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Research paper

What are the determinant of international tourism in Tanzania?

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A B S T R A C T

International tourism has since been recognized as a conduit for poverty alleviation and infrastructure development. Despite the sector's importance in Africa in terms of its contribution to economic growth, foreign exchange earnings, and employment, very few studies have attempted to uncover its potential. In the case of Tanzania, where the sector's importance rank high in the country's development strategy, only two studies exist, and none on the factors that influence international tourism demand. Therefore, this study makes an important contribution to tourism economics literature in Africa by investigating the relevant determinants of international tourism demand using panel data for Tanzania's top fifteen tourists' source countries during the 2000–2016 period. Results, based on various panel data estimation techniques, indicate that income of tourists and infrastructure development in Tanzania, are the two main determinants of international tourism demand for Tanzania. These findings hold across model and sample specifications. From a policy perspective, the government of Tanzania and stakeholders should work towards making Tanzania tourism products more competitive by developing/improving infrastructure in the country. Moreover, there should be a policy that encourages developing tourism packages that fit the demands of tourists from relatively high income countries, and also make conscious efforts to market these products in the target countries. Lowering the cost of living and improving the exchange rate are also some of the areas that the government could work on to help grow the tourism industry.

1. Introduction

Tanzania is endowed with rich and diverse natural resources (particularly; wildlife, forests, mountains and the rift valley) that form the mainstay of the country's tourism industry. Almost a third of Tanzania's land area is under government protection; and is reserved for the purpose of either national park, conservation area or game reserve. In total, Tanzania has 16 national and 2 marine parks, 28 game (including marine) reserves, 44 game controlled areas, multiple forest reserves, and one conservation area; which host the world's renowned biodiversity, wildlife, and unique ecosystems (see Exhibit 1). Thus, it is not surprising that the tourism sector is one of Tanzania's three growth sectors, and the second largest foreign exchange earner after agriculture. For example, in 2016 alone, it generated US$2.1 billion in revenues (4.7 percent of total GDP), employed approximately 3.9 percent of the country's total labor force (equivalent to 470,500 jobs); and contributed about 21.4 and 8.7 percent of total export earnings (US$2,446.6 million) and investment (US$ 1.2 billion), respectively (WTTC – Tanzania, 2017). These economic benefits are amplified when linkages with allied sectors such as hospitality, manufacture of arts and crafts, and, transportation and logistics are taken into consideration. For instance, the total contribution of the sector to Tanzania's GDP and employment in percentage terms in 2016, more than tripled that of direct contribution to roughly 13.5 and 11.6 percent, respectively (WTTC – Tanzania, 2017).

Despite the aforementioned attractions and the increasing importance of tourism in the Tanzanian economy, tourism demand (both domestic and international) for Tanzania lags that of other African nations like Egypt, Morocco, Tunisia, and South Africa; and the sector's total contribution to GDP growth also lags that of Uganda, Botswana, Senegal, Namibia, Kenya, and Republic of Congo (Naudé and Saayman, 2005; WTTC – Tanzania, 2017). Moreover, the Tanzanian tourism products are becoming increasingly noncompetitive in comparison to North African countries, South Africa, Botswana and Kenya. In fact, Tanzania's tourism sector global competitiveness ranked 91 out of 136 countries on the travel and tourism competitiveness index (TTCI) that
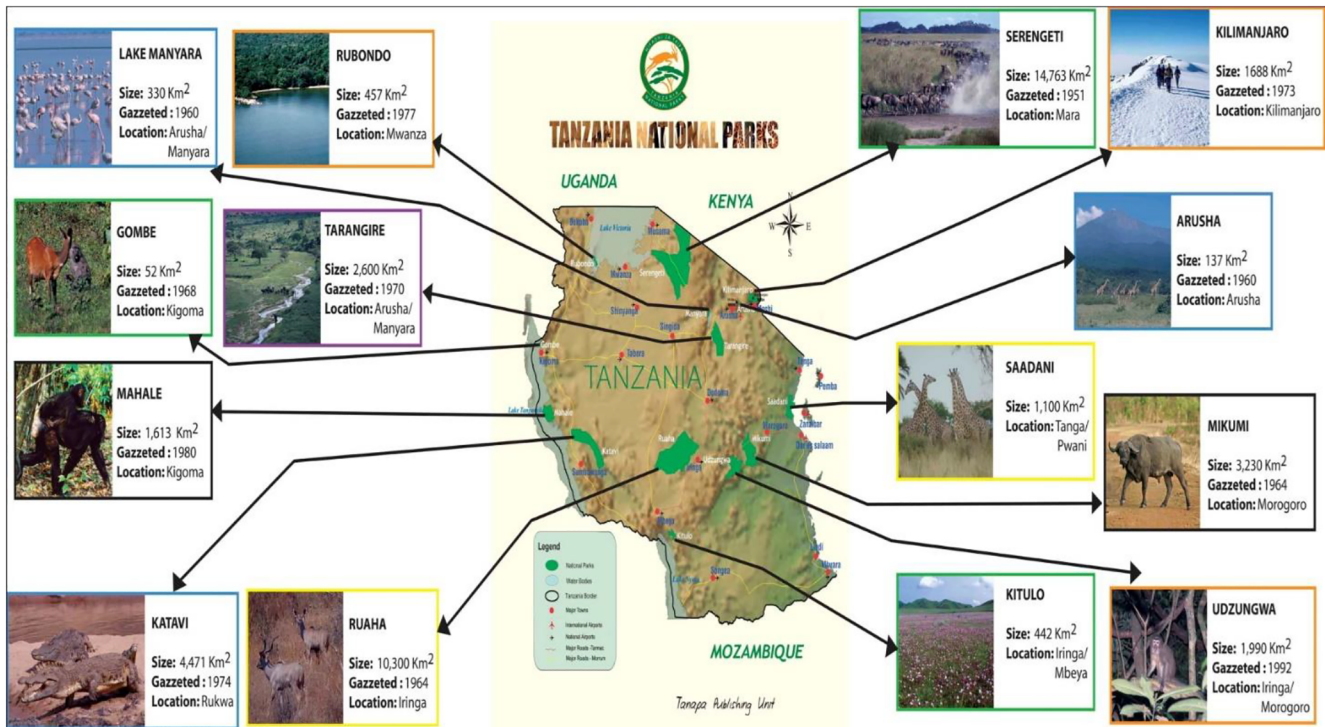
Exhibit. 1. Map of Tanzania with Locations of Tourism Assets. *Source: World Bank REGrow report.*

was published in 2017 (WEF-TTCR, 2017). Aside from the fact that this ranking was an improvement from the 2015 level of 93/141[1], it is lower than that of South Africa (53), Kenya (80) and Botswana (85). Therefore, this should be a cause of concern for Tanzania, since, as mentioned before, the country is the home to one of the most impressive concentration of natural resources and wildlife globally, and it is also considered price competitive relative to its competitor countries in the region. For instance, its natural resource ranked 8th out of 136 countries, and was 34/136 on the price competitive pillar (WEF-TTCR, 2017). In comparison, Kenya, South Africa, and Botswana ranked 15, 23 and 50, respectively, on the natural resource competitive pillar. Tanzania also outperformed South Africa (43) and Kenya (74) on price competitiveness pillar (WEF-TTCR, 2017)

There are several factors that contribute to the non-competitiveness of Tanzania's tourism sector, but the most urgent ones pertain to infrastructure development and marketing of its tourism products. In its 2012 marketing strategy report, the Tanzania Tourist Board (TTB) acknowledged that "*the basic tourism infrastructure, such as information, transportation and safety are not a reason to visit Tanzania, but they are potential reasons for dissatisfaction. If they are not in order they can form a reason for (potential) visitors not to visit Tanzania*" (TTB, 2012). Since the 2012 self-evaluation report, there is evidence suggesting that any improvements in the infrastructure development has not reached the threshold level needed to meaningfully impact the competitiveness of the country's tourism sector. For example, Tanzania ranks poorly globally in the pillars of air transport infrastructure (106/136), ground and port infrastructure (102/136), tourism service infrastructure (103/136) [especially, the hotel reception capacity (119/136)], and ICT infrastructure (121/136) [see WEF-TTCR, 2017]. In comparison, the region's competitor countries rank relatively higher in all the four pillars. For example, South Africa ranked higher in air transport infrastructure (46) [Kenya, 72; Botswana, 87], ground and port infrastructure (59) [Kenya, 70; Botswana, 89], tourism service infrastructure (59)

[Botswana, 84; Kenya, 95], and ICT infrastructure (68) [Botswana, 83; Kenya, 106]. Social infrastructure is also relatively poor in Tanzania as evidenced by the global ranking of 125/136 on the health and hygiene conditions pillar. While the conditions for social infrastructure are not better in the competitor countries in the region, they rank relatively better than Tanzania; with South Africa at 113/136, followed by Botswana (1 1 8) and Kenya (1 2 0) [see WEF-TTCR, 2017].

The second pressing factor contributing to non-competitiveness of Tanzania's tourism products is lack of aggressive marketing. While the Tanzania Tourist Board has done a great job in marketing the sector, evidence suggest that it has not done enough compared to South Africa, Kenya and Botswana (TTB, 2012). The biggest constraint in the marketing efforts, according to Tanzania Tourist Board, is Tanzania's tourism sector marketing expenditure budget, which is significantly lower than that of Kenya, South Africa and Botswana (TTB, 2012). This is despite the fact that prioritization of travel and tourism in the country's development agenda is higher than that of South Africa and Botswana, although lower than that of Kenya [see WEF-TTCR, 2017]. In addition, its cultural resource and business travel are relatively underdeveloped compared to South Africa and Kenya. The country ranks 86/136 on the cultural resource and business travel pillar of the travel and tourism competitiveness index published in 2017, relative to South Africa and Kenya, which rank 19 and 77, respectively. Cultural resource and business travel are potential tourism attraction areas that the country could explore to complement the natural attractions.

It is against the above backdrop that this study investigates the relevant determinants of international tourism demand for Tanzania using panel data for top fifteen tourists' source countries during the 2000–2016 period. Several reasons compel us to use Tanzania as our case study. First, as previously mentioned, tourism is the biggest foreign exchange earner for the country, yet, its products are relatively non-competitive; and essential infrastructure is either under-developed or missing (especially for the touristic attractions in the southern circuit). Second, given the few opportunities that Tanzania has to diversify its export earnings away from the primary sector, and the potential that the tourism sector has in contributing to economic growth and

[1] See WEF-TTCR (2015).

employment, tourism sector emerges as a viable option for export diversification, employment creation and ultimately, contribute to economic growth. Third, Tanzania like many other African economies has a huge informal sector that forms the economic backbone of many households, and therefore, the trickle down effects of the tourism sector through horizontal linkages could yield greater indirect benefits to the informal sector than manufactures or agriculture sectors. Last but not least, the government of Tanzania has already identified tourism industry as a robust source of growth in its second 5-year development plan (Ministry of Natural Resources and Tourism report, 2017). This is based on the fact that annual tourist numbers have been increasing, doubling from about 500,000 in 2000 to over 1 million visitors in 2013, although the trend has now stagnated (see, WEF-TTCR, 2017). Consequently, the findings in this study will provide some crucial information that could help enhance the government's development plan.

A few studies have attempted to investigate the importance of tourism in the economy. However, most have focused on developed countries (Lim 1997a, 1997b, 1999). Studies on African countries are more recent and very few compared to those for developed and other developing nations (Fayissa, Nsiah, & Tadasse, 2008; Kweka, Morrissey, & Blake, 2003; Muchapondwa & Stage, 2013; Naudé & Saayman, 2005; Saayman & Cortes-Jimenez, 2013; Saayman & Saayman, 2008, 2015; Seetanah, Durbarry, & Ragodoo, 2010; Saayman, Rossouw, & Krugell, 2012). In the case of Tanzania, we could only find 2 studies (Kweka et al., 2003; Odhiambo, 2011). Furthermore, these studies evaluate the economic potential of tourism (Kweka et al., 2003) and tourism impact on economic growth (Odhiambo, 2011) rather than the factors that determine tourism demand. Thus, not only is our research timely (falling within the scope of the increasing importance of services sector in economic development of African economies), but also, relevant as Tanzania has recently placed tourism industry at the center of its development plan.

The rest of the paper is organized as follow, part 2 looks at the trends and economic impact of tourism sector in Tanzania. This is followed by related literature review and methodology in parts 3 and 4 respectively. Data description is provided in part 5, while diagnostic tests and empirical results are discussed in part 6. Conclusion and policy recommendations are in part 7.

2. Trends and economic impact of tourism sector in Tanzania

The United Nations World Tourism Organization (UNWTO) recognizes tourism as one of the largest and fastest growing industries in the world. The growth of tourism industry is demonstrated by the ever increasing number of destinations and tourists arriving at those destinations, and investments in tourism development; turning modern tourism into a key driver for socio-economic progress through job creation and enterprises, infrastructure development and, foreign currency earned through exports (UNWTO, 2016). For example, in 2016 alone, travel and tourism directly contributed US$2,306 billion (3.1 percent of total GDP) to the global economy and roughly 109 million jobs (3.6 percent of total employment) worldwide (World travel and tourism council (WTTC), 2017). Both GDP and employment contributions are expected to increase by 4.0 and 2.0 per year over the next ten years. Indirect effects are even larger, where they amounted to US $3,639 billion in contributions to the global economy and supported approximately 125 million jobs. This was equal to 7.1 percent of the World's GDP, and roughly 6 percent of all jobs created in 2016 (see Exhibit 2).

2.1. Global impact of travel and tourism

Travel and tourism's impact includes people travelling for both leisure and business, domestically and internationally. In 2016, 76.8 percent of all travel spend was as a result of leisure travel, compared to 23.2 percent for business travel (see Exhibit 3). Moreover, domestic

tourism generated 72 percent of the sector's contribution to GDP, making a significantly larger contribution than international tourism, which contributed only 28 percent of the sector's share in global GDP.

2.2. Impact of travel and tourism in Tanzania

In developing countries, tourism plays an important role in stimulating investments in new infrastructure, as well as generating government revenues through various taxes and fees. In Africa, tourism has been identified as a key sector for the achievement of shared economic growth and poverty alleviation (Mitchell and Ashely, 2006; World Bank (2006), 2006). Tanzania provides a good example of travel and tourism impact. The most recent data reported in World Travel and Tourism (2017) shows that the direct contributions of the tourism industry to Tanzania's total GDP and employment was 4.7 percent (US$ 2.1 billion) and 3.9 percent (470,500 jobs), respectively. The total contributions are even greater when indirect effects are taken into consideration. For example, in 2016, the sector's share in the country's GDP was 13.3 percent (US$ 5.9 billion), and 11.6 percent (1,389,000 jobs) of all jobs created. The outlook is good as well, since the sector's contribution in total GDP and employment is projected to increase by 6.8 percent and 3.8 percent per annum until 2027, respectively (see Exhibits 4 and 5).

In terms of the salient characteristics of these tourists, evidence in Exhibit 6 shows that even though the number of visitors tend to be evenly spread out throughout the months, the second half of the year (between June and December) see a slight increase, with the peak being in August. Furthermore, majority of them tend to be from Africa (44.3 percent in 2016; compared to 31.8 percent for Europe and 9.2 percent for Americas), particularly, East Africa (Tourism Statistical Bulletin, 2016). They travel for leisure and holiday (73 percent, 2016) with very few traveling to visit friends and relatives (11 percent). Business travelers account for a very small proportion of all the tourists (only 5 percent in 2016). Over half of these tourists travel by air, followed by road (see Exhibit 7)

3. Related literature review

Tourism started experiencing expansion and diversification in the 1950s, especially in developed countries. By the 1980s, developing nations jumped on board, and recognized the importance of tourism (particularly, international tourism) as a key driver in their development agenda. This was more so because researchers were observing (through indirect measures), the economic significance of the tourism industry in development and growth models (Bhagwati & Srinivasan, 1979; Krueger, 1980; Helpman & Krugman, 1985; Davis, Allen, & Consenza, 1988). Since then, tourism sector has become one of the largest and fastest-growing economic sectors in the world (UNWTO, 2012). This has led to increased interest in this sector among scholars and researchers, who have taken bold steps to directly estimate the importance of the sector in the economy [see Castro-Nuno, Molina-Toucedo, and Pablo-Romero (2013) for a meta-analysis of panel data studies on the relationship between tourism and gross domestic product (GDP]. The findings in these studies have served to emphasize the urgency of developing this sector. For example, in addition to being a labor-intensive sector and thus, immensely contributing to job creation (especially for low-skill workers); the sector has real impact on poverty reduction and infrastructure development, and is a good source of foreign currency and tax revenues (Naudé & Saayman, 2005; Onder, Candemir, & Kumral, 2009; Saayman & Saayman, 2015; Martins and Ferreira-lopes, 2017).

More recently, studies have gone beyond the tourism-growth/development nexus to focus on tourism demand models [see Lim (1977a, 1997b, 1999) for a *meta*-analysis of studies on tourism demand]. The later literature provides essential information on how to grow the sector, and in turn, amplify its beneficial effects on economic growth and development. Such information is necessary for policy formulation
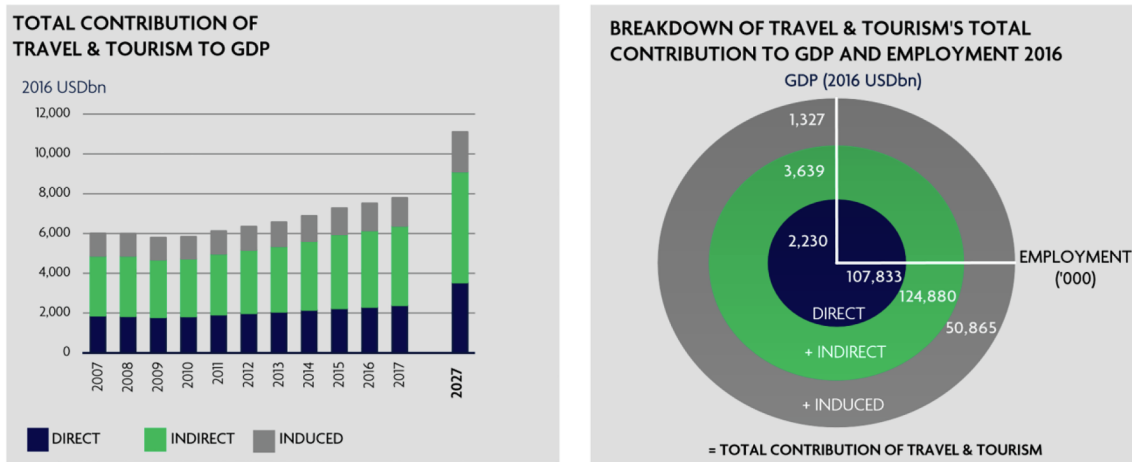
Exhibit. 2. Global Contributions of Travel and Tourism to GDP and Employment. Source: Travel and Tourism Economic Impact (WTTC, 2017). Note: All values are in constant 2016 prices & exchange rates.
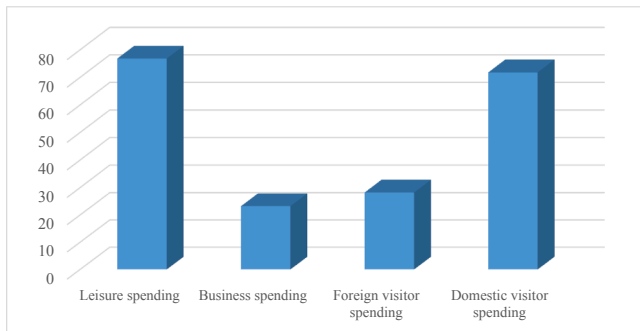

Exhibit. 3. Global Spending by Type of Activity and Tourist. Data Source: Travel and Tourism Economic Impact, (WTTC, 2017).

in African countries that heavily rely on the sector.

Lim (1997a, 1997b, 1999) conducted extensive meta-analysis on the tourism demand literature. Among other things, the author documents the most common proxies of tourism demand and the corresponding explanatory variables. The number of tourist arrivals and tourism expenditure – which captures the quantity and value aspects of tourism demand, respectively – stand out as the popular proxies for the left-hand-side variable, with the former being preferred due to data availability. In fact, Lim (1997a, b) found that 51 percent of the studies used number of tourist arrivals and/or departures, while tourist expenditure and/or receipts were used in 49 percent of the studies. Regarding the

right-hand-side: income of tourists (proxied by nominal or real per capita personal, disposable or national income, or GDP and gross national product (GNP) was used in 84 percent of the studies; relative prices (measured by CPI ratio), and transportation costs were in 73 and 55 percent of the studies, respectively. Exchange rate, and trends were also employed, but, in 25 percent of the studies. Studies that were published after 1999 have also incorporated a measure of tourism infrastructure development as one of the explanatory variables (Cleverdon, 2002; Naudé & Saayman, 2005; Onder et al., 2009; Saayman & Saayman, 2008)

A study by Brida and Scuderi (2013) provide a detailed review of 86 papers that used tourist expenditure as a measure of tourism demand. In all these studies, they do not find any conclusive evidence of the determinants of tourism demand, partly because the composition of the determinants used in the estimation models varied across the studies. In addition, there were differences in the estimation techniques, the sample size, and sample specification; not to mention the heterogeneity across countries and regions. The same is true in studies that used tourism arrivals, whereby, the findings varied across studies (Chao, Lu, Lai, Hu, & Wang, 2013; De Vita & Kyaw, 2013; Eugenio-Martin, Martín Morales, & Sinclair, 2008; Gatt & Falzon, 2014; Garín-Muñoz & Amaral, 2000; Saayman & Saayman, 2013; Tavares & Leitao, 2017; Untong, Ramos, Kaosa-Ard, & Rey-Maquieira, 2015).

However, there are some studies, which provide a comparative analysis of the performance of both the quantity (tourist arrivals) and value (tourist expenditure) measures of tourism demand. These studies are more appropriate in comparing the two proxies since they subject
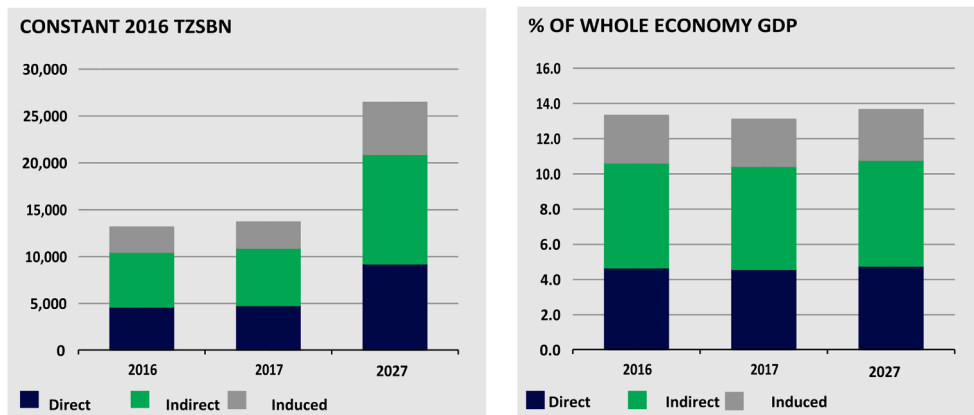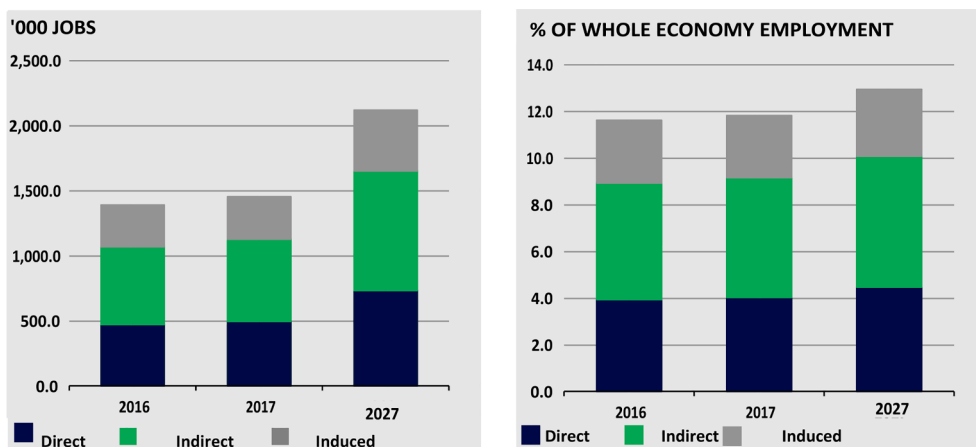

Exhibit. 4. Total Contribution of Travel and Tourism to Tanzania's GDP. **Source: Travel and Tourism Economic Impact, (WTTC-Tanzania, 2017).**

Source: Travel and Tourism Economic Impact, (WTTC-Tanzania, 2017)

Exhibit. 5. Total Contribution of Travel and Tourism to Tanzania's Employment. Source: Travel and Tourism Economic Impact, (WTTC-Tanzania, 2017).

them to the same model, dataset and estimation techniques. For example, Song, Li, Witt, and Fei (2016) estimates a tourism demand model for Hong Kong for the 1981–2006 period, and find that income of tourists was a better predictor of tourist arrivals, while real exchange rate performed well when tourism demand was proxied by tourism expenditure. Also, Martins, Gan, and Ferreira-Lopes (2017) arrived at a similar conclusion.

3.1. Performance of selected tourism demand determinants in literature

In this study we use tourist arrivals for the same reason as previous studies – data availability – and select the determinants that have been commonly used in related studies. Specifically; income of tourists, measures of prices (exchange rate, consumer price index), transportation cost, and infrastructure development. In addition, we include a measure of political stability, an issue that impacts the tourism sector in African countries. To provide some context, we evaluate how these variables have fared in literature.

3.1.1. Income of tourists

Income of tourists measures the ability of the tourists to afford overseas travel and tourism related expenses. As previously indicated, it has been used in more than 80 percent of the studies on tourism demand (Lim, 1997a,b). In most of these studies, especially those that proxy tourism demand with tourist arrivals or departure, income of tourists has a positive relationship with tourism demand (Saayman & Saayman, 2008; Seetanah et al., 2010; Song, Li, Witt, & Fei, 2010; Onder et al., 2009).

3.1.2. Inflation and exchange rate

Relative prices and exchange rate are other determinants of tourism demand that are commonly used in regression models (Oh and Ditton, 2006; Dwyer & Forsyth, 2002; Saayman & Saayman, 2013; Chao et al., 2013; De Vita & Kyaw, 2013). In general terms, these variables are

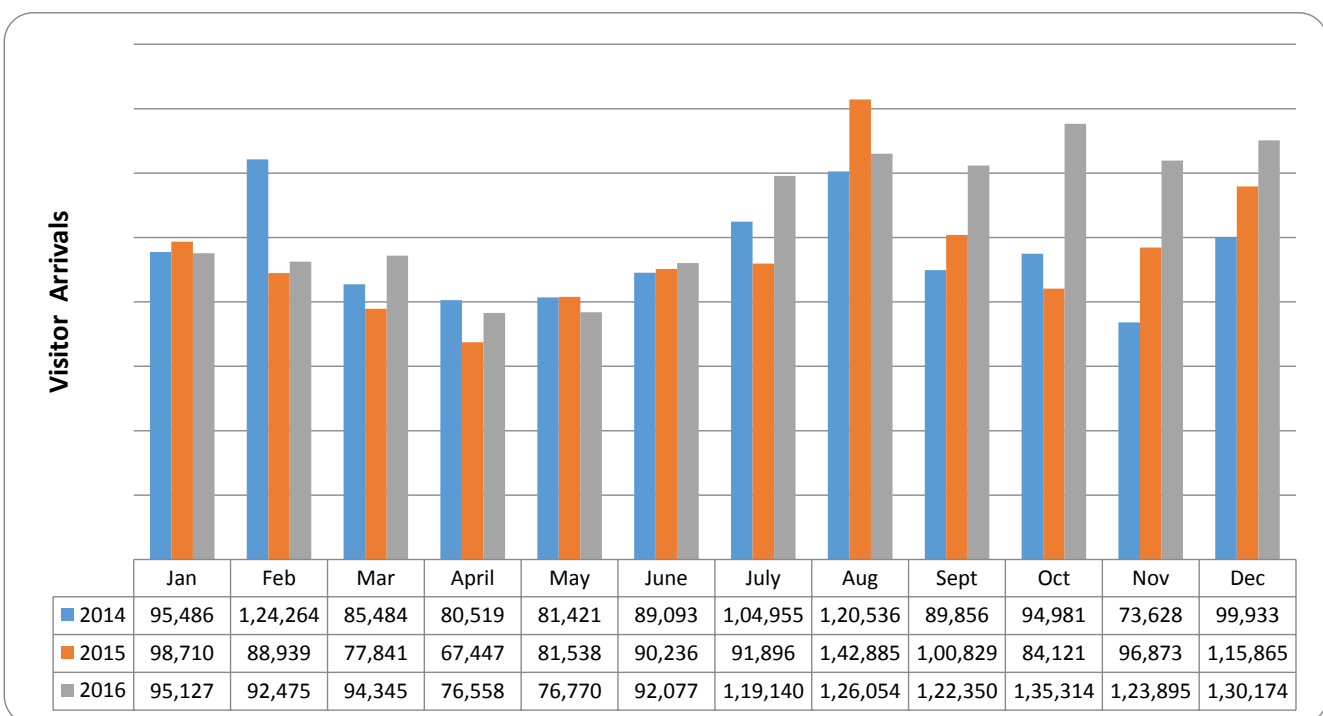|	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2014	95,486	1,24,264	85,484	80,519	81,421	89,093	1,04,955	1,20,536	89,856	94,981	73,628	99,933
2015	98,710	88,939	77,841	67,447	81,538	90,236	91,896	1,42,885	1,00,829	84,121	96,873	1,15,865
2016	95,127	92,475	94,345	76,558	76,770	92,077	1,19,140	1,26,054	1,22,350	1,35,314	1,23,895	1,30,174

Exhibit. 6. Monthly Trends of International Visitor Arrivals in Tanzania, 2014 – 2016. Source: Chart 2, Tourism and Statistical Bulletin, 2016.
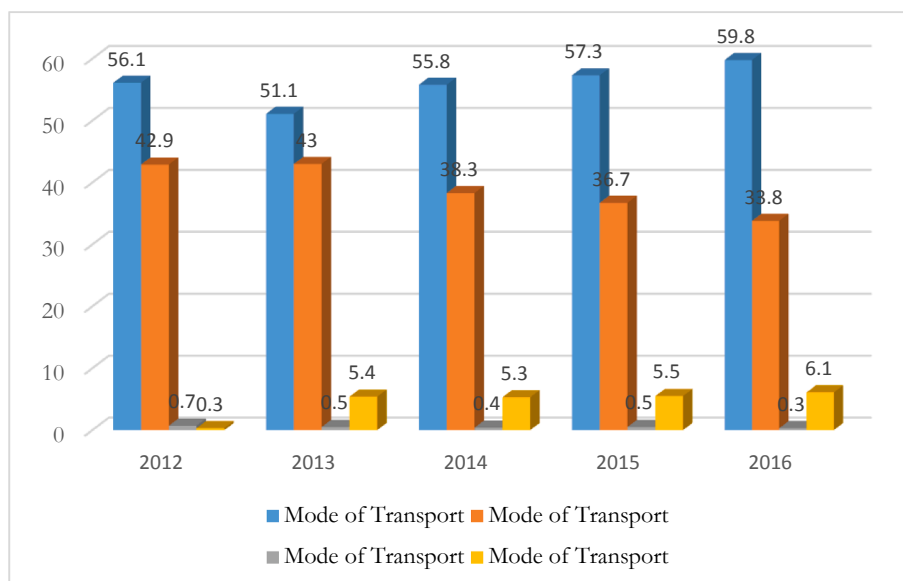
Exhibit. 7. International Visitor Arrivals by Mode of Transportation (in percent), 2012–2016. Data Source: Tourism Statistical Bulletin, 2017.

defined as the ratios of domestic prices (currency) over foreign price (currency), and are often proxied by consumer price index and nominal exchange rate, respectively. Since most rational tourists want to travel to destinations where they can get the most out of their money, they will travel to destinations where prices are relatively favorable. Thus, the sign of the relative exchange rate is expected to be positive, while that of consumer price index, negative (Martins et al., 2017). In other words, an increase in the nominal exchange rate could cause a rise in tourism demand as domestic prices in the tourist destination country become relatively cheaper than those in tourist origin country. Conversely; the higher the cost of living in the tourist destination relative to origin country, the lower the probability of increasing the number of tourists, and vis-à-vis.

The performance of the two variables in empirical studies has been found to depend on the tourism demand variable used. For example, Chao et al. (2013) shows that exchange rate has a dominant impact on the number of tourists arriving in the country, while rising domestic price (inflation in the destination country) can be passed on to tourists through consumption spending while they are already in the country. This implies that relative prices effects are dominant in models that use tourist expenditure as a measure of tourism demand.

3.1.3. Transportation cost

The distance between tourist origin and destination countries impacts the transportation costs, and could decrease the chances of a tourist choosing certain destinations if the transportation costs appear to be higher (Culiuc, 2014; Dritsakis, 2004; Hanafiah and Harun (2010); Kosnan, Ismail, & Kaniappan, 2013). This variable is particularly important for African countries, and especially Tanzania, where transportation infrastructure is relatively poor, and particularly, the air transport infrastructure (that is commonly preferred by most tourists) is underdeveloped in terms of competition of carriers, on-ground facilities (low-standard airports), and safety of travelers. Consequently, the cost of air transport within Africa and to African countries, tend to be higher relative to other destinations in Asia, Europe and Americas. Studies that incorporated this variable in their tourism demand models found significant negative effects (Culiuc, 2014; Seetanah et al., 2010).

3.1.4. Infrastructure development

As observed in developed nations, infrastructure development in a country is a critical component for industrialization. Yet, one of the key

factors retarding Africa's industrialization is insufficient stock and poor quality of infrastructure in transport services, power and water (AEO, 2018). In fact, Africa lags other developing regions in terms of its level of infrastructure development (AEO, 2018). This has a huge negative impact on the tourism sector as well. A number of studies (including those on African countries) have considered infrastructure development as one of the determinants of tourism demand (Naudé & Saayman, 2005; Saayman & Saayman, 2008). According to Kester (2003, pp 204–205), the major obstacles to tourist arrivals in Africa are insufficient air transport, deficiency in facilities and accommodation, lack of image and poor perceptions, poverty, disease and conflict. Gauci, Gerosa, and Mwalwanda (2002, p 4) adds poor public health services and fears of personal safety as some of the factors. Other constraining factors include lack of banking and communication facilities, lack of quality tourism products, weak marketing, and fragmentation among tour operators (Cleverdon, 2002).

3.1.5. Political stability

In addition to the aforementioned determinants, a measure of political and social (in)stability (which falls under the safety and security services and infrastructure) has featured in studies on African countries (Dimopoulos, Queiros, & van Zyl, 2019; Ghalia, Fidrmuch, Samargandi, & Sohag, 2019; Naudé & Saayman, 2005; Seetanah et al., 2010), which arrived at a general consensus that political risk negatively impacts the tourism industry. A cross-country study by Eilat and Einav (2004) found that political risk had significant impact on tourism demand in both developed and developing countries. Studies on other developing countries have included a measure of political risk as well. For example, Lee, Var, and Blaine (1996) included a measure of political unrest for the case of South Korea. Dritsakis (2004) and Salleh, Hook, and Ramachandran (2008) also considered political instability as an important determinant of tourism demand. Moreover, World Economic Forum (WEF) includes safety and security pillar in its calculation of the travel and tourism competitiveness index. Of the 136 countries sampled in the 2017 WEF travel and tourism competitiveness report, 33 were from Africa. And of those from Africa, only 15 percent[2] ranked below 68/136 (the group average) in the safety and security pillar, suggesting that political and social (in)stability is an important factor in

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[2] The 15 percent includes Rwanda (9/136), Gambia (52/136), Zimbabwe (60/136), Ghana (62/136) and Senegal (64/136).

Table 1
Tanzania's Top 16 Tourist Origin Countries, 2000–2016.

Burundi	Norway
Canada	Rwanda
France	South Africa
Germany	Sweden
Israel	Uganda
Italy	United Kingdom
Kenya	United States
Netherlands	Zambia

Note: Germany was dropped out in the regressions due to lack of sufficient data on relative exchange rate

determining African countries' tourism sector competitiveness (WEF-TTCR, 2017).

4. Methodology

To empirically evaluate the determinants of international tourism demand in Tanzania, we employ a commonly used tourism demand model (see Lim, 1997b) outlined in Eq. (1):

$$DT_{ij} = f(Y_i, TC_{ij}, ER_{ij}, CP_j, O_j) \qquad (1)$$

DT_{ii} is demand for tourism products by tourists from origin *I* in destination *j*,
Y is income of tourists,
TC is transportation costs
ER is exchange rate between country *I* and *j*
CP is price of goods and services paid by tourists in destination country *j*,
is other factors in country *j*, that impact tourism demand – this may include infrastructure development, political stability

Eq. (1) can be transformed through natural logarithm as shown in Eq. (2) below, so that the estimated coefficients are interpreted directly in terms of elasticity.

$$lnTA_{ijt} = \beta_0 + \beta_1 lnINC_{it} + \beta_2 lnINFRA_{jt} + \beta_3 lnEXR_{jit} + \beta_4 lnDist_{jit} + \beta_5$$
$$lnCPI_{jt} + \varepsilon_{it} \qquad (2)$$

Where
ln is natural logarithm
Subscripts *i* and *j* are as previously defined, referring to country of origin (*foreign country*), and tourist destination country (*Tanzania*), respectively. *t* is time period (t = 2000–2016)
TA is the number of tourists arriving in Tanzania from country *i*
INC is income of tourists.
INFRA is measure of level of infrastructure development in country *i.*
EXR is the relative exchange rate measured as the annual currency exchange rates between Tanzania and a foreign country *i.*
Dist is a proxy for transportation cost calculated as product of the distance between country *i* and *j,* and the cost of fuel in country *i.*
CPI is the consumer price index in Tanzania, which captures the cost of living.
In other specifications, we include *Gov* an index used as a proxy for political stability in country *j*
ε is stochastic disturbance term and *β*'s are parameters.

5. Data description

5.1. Data sources

The study uses panel data drawn from various sources from

Tanzania's top 15 tourist origin countries covering the period 2000–2016. Tourism arrival data is from Tanzania Tourism Sector surveys of 2007 to 2017; jointly compiled by the Bank of Tanzania (BoT), Ministry of Natural Resources and Tourism, and the National Bureau of Statistics. Gross Domestic Product (GDP) per capita in current US$ of tourist origin country *i (*a proxy for tourists' income*),* a measure of infrastructure development (the percentage of the population with access to improved sanitation facility) in destination country *j, and consumer price index (2010 = 100)* are obtained from World Bank's World Development Indicators database; while Currency exchange rate (TZ (shillings) versus foreign) is from United Nations Commission on Trade and Development. Governance index (Polity2), which measures political stability is from the Polity IV project of the International Country Risk Guide (Marshall & Jaggers, 2011). The index is measured on a 10-point scale with −10 signifying pure autocracy and 10, pure democracy. Finally, the proxy for transportation cost is author calculated as an interaction of the distance between country *i* (foreign) and *j (Tanzania)*, and the cost of fuel in country *i*.

The sample selection is based on the countries that had the number of tourists visiting Tanzania during much of the study period consistently above 1,000. A list of the countries used in the study is presented in Table 1. Correlation-covariance matrix is in Table 2

5.2. Descriptive analyses

Table 3 presents summary statistics of the 15 tourist origin countries and Tanzania. On average, over 34,000 tourists arrived in Tanzania between 2000 and 2016. The median number of tourists (23,459) was less than the mean[3], implying that the distribution was skewed to the right. In other words, most of the years (53 percent) had arrival values less than the mean value. The lowest number of tourist arriving within this period was 799 (Israel, in 2000). The average income per capita for the 15 countries was US$26,445, which was largely driven by the OECD member countries. About 60 percent (9 of 15) of the countries in the sample were OECD member countries with a mean GDP per capita of US$43,138 during the study period; this is compared to only US$2,841 for the 6 African countries.

Infrastructure development is proxied by the percentage of the population that has access to improved sanitation facility. This variable is chosen due to data limitation on more direct measures such as roads. However, it is highly correlated with other related measures of infrastructure development such as total kilometer of rail line route (0.82), electricity consumption (Kwh) (0.92), air transport (freight in million ton-km) (0.86), percentage of the population with access to fixed line telephone (0.89), percentage of population with access to improved water sources (0.97)[4], and percentage of population with access to electricity (see Table 2). On average, only about 15 percent of Tanzanians had access to improved sanitation, compared to 30 percent (Kenya) and 66 percent (South Africa) of competitor countries in the region (see Table 4 below). This also applies to access to electricity; Tanzania had the lowest percentage of the population having access to electricity (13 percent), relative to Kenya (24 percent) and South Africa (81 percent). By all accounts, these percentages are very low, suggesting that infrastructure development in the country is at very low

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[3] Also, notice that the standard deviation (38,367) of the number of tourists visiting Tanzania during the study period is higher than the mean, which is due to the nature of the distribution of the number of tourist arrivals (skewed to the right). Moreover, the country (Kenya) with the maximum number of tourist coming to Tanzania supplied almost 4 times as much tourists as the countries with the minimum number (Israel), and three times as much tourists as the country supplying the second largest number of tourists (See Table 5, column 1). Thus, the higher range (difference between the maximum and minimum values) of 23,931 is reflected in the standard deviation.

[4] Data used is from World Bank's African Development Indicators' database. The most recent year available is 2012. Data on roads is not available

Table 2
Correlation-Covariance Matrix, 2000–2016.

	No. of Tourist Arrivals	GDP per Capita (Foreign Country)	Currency exchange rates, annual, (TZ versus foreign)	Transportation cost	Population with access to improved sanitation facility (%)	Population with access to improved water sources (%)	Fixed Tel subscriptions	Consumer Price Index (Tanzania)	Population with access to electricity (%)
No. of Tourist Arrivals	1.000								
GDP per Capita (Foreign Country)	−0.183	1.000							
Currency exchange rates, annual (TZ versus foreign)	−0.002	0.869	1.000						
Transportation cost	−0.262	0.928	0.759	1.000					
Population with access to improved sanitation facility (%)	0.307	0.132	0.082	0.267	1.000				
Population with access to improved water sources (%)	0.302	0.132	0.082	0.270	0.995	1.000			
Fixed Tel subscriptions	−0.271	−0.111	−0.071	−0.212	−0.831	−0.803	1.000		
Consumer Price Index (Tanzania)	0.305	0.126	0.078	0.258	0.990	−0.989	0.795	1.000	
Population with access to electricity (%)	0.291	0.114	0.075	0.230	0.914	−0.893	0.7542 0	0.906	1.000

levels.

Country level summary statistics over the 2000–2016 period are presented in Table 5. The top tourist origin country for Tanzania is Kenya, which averaged 154,798 tourists during the study period. This was almost three times more than the number of tourists from United States (54,161) and United Kingdom (54,015), the countries in the second and third positions, respectively. Uganda (31, 870), Zambia (30,734) and South Africa (28,503) were in 5, 6 and 7 positions. This suggests (as previously observed) that majority of Tanzania's tourists tend to be from African countries despite the relatively lower GDP per capita levels of these countries. To supplement this observation, we generate two bubble plots, which represent an unconditional bivariate relationship between the average number of tourists arriving from each country in the sample during the 2000–2016 period, and GDP per capita. The findings are reported in Figs. 1.1 and 1.2. Fig. 1.1 has all the 15 countries, however, Kenya and Norway standout as outliers. Nonetheless, even with these countries included, we observe a somewhat positive relationship. In Fig. 1.2, we drop the two countries (Kenya and Norway), and the positive relationship becomes pronounced, suggesting a direct relationship between income of visitors and their demand for tourism services. Kenya, which shares a common border and language with Tanzania, supplied the highest number of tourist despite a relatively low GDP per capita of US$ 851. In fact, studies that directly incorporated a common language and border in tourism demand models found that both variables have a significant and positive impact on tourism demand (Deluna & Jeon, 2014; Kosnan et al., 2013; Leitao, 2010; Moorthy, 2014; Seetanah et al., 2010)

The relative exchange rate was more favorable to OECD member countries in comparison to African countries in the sample. For example, between 2000 and 2016, one Kenya shilling was equivalent to roughly 16 Tanzanian shillings in contrast to a British pound and American dollar being equivalent to an average of 2,179 and 1,344 Tanzania shillings, respectively (see Table 5). We also generate two bubble plots of number of tourist arrivals versus relative exchange rate (see Figs. 2.1 and 2.2). Results in Fig. 2.1 show a weak positive relationship, with Kenya appearing as an outlier and thus skewing the results. When we exclude Kenya, the result is a clear positive relationship, suggesting that favorable exchange rate indeed translates to more tourists arriving in Tanzania (Fig. 2.2).

6. Diagnostic tests and regression results

6.1. Diagnostic tests

To complement the descriptive analysis above, we estimate the empirical model in Eq. (2) using panel data for selected Tanzania's top 15 tourist origin countries during the 2000–2016 period. Fixed effects (FE) model is our primary estimation technique, however, we also employ a number of other estimation models for two reasons: 1) to address other panel data biases that may not have been accounted for in FE model, and thus, negatively impact the FE estimates; and 2) for robustness checks. The FE model assumes that time variant characteristics are unique to each country, and that they are not correlated with another country's characteristics. This assumption holds if the country's error terms are not correlated. However, if the error terms are correlated, the assumption does not hold and fixed effects model cannot be used. Consistent with panel data estimations, we conduct the Hausman specification test in order to determine whether to use Random effects (RE) or FE[5]. The test rejects the null hypothesis that the difference in random and fixed effects coefficients are not systemic, thereby

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[5] Also, after running the FE regressions, we evaluate the F-statistic (with null hypothesis that all u_i = 0) to ascertain that indeed FE rather than pooled OLS is the estimation technique of choice. Results reject the null hypothesis, affirming FE.

Table 3
Summary Statistics for Selected Model Variables, 2000–2016.

	Mean	Std. Deviation	Minimum	Maximum	N
No. of Tourist Arrivals	34512.460	38367.320	799.000	233730.000	255
GDP per Capita (Foreign Country)	26445.280	24194.840	112.849	103059.300	255
Consumer Price Index (Tanzania)	96.284	38.244	51.710	166.190	255
Infrastructure Development	12.150	1.942	9.300	15.600	240
Transportation Cost	9129.114	7363.926	461.776	29143.530	255
Relative Exchange Rate	721.010	816.372	0.487	3042.404	255
Polity2	−0.529	1.291	−1.000	3.000	255

Table 4
Average Infrastructure Measures, 2000–2016.

	Kenya	South Africa	Tanzania
People using at least basic sanitation services (% of population)	30.386	66.495	14.784
Access to electricity (% of population)	24.516	81.021	13.371
Access to electricity, urban (% of urban population)	60.550	89.085	42.250

Data source: Author's calculation based on World Bank's World Development Indicators database

Table 5
Summary Statistics for Selected Tanzania's Top Tourist Origin Countries, 2000–2016.

Country	No. of Tourist Arrival	GDP Per Capita	Transportation Cost	Relative Exchange Rate	
Burundi	22906.76	184.66	1672.57	1.10	Mean
	18924.73	46.56	474.80	0.10	Std. Deviation
Canada	14474.59	40061.35	10407.11	1148.05	Mean
	4090.78	10275.11	3569.51	387.62	Std. Deviation
France	22953.06	36302.82	14467.46	1657.95	Mean
	5250.63	7487.60	3847.54	524.74	Std. Deviation
Israel	4858.12	27453.09	8976.67	340.26	Mean
	5709.79	7116.31	3844.65	115.23	Std. Deviation
Italy	42398.41	31911.43	15425.02	1657.95	Mean
	16462.39	6225.12	4712.13	524.74	Std. Deviation
Kenya	154798.10	851.14	780.94	16.43	Mean
	42660.60	370.22	219.91	3.17	Std. Deviation
Netherlands	16442.71	44123.16	15594.63	1657.95	Mean
	4215.49	9778.27	4606.16	524.74	Std. Deviation
Norway	7638.94	74491.21	20929.36	202.47	Mean
	2660.43	22556.09	5065.78	61.54	Std. Deviation
Rwanda	21064.76	459.12	1759.06	2.29	Mean
	15770.37	206.06	464.79	0.28	Std. Deviation
South Africa	28503.00	5400.09	3311.46	157.23	Mean
	6496.97	1657.49	1179.88	32.70	Std. Deviation
Sweden	10865.53	47104.22	18614.05	179.36	Mean
	3283.68	10963.31	5333.91	56.98	Std. Deviation
Uganda	31870.82	455.10	1674.51	0.61	Mean
	5372.23	174.46	365.83	0.07	Std. Deviation
United Kingdom	54015.88	39810.54	9134.13	2179.35	Mean
	10717.28	6573.11	2782.37	538.24	Std. Deviation
United States	54161.29	46988.56	11839.02	1344.57	Mean
	16503.46	6602.80	2476.72	377.06	Std. Deviation
Zambia	30734.94	1082.71	2350.72	269.58	Mean
	15470.89	530.95	736.14	41.96	Std. Deviation
Total	34512.46	26445.28	9129.11	721.01	Mean
	38367.32	24194.84	7363.93	816.37	Std. Deviation

affirming FE as the model of choice.

A number of diagnostic tests are also conducted on the data. First, we test for unit root in each variable using Levin–Lin–Chu (LLC) (Levin, Lin, and Chu, 2002) panel unit root test, analogous to the time-series augmented Dickey–Fuller test (ADF). The null hypothesis of unit root is rejected in all variables [tourist arrivals, GDP per capita, transportation cost, relative exchange rate and consumer price index] except the infrastructure development measure (percentage of population with access to improved sanitation). To solve this problem, we take first difference on the infrastructure development series and conduct the test again.

Results reported in Table 6 reject the null hypothesis of unit root in all variables. Second, we ran the fixed effects regression on the revised

data and conduct a test of heteroscedasticity using the modified Wald test for groupwise heteroscedasticity in fixed effect regression model, with the null of homoscedasticity (or constant variance). The test results reject the null and conclude heteroskedasticiy. Lastly, given the number of years in our sample (15 years) we do not conduct tests for serial correlation and contemporaneous correlation since they are problems that impact macro panels with long time series (over 20–30 years).

6.2. Regression results

Regression results presented in Table 7 use a modified equation that is corrected for unit root. As previously mentioned, FE model is our
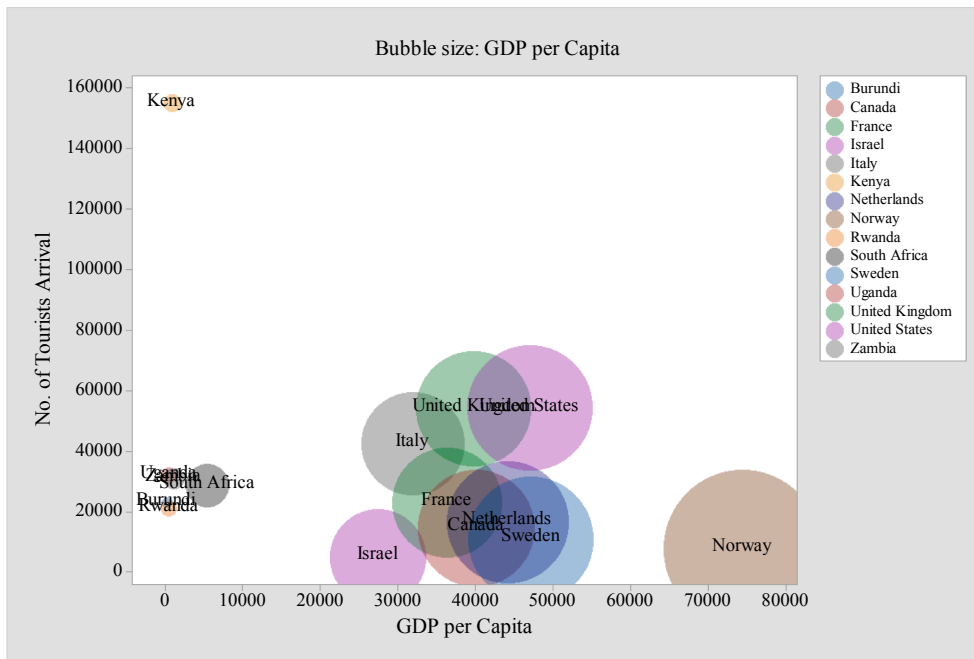
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E.F. Wamboye, et al.   World Development Perspectives xxx (xxxx) xxxx

Fig. 1.1. Bubble Plot of Average No. of Tourists Arrival versus GDP per Capita (15 Countries), 2000–2016.
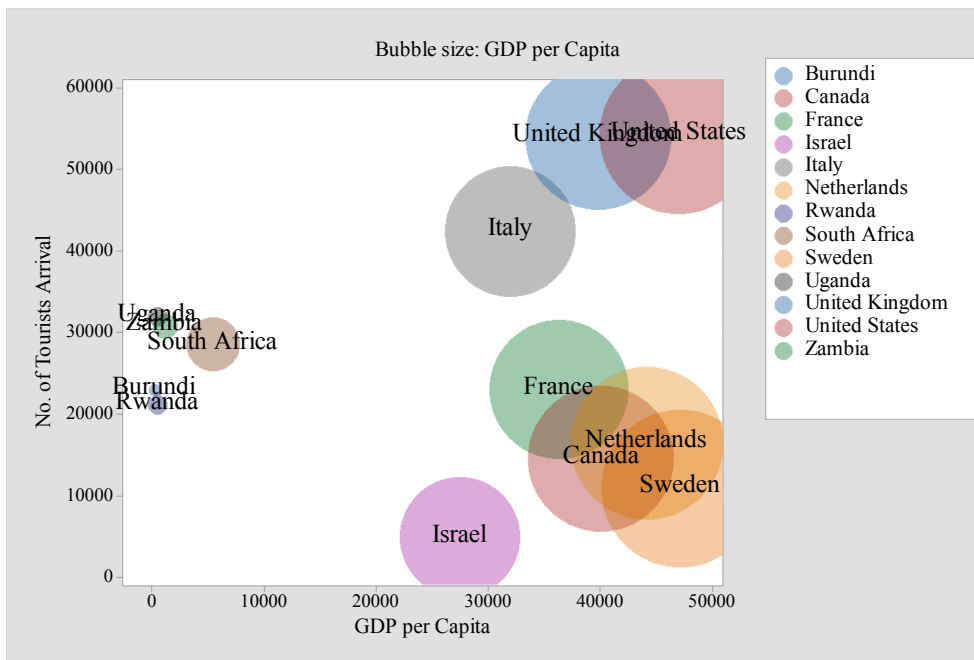

Fig. 1.2. Bubble Plot of Average No. of Tourists Arrival versus GDP per Capita (13 countries, minus Kenya and Norway), 2000–2016.

primary estimation technique. Results in column 1 of Table 7, and those based on other estimation techniques (column 2 through 4), consistently show that the main determinants of tourism demand in Tanzania are the income of tourists and the infrastructure development in Tanzania. The higher the income per capita of the tourist's origin country (in relative terms), the greater the probability that he/she will demand tourism services. Also, these tourists are more likely to travel to countries and visit places that have well developed infrastructures that include transportation, water, sanitation and hospitality facilities. As demonstrated in robustness checks, these results also hold regardless of the model specification. In terms of magnitude of effect; a one percentage point increase in GDP per capita of the tourist's origin country leads to roughly 0.5 percent increase in the number of tourists arriving

in Tanzania annually (column 1). An improvement in the infrastructure development leads to even more traffic of tourists to Tanzania of about 1.2 percent annually with each percentage increase in infrastructure development.

The above results are consistent with findings in related studies that use tourism arrivals as a response variable in the tourism demand equation. For example, Onder et al. (2009) found income of tourist as the main determinant of tourism demand in the Izmir, Antalya and Istanbul regions of Turkey. Martins et al. (2017) find similar results (of income of tourist being the key determinant) in a study of 218 countries. On the other hand, Naudé and Saayman (2005) results showed that infrastructure development was one of the major determinants for 43 African countries. Other studies also find income of tourists (Garín-
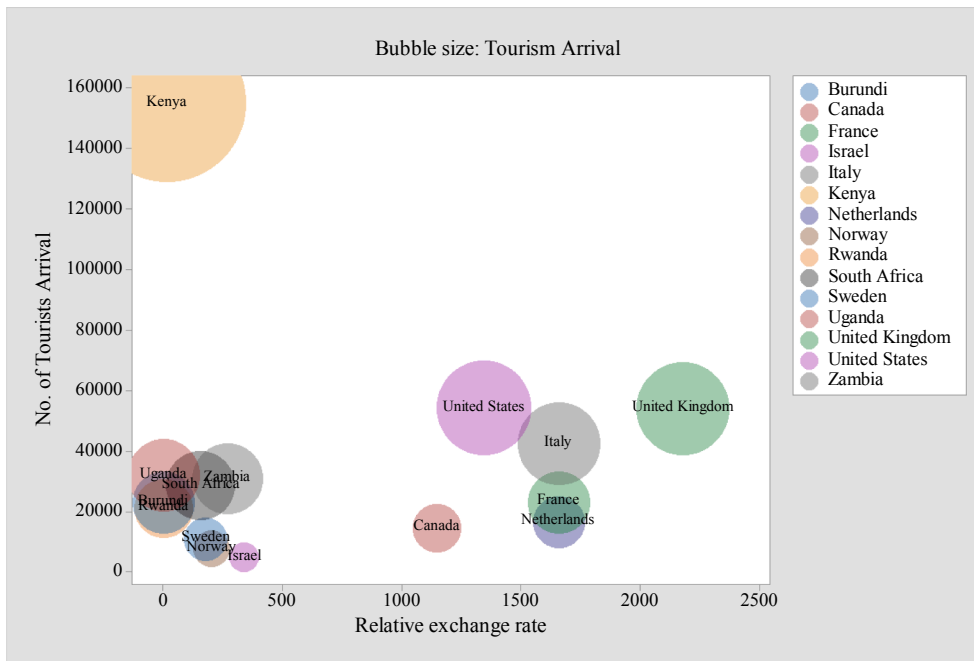
Fig. 2.1. Bubble Plot of Average No. of Tourists Arrival versus Relative Exchange Rate (15 Countries), 2000–2016.

Muñoz & Amaral, 2000; Lee et al., 1996; Song et al., 2016) and infrastructure development (Eugenio-Martin, Martín, Morales, & Sinclair, 2008; Seetanah et al., 2010) to be relevant in influencing tourism demand

As previously mentioned, Tanzania has 16 national parks and 17 game reserves, which are located in two regions; the Northern circuit and Southern circuit. While the Southern circuit consists of the largest and unique game parks/reserves (including Selous game reserve, which is the largest in Africa and designated a UNESCO world heritage site), it has the lowest tourist traffic relative to the Northern circuit (see Exhibit 8). While there are a number of reasons that could be contributing to the popularity and success of the Northern circuit relative to the Southern circuit (including Mount Kilimanjaro and proximity to

Kenya), the most obvious one is poor/limited infrastructure, including accommodation capacity (See MNRT, 2017). In fact, Tanzania' International Visitors' Exit Survey Reports published by the Ministry of National Resources and Tourism consistently point to Roads and other infrastructure as the top areas that require improvement. For example, in the 2014 survey, all the top 4 areas that the tourists pointed out as requiring improvement were infrastructure related; roads (22.7 percent of the tourists), traffic jam (13.4 percent), airport facilities and inland transport (12.2 percent), and utilities (toilets, water) and public places (11.9 percent) (Tanzania Tourism Sector Survey, 2014).

In 2016, many more tourists were still dissatisfied with the quality of infrastructure as indicated in the exit survey, where; 40 percent of the tourist indicated that roads and other infrastructure was the top
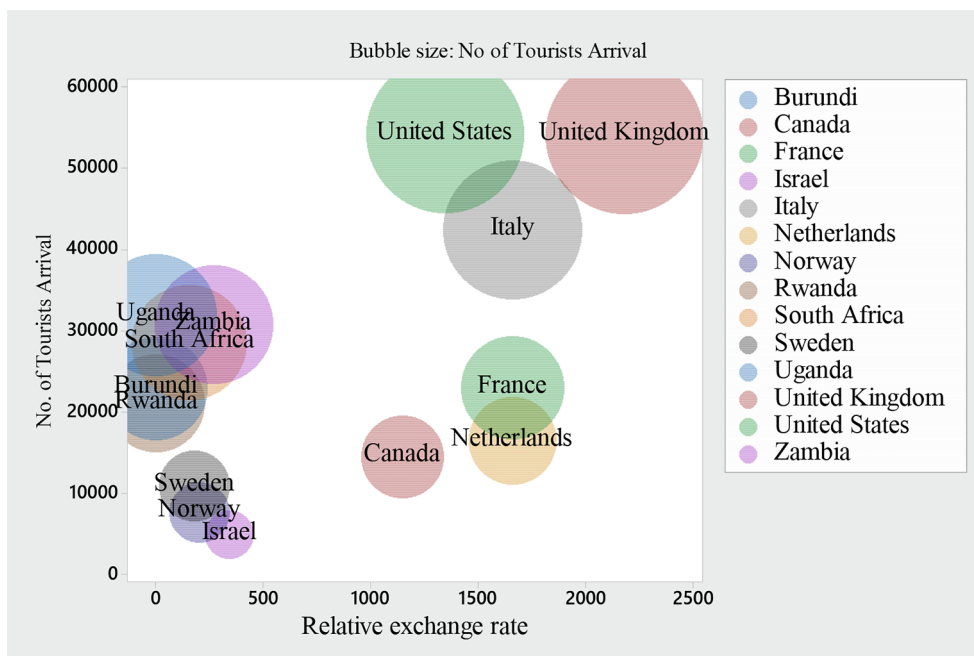

Fig. 2.2. Bubble Plot of Average No. of Tourists Arrival versus Relative Exchange Rate (14 Countries, minus Kenya), 2000–2016.

Table 6
Levin-Lin-Chu Panel Unit Root Tests (2000–2016).

	Adjusted t
No. of Tourist Arrivals	−7.576
	(0.000)
GDP per Capita (Foreign Country)	−5.494
	(0.000)
Currency exchange rates, annual (TZ versus foreign)	−6.942
	(0.000)
Transportation cost	−3.313
	(0.000)
Population with access to improved sanitation facility (%)	−8.383
	(0.000)
Consumer Price Index (Tanzania)	−3.250
	(0.000)

Notes: All statistics are based on data at levels, except, infrastructure measure (population with access to improved sanitation) and consumer price index, which are based on first-differenced data, p-values in parenthesis, time trend is included. Ho: Panels contain unit roots; Ha: Panels are stationary

aspect that required improvement, followed by cleanliness of public washrooms (18.5 percent), and traffic jams (10.1 percent) (Tanzania Tourism Sector Survey, 2016). Thus the regression results correctly capture the observations and sentiments of the tourists; that is, an improvement in the infrastructure development in Tanzania could have larger contributions to the inflow of tourists in the country.

The other interesting finding from the results in Table 7 is the importance of income of tourists as proxied by the income per capita of tourists' home country. Most of Tanzania's top tourist source markets have income per capita larger than that of Tanzania. Also, majority are OECD member countries as exemplified in our sample and Exhibit 9. Given that tourism is a luxury 'good' and it's a household want rather than a need, and is income elastic; it implies that only those households that have excess income (beyond what is required to cover their needs), will engage in tourism activities. This applies to business travelers as well (including medical tourism). In as far as their primary reason for travel is business (conference or meeting or seeking medical treatment), they are only likely to engage in tourism activities if they are willing to forego additional income for tourism activities (whether as an individual or part of a group). This provides a self-selection process based

on income within tourists' source country.

Notwithstanding, there are other aspects that matter in the tourism demand equation for Tanzania. For example, proximity, which cuts down transportation costs; and common culture and language. This explains why majority of Tanzania's international tourist are from Kenya (where they share a common border, Swahili language and culture), and other English speaking countries (United Kingdom and United States). Also, we cannot underestimate the importance of targeted and aggressive marketing, which has helped to boost Kenya and South Africa's tourism industry relative to that of Tanzania.

The effects of transportation cost have been captured in the regression analysis as well (see Table 7). Specifically, an increase in the transportation cost deters tourism services demand, and thus, decreases the number of tourists coming to Tanzania. In terms of magnitude of effect, an increase in the transportation cost by one percentage point, decreases the number of tourists arriving in Tanzania by 0.3 percentage points (Table 7, Column 1) every year. These effects are robust at 10 percent level of significance. Studies such as Seetanah et al. (2010) and Culiuc (2014) have also found negative effects of transportation cost on tourism demand.

The negative effects of transportation costs could be alleviated by improving the infrastructure in the country, similar to what the government is currently doing by investing in airports, roads, and rail. As observed above (Fig. 7), most tourists travel to the country via air followed by roads. Therefore, improving the air transport infrastructure, and increasing competition in the airline market (in terms of the number of local and international carriers) could offer more travel options to the tourist and lower transportation cost as well. While the government has revived Air Tanzania, and currently renovating/expanding Julius Nyerere International Airport, better quality regional airports (especially in regions that are key to the tourism industry), and more domestic and international carriers are still needed.

Other determinants such as high cost of living (as measured by the inflation rate) in the host country (Tanzania) has a negative impact on demand for tourism services (Table 7, column 4), while, favorable exchange rate (Tanzania shilling versus foreign) encourages demand of tourism services. The effects for inflation rate are significant (at one percent level) where Linear Dynamic Panel regression estimation technique is used (Table 7, column 4), with a one percent increase in

Table 7
Determinants of Tourism Demand in Tanzania, Evidence from Top Tourist Origin Countries in Africa and OECD Member Countries (Instrumental Variable Estimation), 2000–2016.

	FE	FE-Instrumental Variable)	GEE-Population Averaged	Linear Dynamic Panel Estimation
Variables	1	2	3	4
GDP Per Capita	0.460***	0.460***	0.196***	0.572***
	(0.123)	(0.123)	(0.091)	(0.136)
Infrastructure development	1.180***	1.180***	1.615***	0.925***
	(0.258)	(0.258)	(0.219)	(0.228)
Transportation cost	−0.271*	−0.271*	−0.238	−0.282***
	(0.164)	(0.164)	(0.163)	(0.034)
Relative exchange rate	0.277	0.277	0.382	0.168
	(0.269)	(0.269)	(0.267)	(0.117)
CPI	−0.859	−0.859	−0.322	−1.294***
	(0.834)	(0.834)	(0.816)	(0.318)
Constant	2.952***	2.952***	4.200***	
	(0 0.695)	(0 0.695)	(0.637)	
No. of Instruments				174
Arellano-Bond test for zero autocorrelation in first-differenced errors [AR (2)], Prob > z				0.321
Sargan test of overidentifying restrictions (Prob > chi2)				0.960
Hansen-Sargan (P-value)		0.000(+ +1)		
No. of countries	15	15	15	15
No. of observations	225	225	225	210

Note: *** p < 0.01, ** p < 0.05, * p < 0.1. All variables are expressed in natural log. Sargan test: H0: overidentifying restrictions are valid. Arellano-Bond test: H0: no autocorrelation. + +1 = equation exactly identified. Infrastructure development is proxied by percentage of the population with access to improved sanitation.

Table 8

Determinants of Tourism Demand in Tanzania, Evidence from Top Tourist Origin Countries in Africa and OECD Member Countries (Panel Data Estimation), 2000–2016.

	FE	FE-Instrumental Variable)	GEE-Population Averaged	Linear Dynamic Panel Estimation
Variables	1	2	3	6
GDP Per Capita	0.470***	0.470***	0.181**	0.591***
	(0.128)	(0.128)	(0.092)	(0.139)
Infrastructure development	1.135***	1.135***	1.691***	0.819***
	(0.313)	(0.313)	(0.264)	(0.235)
Transportation cost	−0.273*	−0.273*	−0.235	−0.271***
	(0.162)	(0.162)	(0.163)	(0.053)
Relative exchange rate	0.270	0.270	0.393	0.123
	(0.267)	(0.267)	(0.268)	(0.128)
CPI	−0.778	−0.778	−0.473	−1.000***
	(0.885)	(0.885)	(0.891)	(0.386)
Political Stability	0.007	0.007	−0.012	0.014
	(0.027)	(0.027)	(0.027)	(0.009)
Constant	2.976***		4.143***	
	(0.703)		(0.658)	
No. of Instruments				174
Arellano-Bond test for zero autocorrelation in first-differenced errors [AR (2)], Prob > z				0.261
Sargan test of overidentifying restrictions (Prob > chi2)				0.960
Hansen-Sargan (P-value)		0.000(++1)		
No. of countries	15	15	15	15
No. of observations	225	225	225	210

Note: *** p < 0.01, ** p < 0.05, * p < 0.1. All variables are expressed in natural log. Sargan test: H0: overidentifying restrictions are valid. Arellano-Bond test: H0: no autocorrelation. ++1 = equation exactly identified. Infrastructure development is proxied by percentage of the population with access to improved sanitation

the inflation rate in Tanzania, reducing demand for tourism product by 1.3 percentage points per year. Exchange rate effects are not robust across all model specifications.

6.3. Robustness checks

6.3.1. Impact of different estimation techniques

To ensure the robustness of our results; first, we employ various estimation techniques on the baseline model. As previously reported, results based on estimation techniques that account for potential endogeneity problems [FE instrumental variable (column 2) and Linear dynamic panel estimation (column 4)], and those that account for possible unknown correlation between variables [GEE population averaged (column 3)] all yield results similar to those in the baseline specification (Table 7).

6.3.1.1. Political stability effects on tourism demand. Second, we use different model specifications and apply the same estimation techniques mentioned above. We introduce a proxy for government stability. African countries are generally assumed to be politically unstable, and most Western countries (where majority of tourists originate), tend to lump them as 'Africa' despite the heterogeneity across these countries. Thus, when one country is experiencing political instability, or social unrest, it tends to cause unintended negative externalities that usually impact other countries. For example, political unrest in Kenya, could deter tourists intending to visit the Serengeti
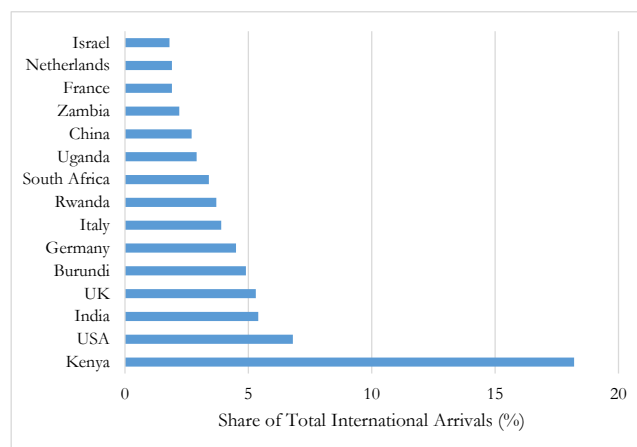

Exhibit. 9. Tanzania's Top 15 Tourist Origin Countries, 2016. *Data source: Immigration services department, 2016.*

national park or Ngorongoro conservation area given the proximity of these attractions to Kenya. Thus, it makes sense to include a variable in the model that would capture the effects of political stability/ instability. Inclusion of this variable is consistent with related studies that have evaluated the determinants of tourism demand (using number of tourist arrivals as the dependent variable) (Ghalia et. al., 2019;

Exhibit 8

Number of visitors in Protected Areas, 2015.

Northern Circuit National Parks			Southern Circuit National Parks		
	Residents	Non-residents		Residents	Non-residents
Lake Manyara national park	62,287	92,341	Mikumi national park	35,311	17,117
Serengeti national park	204,998	167,988	Ruaha national park	7,403	11,558
Tarangire national park	55,585	116,590	Udzungwa national park	6.31	2,608
Ngorongoro Conservation Area	278,922	289,061	Selous game resource	4,750	13,447

Data source: World Bank REGrow report

Naudé & Saayman, 2005), and impact of external risks on selected tourism activities (Dimopoulos et al., 2019) in African countries. The proxy used in this study is polity2 index from Polity IV project (Marshall & Jaggers, 2011). It is measured on a scale of −10 to 10, with −10 indicating a strongly autocratic (political suppression) and 10 a strongly democratic (political freedom) political system. Results tabulated in Table 8 show that inclusion of the new variable does not change the findings observed in the baseline specifications. Specifically, income of tourists and infrastructure development consistently enhance the number of tourists arriving in Tanzania. The other determinants also carry the expected signs as previously discussed.

6.3.2. Impact of different measures of infrastructure development

Next, we use a different measure of infrastructure development, specified as the percentage of population with access to electricity. As previously shown in the descriptive analysis, the infrastructure development measures have a high pairwise correlation, and thus we do not expect the results to change. Accordingly, results (available upon request) show consistency with those in the baseline estimations in Table 7.

6.3.3. Country level analyses

Finally, we evaluate these issues using time series data for the 16 top tourist origin countries for Tanzania. Because of the sample size, we limit the number of independent variables to 5 and use stepwise regressions with OLS estimation technique. The objective of using stepwise regressions is to isolate those variables that are key in the tourist demand equation and unique to each source country. In most cases and where significant, the results (available upon request) mimic those in the panel estimations. Specifically, increasing income per capita of tourist origin countries and infrastructure development in Tanzania, both enhance demand for tourism services. In other words, they lead to an increase in the number of tourists coming to Tanzania

7. Conclusion and policy implications

7.1. Conclusion

This study attempted to establish how Tanzania could increase the number of international tourist arrivals, and in turn, enhance the sector's effectiveness in contributing to the country's second 5-year development plan; by empirically investigating the relevant determinants of international tourism demand for Tanzania. The empirical analysis used panel data for Tanzania's top fifteen tourist source countries, during the 2000–2016 period. The sample selection was based on the countries that had the number of tourists visiting Tanzania during most of the study period consistently above 1000.

Generally, results from our econometric analysis indicate that income of tourists and infrastructure development are the two main determinants of international tourism demand for Tanzania. These findings hold across model and sample specifications. Other factors such as transportation cost, cost of living in the host country (as measured by consumer price index), and relative exchange rate bear the right sign where significant.

Focusing on panel estimations in Table 7 and in instances where the coefficients are significant; we find that a one percentage point increase in GDP per capita of the tourist's origin country leads to roughly between 0.1 and 0.6 percent increase in the number of tourists arriving in Tanzania per year. On other hand, an improvement in the infrastructure development by one percent, leads to even more traffic of tourists to Tanzania annually of about 0.6–1.2 percent.

Contrary to the effects of income of tourists and infrastructure development in Tanzania, an increase in transportation cost is detrimental to the demand of Tanzania's tourism products. Specifically, when transportation cost increases by one percentage point, the number of tourists coming to Tanzania decreases by 0.1–0.3 percentage points

every year. Inflation also has negative effects on tourism demand; equivalent to 1.3 percent decrease in the number of tourists visiting Tanzania annually, with every one percent increase in inflation rate

7.2. Policy implications

Taking into consideration the findings in this study, we recommend the government and stakeholders to work towards making Tanzania tourism products more competitive by developing/improving infrastructure in the country. Tanzania's international visitors' exit survey reports point to improvement/development of roads and other (transport) infrastructure, cleanliness of public washrooms and easing congestion on the roads. Moreover, there should be a policy that encourages developing tourism packages that fit the demands of tourists from relatively high income countries, and also make conscious efforts to market these products in the target countries.

The number of tourists originating from neighboring and other African countries should not be ignored, since transportation cost and political and social instability are some of the factors that influence international tourism demand. Evidence in the descriptive analysis showed that majority (44.3 percent) of international tourists to Tanzania are from other African countries compared to those from Europe (31.8 percent) and Americas (9.2 percent), and these tourists come for leisure and holiday (73 percent); and tend to travel by air (roughly 60 percent in 2016). This suggests that most of the African tourists tend to be from high/middle income category in their respective countries, and therefore, could be spending more in the country. While majority might not be visiting the national parks, they could be coming to the beaches, getting accommodation in hotels outside the national parks (since only 11 percent travel to visit friends and relatives), dining in local restaurants, and buying souvenirs. Consequently, African tourists boost Tanzania's tourism sector output through allied sectors. Moreover, they smooth out output fluctuations in the sector since they are not highly prone to seasonal fluctuations (that impact tourists from western countries), and are less discouraged by social and political instability in the country due to shared experiences. In other words, they are more dependable compared to those from outside Africa, and should be considered as an important segment of international tourists in Tanzania. Accordingly, from a policy standpoint, Tanzania could work with its regional partners to improve transportation network across these countries, but at the home front, Tanzania could ease visa requirements from the target African countries. Lowering the cost of living and improving the exchange rate are also some of the areas that the government could work on to help grow the tourism industry.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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