8112	0.0066	0.0006	0.1425

(continued)

Table 9. (continued)

ITE model

Response variable	Forecast horizon	Impulse variables					
		GFCF	GEX	HEX	FDI	ITE	GDPPPE
FDI	**1**	0.0534	0.0003	0.0034	0.9429	0	0
	2	0.0696	0.0070	0.0107	0.8249	0.0018	0.0859
	5	0.0684	0.0064	0.0163	0.7792	0.0074	0.1224
	10	0.0695	0.0063	0.0163	0.7721	0.0126	0.1231
ITA	**1**	0.1336	0.0011	0.0105	0.0024	0.8525	0
	2	0.1850	0.0021	0.0092	0.0037	0.7184	0.0816
	5	0.2116	0.0018	0.0046	0.0053	0.5549	0.2219
	10	0.2173	0.0016	0.0031	0.0061	0.5051	0.2668
GDPPPE	**1**	0.1311	0.0010	0.0027	0.0181	**0.0008**	0.8462
	2	0.1236	0.0009	0.0071	0.0184	**0.0007**	0.8493
	5	0.1227	0.0008	0.0080	0.0191	**0.0008**	0.8485
	10	0.1228	0.0008	0.0079	0.0192	**0.0010**	0.8482

ITR model

Response variable	Forecast horizon	Impulse variables					
		GFCF	GEX	HEX	FDI	ITE	GDPPPE
GFCF	**1**	1	0	0	0	0	0
	2	0.6940	0.0000	0.0172	1.16×10^{-6}	0.0001	0.2887
	5	0.6789	0.0000	0.0182	0.0002	0.0003	0.3024
	10	0.6786	0.0000	0.0182	0.0002	0.0006	0.3024
GEX_EDU	**1**	0.0125	0.9875	0	0	0	0
	2	0.0140	0.9742	0.0039	0.0006	0.0001	0.0072
	5	0.0141	0.9730	0.0040	0.0008	0.0001	0.0081
	10	0.0141	0.9729	0.0040	0.0008	0.0001	0.0081
HEX	**1**	0.0000	0.0024	0.9975	0	0	0
	2	0.0021	0.0075	0.9384	0.0112	0.0002	0.0406
	5	0.0025	0.0082	0.9279	0.0147	0.0009	0.0458
	10	0.0028	0.0082	0.9265	0.0147	0.0017	0.0462
FDI	**1**	0.0001	0.0002	0.0001	0.9997	0	0
	2	0.0007	0.0209	0.0115	0.9623	0.0012	0.0035
	5	0.0049	0.0207	0.0150	0.9435	0.0098	0.0061
	10	0.0085	0.0203	0.0147	0.9219	0.0218	0.0129
ITR	**1**	0.0892	0.0008	0.0046	0.0014	0.9040	0
	2	0.1314	0.0004	0.0021	0.0024	0.7828	0.0809
	5	0.1470	0.0002	0.0019	0.0044	0.6418	0.2047
	10	0.1495	0.0001	0.0022	0.0057	0.6004	0.2420
GDPPPE	**1**	0.0597	0.0002	0.0097	0.0059	**0.0076**	0.9171
	2	0.0575	0.0005	0.0135	0.0070	**0.0096**	0.9118

(continued)

Table 9. (continued)

ITE model							
		Impulse variables					
Response variable	Forecast horizon	GFCF	GEX	HEX	FDI	ITE	GDPPPE
	5	0.0579	0.0005	0.0140	0.0082	**0.0136**	0.9057
	10	0.0585	0.0005	0.0139	0.0083	**0.0169**	0.9018

TOURISM INDEX MODEL							
		Impulse variables					
Response variable	Forecast horizon	GFCF	GEX	HEX	FDI	ITE	GDPPPE
GFCF	**1**	1	0	0	0	0	0
	2	0.6267	0.0056	0.0065	0.0000	0.0077	0.3535
	5	0.5725	0.0053	0.0065	0.0001	0.0079	0.4077
	10	0.5708	0.0053	0.0064	0.0001	0.0107	0.4067
GEX_EDU	1	0.0092	0.9908	0	0	0	0
	2	0.0273	0.9391	0.0012	0.0007	0.0008	0.0310
	5	0.0277	0.9241	0.0015	0.0009	0.0010	0.0448
	10	0.0278	0.9236	0.0015	0.0009	0.0014	0.0448
HEX	1	0.0319	0.0063	0.9618	0	0	0
	2	0.0316	0.0056	0.8202	0.0170	0.0005	0.1252
	5	0.0314	0.0056	0.8071	0.0210	0.0054	0.1295
	10	0.0317	0.0056	0.7996	0.0209	0.0125	0.1297
FDI	1	0.0822	0.0033	0.0043	0.9103	0	0
	2	0.0845	0.0034	0.0137	0.7910	0.0042	0.1032
	5	0.0849	0.0033	0.0152	0.7607	0.0064	0.1295
	10	0.0850	0.0033	0.0152	0.7598	0.0069	0.1299
TDA	1	0.0195	0.0060	0.0013	0.0000	0.9731	0
	2	0.0357	0.0085	0.0014	0.0007	0.9263	0.0273
	5	0.0543	0.0097	0.0020	0.0014	0.8455	0.0870
	10	0.0608	0.0101	0.0023	0.0015	0.8134	0.1119
GDPPPE	1	0.1606	0.0054	0.0028	0.0155	**0.0170**	0.7987
	2	0.1514	0.0049	0.0039	0.0135	**0.0151**	0.8112
	5	0.1492	0.0048	0.0040	0.0131	**0.0168**	0.8120
	10	0.1487	0.0049	0.0040	0.0130	**0.0215**	0.8079

Note: see Table 1 for definition of variables.

or equilibrium subsequent to the occurrence of an innovation or shock. Similar to the FEVD, we employed 200 Monte Carlo simulations Gaussian approximation, following the Cholesky decomposition (see Abrigo and Love, 2016).

The results from the impulse response functions are exhibited in Figures 1–4 for each of the four models. Considering the IRFs results, it is evident that all series appear to return to their steady states or equilibrium, following an innovation or shock, indicating that all variables are stationary. As exhibited in the Figure for tourism arrivals, and consistent with the forecast error variance decomposition, it is found that an innovation to international tourism arrival will lead to significant positive reaction by inclusive growth, while a shock to international tourism expenditure also appear to generate an insignificant negative reaction by inclusive growth (see Figure for tourism expenditure). Further, the Figure for tourism receipts shows that fluctuations or changes to international tourism receipts appear to lead to an insignificant negative response by inclusive growth. Lastly, the Figure for the composite indicator reveals that shocks to tourism development as a whole lead to a positive reaction to inclusive growth. Our findings are similar to prior literature on tourism-inclusive growth relationship (see, e.g., Hampton et al., 2018; Osinubi and Osinubi, 2020). The findings from tourism arrivals and tourism composite indicator support the results documented in Butler and Rogerson (2016), who argued that improvement in the tourism industry in South Africa generates series of favorable socio-economic gains for the populace. Implying that a rise in tourism arrivals and the composite indicator signifies the likely attainment of inclusive growth via employment opportunities, further reducing income inequality levels and poverty. In addition, turning to the shocks in inclusive growth, we found that an innovation to inclusive growth appear to prompt an consequential negative response by international tourism arrival, receipt, and expenditure, whereas it is likely to trigger a positive reaction by the composite indicator; it does not show contemporaneous reaction as the shock occurs, but it is significantly positive from the first period to the fifth period and thereafter turn toward convergence to equilibrium at after the fifth year.

Furthermore, consistent with the FEVD, the variables displayed characteristics of autoregression, that is, it is clearly observable from our results that the series own shocks or innovations appear to have the highest magnitudes. Also, it should be noted that the tourism composite indicator seems to be the most strongly relevant variable, which indicates that fluctuations to this indicator

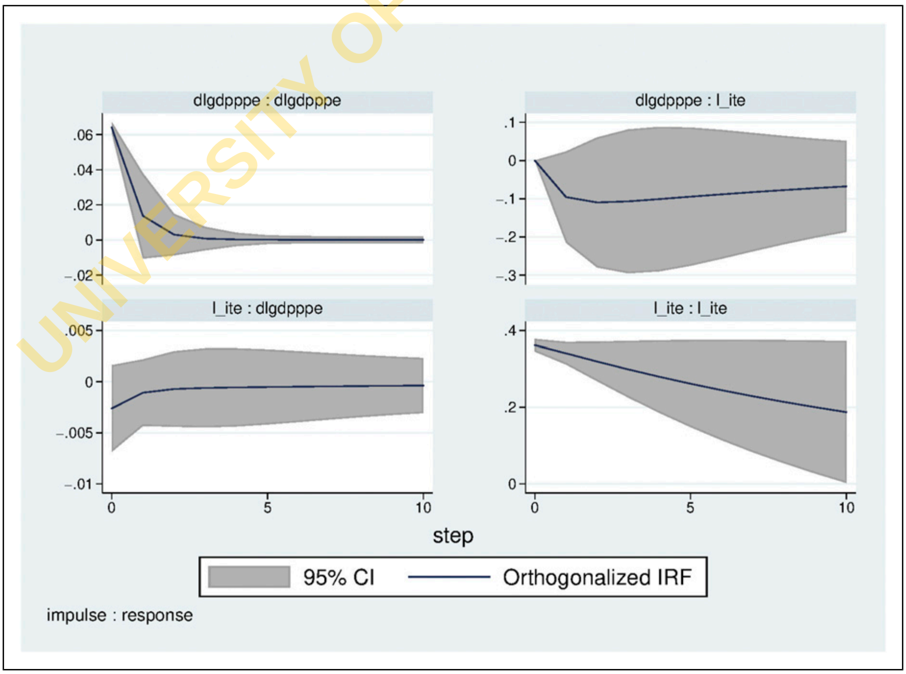


Figure 1. Impulse response functions for tourism expenditure model.

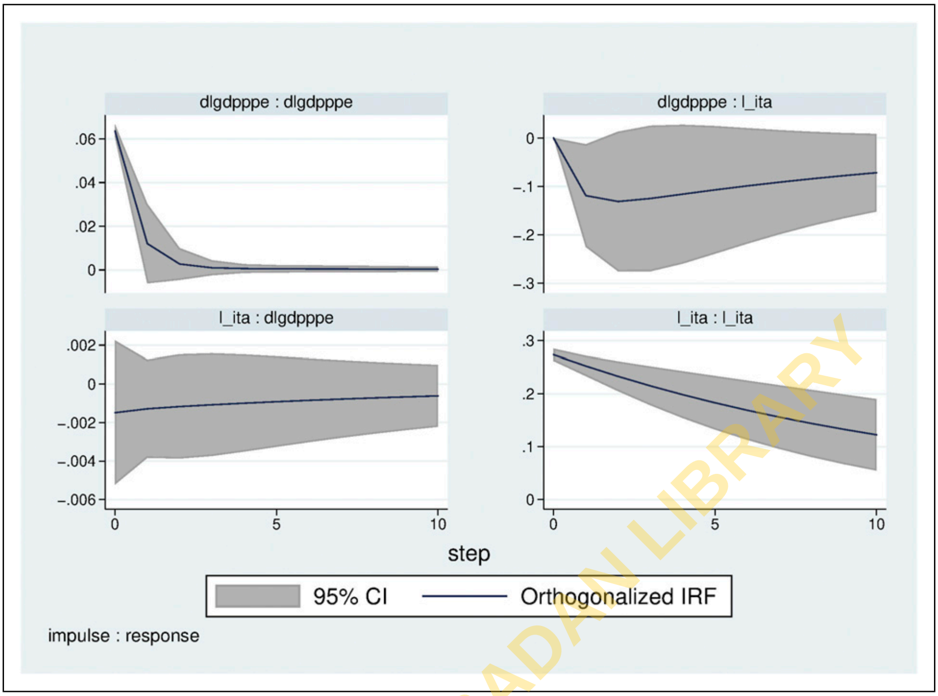


Figure 2. Impulse response functions graph for tourism arrivals model.

generate stronger responses from inclusive growth and the other series. Following our results, it is necessary to mention the reaction of inclusive growth to international tourism arrivals, international tourism expenditure, international tourism receipts and the tourism composite indicator impulses; and the responses of these variables to inclusive growth. Given the fact that the reactions of these variables coincide with the test results of the pVAR analysis, their scale collectively with the consistent impacts of these fluctuations further show us their somewhat irrelevance in the African context, which was also confirmed in the causal association of the FEVD estimation. Overall, and based on the purpose of this study, which is to examine the relationship between tourism development and inclusive growth by the FEVD and the IRFs, our findings exhibited weak positive influence of international tourism arrivals and the composite indicator on inclusive growth in the sampled African economies.

Our results weakly confirm the tourism-led inclusive economic growth argument as acknowledged in extant empirical works on the tourism–economic growth association; for example, Lee and Chang (2008) found that tourism development affected the economic growth of non-OECD economies more than the OECD members. Also, tourism receipts seem to be more effective on the economic growth of sub-Saharan economies than the other regions. Ultimately, they claimed that in the case of the OECD, one-way causality effect was confirmed running from tourism development to economic growth, but non-OECD economies have two-way causality. Also, Samimi et al. (2011) concluded that tourism development enhances economic growth but not vice versa. Additionally, Tugcu (2014) confirmed that tourism development promotes economic growth especially for the European economies. Similarly, Shahzad et al. (2017) confirmed the positive effects of tourism development on economic

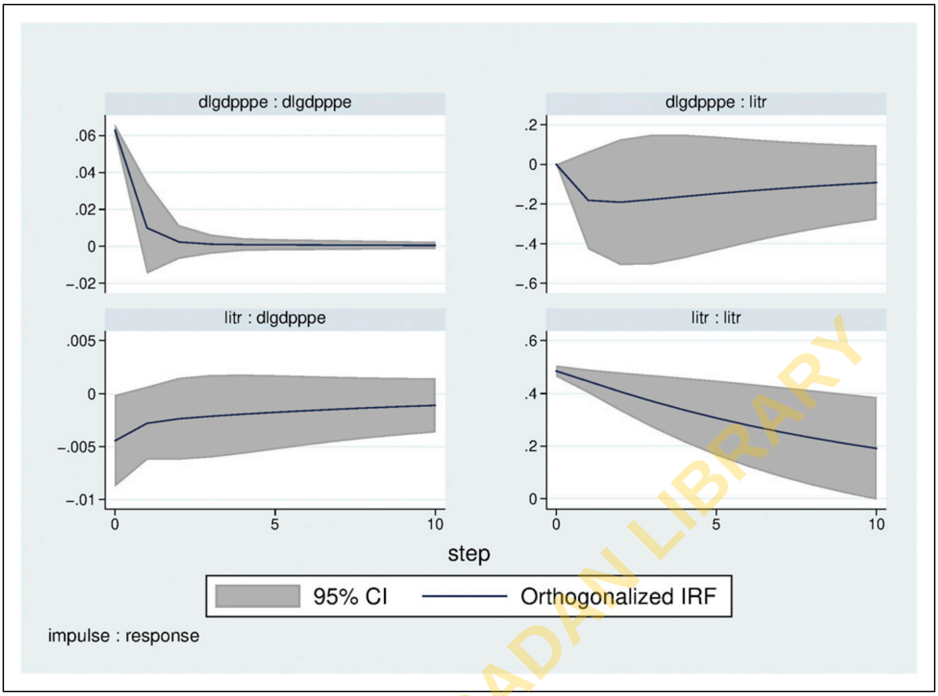


Figure 3. Impulse response functions graph for tourism receipts model.

growth for the sampled markets but with irregular outcomes across economies and quantiles in each market. This is also recently supported by Benkraiem et al. (2020) who assessed the tourism development–economic growth relationship in top termini for world tourism; and found asymmetric influence of tourism development on economic growth in some of the economies, including France, Italy, Mexico, and Spain, while both simultaneous and lagged asymmetric relationship was documented in the cases of China and Germany. Also Sahni et al. (2020) documented that there exists a threshold between economic growth and tourism receipts. And argued that tourism has stronger impact on economic growth at the lower level of the threshold than at the higher level; and tourism receipts are more beneficial at the worse phases (lower quantiles) of economic growth than at boom phases (upper quantiles).

Furthermore, our findings on the other proxies for the tourism sector—the impact of tourism expenditures and receipts on economic growth however—confirmed the neutrality hypothesis documented by other previous empirical literature, such as Georgantopoulos (2013) who analyzed whether tourism expenditure Granger causes economic growth in India from 1988 to 2011, and documented that even though there exists long-term equilibrium association, there was no causal relationship between the two variables. Also, by revisiting the TLGH for the Turkish economy, Katircioglu (2009b) argued that there was relationship among the variables and no causality between the variables, thereby confirming the neutrality hypothesis. Likewise, Ozturk and Acaravci (2009) further confirmed the neutrality hypothesis in the case of Turkey. Furthermore, Jackman and Lorde (2010) examined the short- and long-term link tourism development—economic growth in Barbados—and found no causality between the variables, which also corroborates the neutrality hypothesis.

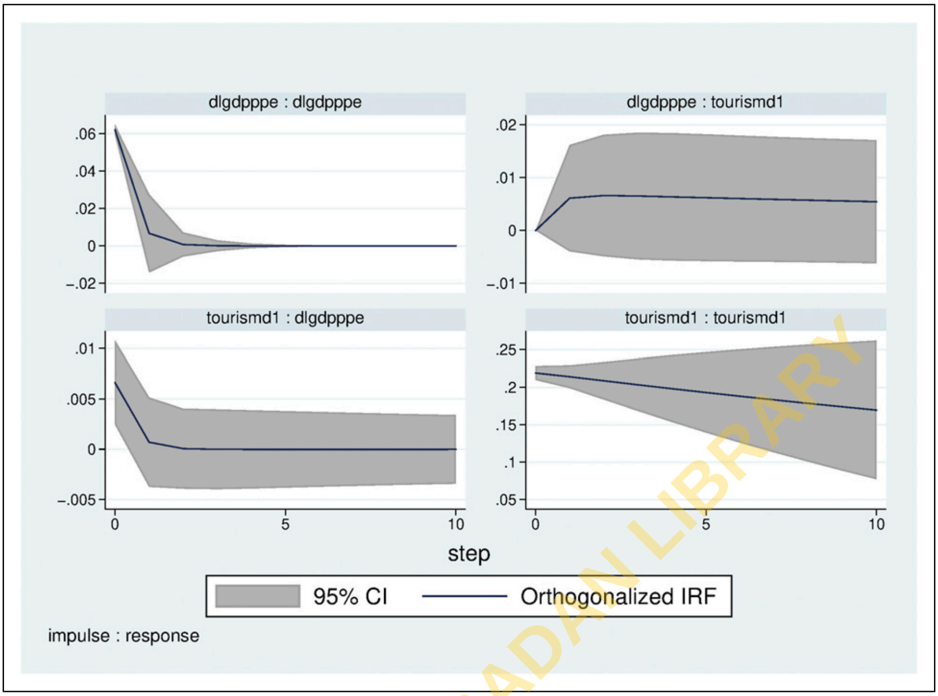


Figure 4. Impulse response functions graph for composite tourism indicator model.

Robustness checks and additional results

For the purposes of robustness, we employ the system GMM technique to also offer additional results using baseline and stepwise approach. Consistent with the literature, we use the recommended GMM estimators according to Blundell and Bond (1998), Arellano and Bover (1995) and Arellano and Bond (1991). This follows a simple procedure by assuming that there is no correlation between the disturbance term and the $t-1$ values of the endogenous and explanatory variables (Wooldridge, 2001). Hence, the following equation

$$x_{it} = \varphi_i + \delta_1 x_{it-1} + \delta_2 W_{it} + \xi_{it} \tag{2}$$

W_{it} is a row vector of the independent variables, such as the three proxies for the tourism sector (see data description above), the tourism composite indicator; it also captures other control variables (see Table 1 for detailed definition of variables). x_{it-1} represents the previous values of the endogenous variable, the unobserved country-specific effect is denoted by φ_i, while the disturbance term is denoted by ξ_{it}. To jettison the effect of φ_i, we take the 1st difference of equation (2) according to Arellano and Bond (1991), thus

$$x_{it} - x_{it-1} = \delta_1 \Delta x_{it-1} + \delta_2 \Delta W_{it} + \Delta\xi_{it} \tag{3}$$

Even though the effect of φ_i is eliminated by differencing, however, additional bias is generated from the disturbance term , which correlates with the lag of the endogenous variable Δx_{it-1} (i.e., there is correlation between $x_{i,t-1}$ and $\xi_{i,t-1}$). Given two assumptions: (i) the independent variables

Table 10. Tourism and inclusive growth—system GMM results.

Regressors	1, ITE model	2, ITA model	3, ITR model	4, tourism index model
GDPPPE	−0.3400*** (0.0996)	−0.3457*** (0 0.1027)	−0.3387*** (0.1018)	−0.3544*** (0.1003)
ITE	**0.0053 (0.0069)**			
ITA		**−0.0038 (0 0.0115)**		
ITR			**−0.0024 (0.0064)**	
TDA				**−0.0174 (0.0151)**
GFCF	0.0003 (0.0006)	0.0003 (0 0.0006)	0.0004 (0.0007)	0.0003 (0.0006)
GEX	−0.0042*** (0.0016)	−0.0040*** (0 0.0014)	−0.0039** (0.0016)	−0.0042*** (0.0014)
HEX	−0.0123 (0.0081)	−0.0122* (0 0.0074)	−0.0127 (0.0083)	−0.0120 (0.0077)
FDI	0.0003 (0.0007)	0.0002 (0 0.0007)	0.0002 (0.0007)	−0.0001 (0.0007)
Constant	−0.0766 (0.1310)	0 0.075 (0 0.1546)	0.0694 (0.1245)	0.0351*** (0.0121)
No. of Obs	1035	1035	1035	1035
No. of groups	45	45	45	45
Post-estimation tests				
Sargan–Hansen test of over-identification	36.4849 [0.0135]	37.4878 [0.0102]	38.1779 [0.0084]	34.2622 [0.0244]
AR(1)	−2.0432** [0.0410]	−2.0757** [0.0379]	−2.0704** [0.0384]	−2.0139** [0.0440]
AR(2)	−1.0811 [0.2796]	−1.0721 [0.2837]	−1.0705 [0.2844]	−1.1067 [0.2684]
AR(3)	0.8131 [0.4162]	0.8112 [0.4173]	0.8229 [0.4106]	0.8270 [0.4082]

Note: see Table 1 for definition of variables. ***, **, and * indicate 1%, 5%, and 10% significance levels. Standard errors in circle parentheses, while figures in square brackets are *p-values*.

exhibit weak exogeneity and (ii) the disturbance term lacks serial correlation, the following dynamic panel GMM was recommended by Arellano and Bond (1991)

$$E\left[x_{it-q}\Delta\xi_{it}\right] = 0 \quad \text{for} \quad q \geq 2; \quad t = 3,\ldots,T; \quad i = 1,\ldots,N \tag{4}$$

$$E\left[W_{it-q}\Delta\xi_{it}\right] = 0 \quad \text{for} \quad q \geq 2; \quad t = 3,\ldots,T; \quad i = 1,\ldots,N \tag{5}$$

where W_{it} is the whole matrix of covariates, that is, the proxies for the tourism sectors; our constructed tourism indicator and other control variables. For the country-specific effect and the variations in the explanatory variables, the assumption is that of no correlation. Therefore, following the system generalized method of moment estimator recommended by Blundell and Bond (1998) and Arellano and Bover (1995), additional moments are stated

$$E = \left[\Delta x_{it-q}(\varphi_i + \xi_{it})\right] = 0 \quad \text{for} \quad q = 1 \tag{6}$$

$$E\left[\Delta W_{it-q}(\varphi_i + \xi_{it})\right] = 0 \quad \text{for} \quad q = 1 \tag{7}$$

Arising from equations (4)–(7), we may analyze the system GMM with one-step estimator[3] or the two-step estimator. In this study, the procedure for the two-step was the base for the estimation technique to produce efficient and consistent parameters. Finally, to confirm validity of the instruments in the system, we rely first on the over-identification of Sargan test restrictions[4] and second to verify the presence of serial correlation. Consistent with literature, first-order, second-order and third-order autocorrelation were tested for the error term. Accepting the null hypothesis in the case of 2nd-order autocorrelation means the system is validated.

Our outcomes are presented in Table 10, which displays the findings on the link between inclusive growth and tourism activity (i.e., tourism expenditures, receipts, and arrivals) and the composite tourism indicator. Starting with the model for the composite indicator in column (4); it reports that TDA has a negative but non-significant effect on inclusive growth, meaning that a percentage point rise in tourism sector as a whole, will lead to about 1.7% fall in employment opportunities and social benefits in Africa. In the case of control variables, the results reveal that there is positive and insignificant relationship between gross fixed capital formation and inclusive growth, while human capital development—current expenditure on health, government expenditure on education and net inflows of FDI all show negative influence on inclusive with 1% significance level only in the case of expenditure on education. In terms of magnitudes, for every one percentage increase in gross fixed capital formation will improve inclusive growth by approximately 0.03 percentage, while for every one percentage rise in current expenditure on health government expenditure on education and net inflows of FDI will lead to a deterioration in inclusive growth by about 0.42%, 1.2% and 0.01%, respectively. In addition, columns (1), (2), and (3), contain the sensitivity analysis results conducted by consecutively introducing the independent variables—the three tourism variables separately. As shown in column (1), we found that international tourism expenditure and inclusive growth has positive connection, but international tourism arrivals and international tourism receipts exhibited negative association with inclusive growth. Moreover, all these relationships are statistically insignificant. In terms of validity and performance of the model, over-identification Sargan test confirmed that the instruments are valid; moreover, our model do not exhibit any form of second-order autocorrelation. Generally, the results found in this section and the previous sections are qualitatively the same.

Conclusion and implications

This paper investigated the association between tourism and inclusive growth in 45 African markets. To achieve the objective of this study, we employed pVAR methodology on these countries for the period ranging from 1995 to 2019. We also employed the panel system GMM technique as robustness. We began our analysis by performing some preliminary tests, which included the confirmation of cross-sectional dependence, after determining that collinearity and multicollinearity were not major issues in the estimations. The existence of CD prompted the implementation of panel method that provides explanations to CD and additional issues with panel data. The results from the CIPS showed that all the series were stationary in their levels, that is, I(0). Also, we estimated a panel VAR with one lag given the results from the lag length selection criteria; thereafter, we estimated the FEVD and lastly the IRFs.

Our results from the pVAR, IRFs, and FEVD marginally confirm the neutrality postulation between tourism and inclusive growth with all the proxies for tourism activity employed in our study. In the same vein, in terms of the constructed indicator, we do not find any evidence of tourism composite indicator influencing inclusive growth in Africa. On the contrary, our results show that inclusive growth seems to have substantial deteriorating influence on the tourism sector in these African economies. Further, the panel system GMM technique was used as robustness checks and the results are qualitatively the same.

The following policy suggestions arise from our general findings: given that international tourist arrivals and the composite tourism indicator marginally influence inclusive growth, hence, policy makers are encouraged to develop different tourism areas and activities in order to attract more tourists. This will also disperse visitors to new areas, thereby relieving the pressure in very concentrated tourist areas and broadly distributes the economic gains from tourism. Also, to increase tourists' arrivals and overall tourism activities, policy makers must tackle the challenges of insecurity in their individual countries—this is highly recommended since universal peace and security are necessary for a robust tourism sector; amenities such as roads and other means of transportation must be improved to attract more visitors; aside the traditional tourism activities (e.g., games reserves and national parks), the sector should be diversify to include entertainment and sports. Lastly, governments in Africa need to vigorously develop a tourism sector that benefits citizens economically, and makes available broad gains for tourists, employees, businesses, local communities and other stakeholders. It is not enough to quantify benefits from tourism only in terms of visitors, employment and income; governments must guarantee the equal benefits of the local communities in their policy discussion.

Our current study has some limitations: first, due to the lack of recent data, we are unable to capture the effects of the ongoing global health crisis, which grounded the tourism sector in 2020. Future studies are recommended to provide detail explanations on how COVID-19 affected the tourism-inclusive growth nexus as soon as data is feasible. Second, our study includes a large sample of countries, however restricted to only African economies. Future studies should expand the scope in order to draw comparison across different areas (Africa, Asia, Europe, North America, and South America) and economic groups (Brazil, Russia, India, China, and South Africa—BRICS—Middle East and North Africa—MENA, etc.).

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Notes

1. See the list of sampled economies in the Appendix Table A1.
2. Productivity of labor is a metric employed to analyze the economic ability of an economy to create and keep decent jobs with fair and equitable pay. Increases in productivity resulting from investment, trade, technical advances, or changes in work organization can improve social protection and reduce poverty, resulting in fewer vulnerable jobs and working poor. Productivity gains may not guarantee these benefits, but they are exceedingly unlikely without them—and the economic development that comes with them. GDP per employed person is an important indicator of a country's progress toward the Sustainable Development Goals of supporting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. [SDG Indicator 8.2.1] (United Nations, 2015)
3. This assumes that the errors are homoscedastic.
4. The Sargan test presents a H0 that the instrumental series are not correlated with the error terms.

References

Abrigo MRM, and Love I (2016). Estimation of panel vector autoregression in STATA: A package of programs. *The Stata Journal* 16(3): 778–804.

Addessi W, Biagi B and Brandano MG (2018). Evaluating the effect of the introduction of the euro on tourist flows: a synthetic control approach. *The World Economy* 42: 1554–1575.

Antonakakis N, Dragouni M and Filis G (2015). How strong is the linkage between tourism and economic growth in Europe? *Economic Modelling* 44: 142–155.

Aratuo DN and Etienne XL (2019). Industry level analysis of tourism-economic growth in the United States. *Tourism Management* 70: 333–340.

Arellano M and Bond S (1991). Some tests of specification for panel data: monte-carlos evidence and an application to employment equations. *Review of Economic Studies* 58: 277–297.

Arellano M and Bover O (1995). Another look at the instrumental-variable estimation of error components models. *Journal of Econometrics* 68: 29–52.

Aslan A (2016). Does tourism cause growth? Evidence from Turkey. *Current Issues in Tourism* 19: 1176–1184.

Bakker M (2019). A conceptual framework for identifying the binding constraints to tourism- driven inclusive growth. *Tourism Planning & Development* 16(5): 575–590.

Bakker M, and Messerli HR (2017). Inclusive growth versus pro-poor growth: Implications for tourism development. *Tourism and Hospitality Research* 17(4): 384–391.

Bakker M, van der Duim R, Peters K, et al. (2020). Tourism and Inclusive Growth: Evaluating a Diagnostic Framework. *Tourism Planning & Development* 1: 23.

Benkraiem R, Lahiani A, Miloudi A and Shahbaz M (2020). A new look at the tourism development and economic growth nexus: International evidence. *Tourism Economics*, 1354816620938482.

Bianchi RV and de Man F (2021). Tourism, inclusive growth and decent work: a political economy critique, *Journal of Sustainable Tourism* 29(2–3): 353–371.

Blundell R and Bond S (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics* 87: 115–143.

Bouzahzah M and Menyari Y (2013). International Tourism and Economic Growth: The Case of Morocco and Tunisia. *Journal of North African Studies* 18(4): 592–607.

Brau R, Lanza A and Usai S (eds) (2008). *Tourism and Sustainable Economic Development: Macroeconomic Models and Empirical Methods*. Cheltenham, UK: Edward Elgar.

Brida JG, Lanzilotta B, Pereyra JS, et al. (2015). A nonlinear approach to the tourism-led growth hypothesis: the case of MERCOSUR. *Current Issues in Tourism* 18(7): 647–666.

Bulut U, Kocak E and Suess C (2020). The effect of freedom on international tourism demand: Empirical evidence from the top eight most visited countries. *Tourism Economics* 26(8): 1358–1373.

Butler G and Rogerson C (2016). Inclusive local tourism development in South Africa: evidence from Dullstroom. *Local Economy* 31: 264–281.

de Haan A (2015). Inclusive growth: more than safety nets? *European Journal of Development Research* 27(4): 606–622.

Dogru T and Bulut U (2018). Is tourism an engine for economic recovery? theory and empirical evidence. *Tourism Management* 67 425–434.

Dumitrescu EI and Hurlin C (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling* 29(4): 1450–1460.

Durbarry R (2002). The economic contribution of tourism in Mauritius. *Annals of Tourism Research* 29(3): 862–865.

Dwyer L, Forsyth P and Spurr R (2004). Evaluating tourism's economic effects: new and old approaches. *Tourism Management* 25: 307–317.

Fossati A and Panella G (2000). Tourism and sustainable development: a theoretical framework. In: Fossati A and Panella G (eds) *Tourism and Sustainable Economic Development*. Boston, MA: Springer, pp. 3–36.

Georgantopoulos AG (2013). Tourism expansion and economic development: VAR/VECM analysis and forecasts for the case of India. *Asian Economic and Financial Review* 3(4): 464–482.

Glocker D and Haxton P (2020). *Leveraging Tourism Development for Sustainable and Inclusive Growth in South Africa*. OECD.

Hampton MK and Jeyacheya J (2013). *Tourism and Inclusive Growth in Small Islands Developing States*. Commonwealth Secretariat.

Hampton MP and Jeyacheya J (2020). Tourism-dependent small islands, inclusive growth, and the blue economy. *One Earth* 2(1): 8–10.

Hampton M, and Jeyacheya J (2015). Power, ownership and tourism in small islands: evidence from Indonesia. *World Development* 70: 481–495.

Hampton MP, Jeyacheya J, and Long PH (2018). Can tourism promote inclusive growth? Supply chains, ownership and employment in Ha Long Bay, Vietnam. *Journal of Development Studies* 54(2): 359 –376.

Hedrick-Wong Y (2016). *Capturing the Full Potential of Tourism for Inclusive Growth in Colombia*. MasterCard Center for Inclusive Growth, 2016.

Holtz-Eakin D, Newey W and Rosen HS (1988). Estimating vector autoregressions with panel data. *Econometrica* 56(6): 1371–1395.

Ivanov SH and Webster C (2013). Tourism's contribution to economic growth: a global analysis for the first decade of the millennium. *Tourism Economics* 19(3): 477–508.

Jackman M and Lorde T (2010). On the relationship between tourist flows and household expenditure in barbados: a dynamic OLS Approach. *Economics Bulletin* 30(1): 472–481.

John J and Chelat S (2013). Medical tourism and inclusive growth: significance of Ayurveda sector. *Atna, Journal of Tourism Studies* 8(2): 19–35.

Jones H (2013). Entry points for developing tourism in Nepal. In: *What Can Be Done to Address Constraints to Inclusive Growth? Centre for Inclusive Growth- Practical Solutions for Nepal*. London: Overseas Development Institute.

Katircioglu ST (2009a). Testing the tourism-led growth hypothesis: the case of Malta. *Acta Oeconomica* 59(3): 331–343.

Katircioglu ST (2009b). Revisiting the tourism-led-growth hypothesis for Turkey using the bounds test and johansen approach for cointegration. *Tourism Management* 30(1): 17–20.

Kim HJ and Chen M-H (2006). Tourism expansion and economic development: the case of Taiwan. *Tourism Management* 27(5): 925–933.

Lanza A and Pigliaru F (2000). Why are tourism countries small and fast-growing? In: Fossati A and Panella G (eds) *Tourism and Sustainable Economic Development*. Dordrecht: Kluwer Academic Publishers, pp. 57–69.

Lee C-C and Chang C-P (2008). Tourism development and economic growth: a closer look at panels. *Tourism Management* 29: 180–192.

Lee CG (2012). Tourism, trade, and income: evidence from Singapore. *Anatolia* 23(3): 348–358.

Lee N (2019). Inclusive growth in cities: a sympathetic critique. *Regional Studies* 53(3): 424–434.

Lee TH and Jan FH (2019). Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability. *Tourism Management* 70: 368–380.

Love I and Zicchino L. 2006. Financial development and dynamic investment behavior: Evidence from panel VAR. *Quarterly Review of Economics and Finance* 46(2): 190–210.

Lütkepohl H (2005). *New Introduction to Multiple Time Series Analysis*. Berlin: Springer.

Narayan PK (2004). Fiji's tourism demand: The ARDL approach to cointegration. *Tourism Economics* 10(2): 193–206.

Nayaran PK, Nayaran S, Prasad A, et al. (2010). Tourism and economic growth: a panel data analysis for Pacific Island countries, *Tourism Economics* 16(1): 169–183.

Oh C-O (2005). The contribution of tourism development to economic growth in the Korean economy. *Tourism Management* 26(1): 39–44.

Osinubi TT and Osinubi OB (2020). Inclusive growth in tourism-led growth hypothesis: Evidence from Nigeria. *African Journal of Economic Review* 8(2): 141–160.

Ozturk I and Acaravci A (2009). On the causality between tourism growth and economic growth: empirical evidence from Turkey. *Transylvanian Review of Administrative Sciences* 5(25): 73–81.

Perles-Ribes JF, Ramón-Rodríguez AB, Rubia A, et al. (2017). Is the tourism-led growth hypothesis valid after the global economic and financial crisis? the case of Spain 1957–2014. *Tourism Management* 61: 96–109.

Pesaran MH (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics* 22(2): 265–312.

Pesaran MH (2004). *General Diagnostic Tests for Cross Section Dependence in Panels, CESifo Working Paper Series*. Vol. 1229, CESifo Group Munich.

Phiri A (2016). Tourism and economic growth in South Africa: evidence from linear and nonlinear co-integration frameworks. *Managing Global Transition* 14(1): 31–53.

Rasool H, Maqbool S and Tarique Md (2021). The relationship between tourism and economic growth among BRICS countries: a panel cointegration analysis. *Future Business Journal* 7(1): 8711. DOI: 10.1186/s43093-020-00048-3

Repetti T and Roe S (2018). Minimum wage change effects on restaurant pricing and employment. *International Journal of Contemporary Hospitality Management* 30(3): 1545–1562.

Rogerson CM (2006). Pro-poor local economic development in South Africa: the role of pro- poor tourism. *Local Environment* 11: 37–60.

Rogerson CM (2014). Rethinking slum tourism: tourism in South Africa's rural slumlands. *Bulletin of Geography: Socio-Economic Series* 26: 19–34.

Saarinen J, Rogerson C and Manwa H (2011). Tourism and millennium development goals: tourism for global development? *Current Issues in Tourism* 14(3): 201–203.

Sahni H, Nsiah C and Fayissa B (2020). The African economic growth experience and tourism receipts: a threshold analysis and quantile regression approach. *Tourism Economics* 27: 915–932.

Samimi A, Somaye J and Soraya S (2011). Tourism and economic growth in developing countries: P-VAR Approach. *Middle-East Journal of Scientific Research* 10(1): 28–32.

Santana-Gallego M, Ledesma-Rodrıguez FJ, Perez-Rodrıguez JV, et al. (2010) Does common currency promote countries' growth via trade and tourism? *The World Economy* 33: 1811–1835.

Santiago R, Fuinhas JA and Marques AC (2019). Income inequality, globalization, and economic growth: a panel vector autoregressive approach for Latin American countries. *The Extended Energy-Growth Nexus* 57: 96.

Sari Hassuon SE, Salim Adda K and Hadjira Sebbane A (2021). Examining the connection among national tourism expenditure and economic growth in Algeria. *Future Business Journal* 7(14): DOI: 10.1186/s43093-021-00059-8

Scheyvens R (2011) *Tourism and Poverty*. London: Routledge.

Seetanah B (2011). Assessing the dynamic economic impact of tourism for Island economies. *Annals of Tourism Research* 38(1): 291–308.

Serena N and Perron P (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica* 69(6): 1519–1554.

Shahzad SJH, Shahbaz M, Ferrer R, et al. (2017). Tourism-led growth hypothesis in the top ten tourist destinations: new evidence using the quantile- quantile approach. *Tourism Management* 60: 223–232.

Shakouri B, Yazdi SK, Nategian N, et al. (2017). International tourism, economic growth and trade: variance decomposition analysis. *Journal of Tourism and Hospitality* 6(3): 1–11.

Sim N and Zhou H (2015). Oil prices, US stock returns, and the dependence between their quantiles. *Journal of Baking and Finance* 55: 1–8.

Snyman SL (2012). The role of tourism employment in poverty reduction and community perceptions of conservation and tourism in Southern Africa. *Journal of Sustainable Tourism* 20(3): 395–416.

Surinach J and Wober K (2017). Introduction to the special focus: cultural tourism and sustainable urban development. *Tourism Economics* 23(2): 239–242.

Tang CF (2018). The impacts of governance and institutions on inbound tourism demand: evidence from a dynamic panel data study. *Asia Pacific Journal of Tourism Research* 23(10): 1000–1007.

Tang CF, Tiwari AK, and Shahbaz M (2016). Dynamic inter-relationships among tourism, economic growth and energy consumption in India. *Geosystem Engineering* 19(4): 158–169.

Truong VD (2014). Pro-poor tourism: Looking backward as we move forward. *Tourism Planning and Development* 11(2): 228–242.

Tugcu CT (2014). Tourism and economic growth nexus revisited: a panel causality analysis for the case of the mediterranean region. *Tourism Management* 42: 207–212.

Twining-Ward L (2010). *Cape Verde's Transformation: Tourism as a Driver of Growth*. Washington, DC: The World Bank.

United Nations. (2015). *Sustainable Development Goals*. Washington, DC: Author.

United Nations Conference on Trade and Development (UNCTAD). (2010). Trade and Development Report 2010.

UNWTO (2016). World Tourism Barometer.

UNWTO, & ILO. (2014). *Measuring Employment in the Tourism Industries—Guide with Best Practices* (UNWTO Ed.). Madrid: Author.

Wooldridge J (2001). Application of generalized methods of moments estimation. *Journal of Economic Perspective* 15: 87–100.

World Economic Forum (2019). The Travel & Tourism Competitiveness Report 2019: Travel and Tourism at a Tipping Point. Available at https://www3.weforum.org/docs/WEF_TTCR_2019.pdf

Wu P-C, Liu SY, Hsiao J-M, et al. (2016). Nonlinear and time-varying growth-tourism causality. *Annals of Tourism* 59: 45–59.

Xu L, Wang S, Li J, et al. (2018). Modelling international tourism flows to China: a panel data analysis with the gravity model. *Tourism Economics* 25(7): 1047–1069.

Yazdi SK, Salehi KH and Soheilzad M (2017). The relationship between tourism, foreign direct investment and economic growth: evidence from Iran. *Current Issues in Tourism* 20(1): 15–26.

Appendix

Table A1 List of countries investigated.

S/N	Country name	S/N	Country name	S/N	Country name	S/N	Country name
1	Algeria	13	Cote D'Ivoire	25	Madagascar	37	Sierra Leone
2	Angola	14	Egypt	26	Malawi	38	South Africa
3	Benin	15	Eswatini	27	Mali	39	Sudan
4	Botswana	16	Ethiopia	28	Mauritius	40	Tanzania
5	Burkina Faso	17	Gabon	29	Morocco	41	Togo
6	Burundi	18	Gambia, The	30	Mozambique	42	Tunisia
7	Cabo Verde	19	Ghana	31	Namibia	43	Uganda
8	Cameroun	20	Guinea	32	Niger	44	Zambia
9	Central African Republic	21	Guinea-Bissau	33	Nigeria	45	Zimbabwe
10	Comoros	22	Kenya	34	Rwanda		
11	Congo Dem. Rep.	23	Lesotho	35	Sao Tome and Principe		
12	Congo Rep.	24	Libya	36	Senegal		

Source: compiled by the authors.

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