TOURISM – EXPORTS AND ECONOMIC GROWTH IN AFRICA

BY

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Problem Statement

Tourism has continued driving itself onto the radar of developing countries' policy makers. The growth of tourism has been sustained at 7-12% per year in most developing countries in the last five years (ODI, 2007). At the local and international level, it is being seen as an impetus to sustained growth and development, and no longer as a generator of foreign exchange. It is often included in more than 80% of low income counties Poverty Reduction Strategies (ODI, Ibid). However, practical action to harness tourism for sustained growth and development is being hindered by the elusive nature of the evidence on pro-poor impact, and the policy void on tourism that exists in many donor and financing organisations.

Tourism generates a vital amount of foreign exchange earning that also contributes to the sustainable economic growth and development of developed world. However, such component of growth has not been effectively and appropriately utilized by African countries. World Tourism Organisation (2005) reports that in 2004, 766 million of tourists generated $626 billion (excluding transport). In the same year, the share of Africa in global tourist arrivals was just 4.3% (33 million tourists), which is a positive figure compared to what she obtained in 2000 (28.2 million tourists), which was 4%.

Tourism's contribution to economic growth and development could be seen from its exports, and this according to WTO (2006) represents over 40% of all services exports, which puts it as the highest category of global trade. WTO (2005) estimates put tourism to have accounted between 3% to 10% of the GDP in the developing world. Thus, we find it not surprising that tourism has become a viable export-oriented economic growth strategy for the creation of employment and the

reduction of abject poverty. However, despite the popularity and increasing importance of tourism among continents of the world and particularly Africa, it has attracted relatively low attention in the economic development literature. Many studies that examined cross-country growth rates and development were often focused on the contributions of exports from either agriculture or manufacturing sectors, rather than those of the services sector of the economy. Even the little literature that focuses on service sector and more specifically on the tourism sector in developing countries are mainly concerned with the estimation and forecasting of tourism demand and income generation via the multiplier process (Sinclair, 1999; Naude and Saayman, 2004; Bezmen, 2006; Odularu and Kareem, 2007, Kareem, 2007). It is against this background that we intend to know whether tourism exports drive growth in Africa, and to ascertain if tourism exports could accelerate long run economic growth.

Justification

Tourism has become one of the most significant export sectors in many developing countries, especially in the least developed countries. This sector provides a large number of jobs because it is labour intensive. According to ODI (2007), tourism has accounted to equivalent to around 2-6% of jobs in Africa and these include jobs for the women (around 50% of the workforce), unskilled and informal sector workers.

Empirical evidence in some micro studies have shown that income flows and other net benefits to participants at enterprise level, especially where pro-poor tourism initiatives are put in place to assist micro entrepreneurs gain market access to many markets.

Tourists often demand in their destinations, these four main goods and services: accommodation, food, transportation facilities and entertainment services. In

order to satisfy these demands, many of the developing countries need to increase their current level of production, which provides two positive effects on their economy. First, increased production that will ultimately improve the income level. Second, given the fact that tourism sector is labour intensive, it will therefore reduce the level of unemployment and thereby alleviate the extent of poverty in the economy of these regions. This is highly important in the case of regions with high rates of unemployment, low level of per capital GDP, one source of foreign exchange earning and export products facing difficulties in competing internationally.

Furthermore, one of the main factors to economic growth in Africa is the export of additional commodities, which have minor or no domestic demand. This means that Africa is a poor continent due to the fact that her range of commodities for export is very low and not necessarily because of trade restrictions in the developed countries.

It is as a result of this that a lot of efforts have been put in place by many African countries to diversify their economies and to increase their export commodities in international markets through the promotion and enhancement of export through tourism sector. It has also been seen that for adequate and appropriate development of the rural as well as the urban areas of the continent, the promotion of tourism export through the provision of necessary facilities at the tourism sites is inevitable. Given this, we find it worthwhile investigation whether tourism export in Africa has the potential of translating to economic growth.

Following the review of empirical literature on tourism-export led growth hypothesis, we discovered that most of the studies did not evaluate the long run relationship as well as the direction of causality between tourism and economic growth, but rather they show the effect of tourism exports on economic growth.

Eugenio-Martin, Morales and Scarpa (2004) consider the effect of tourism on economic growth in Latin American countries from 1985 to 1998 using Arrelano-Bond dynamic panel estimation technique. Also, Sequeira and Campos (2005) examine the relationship between international tourism exports and economic growth using a panel data approach. Ledo and Iglesians (2007) evaluate the relationship between tourism activities and local development in the Spanish Urban Settlement using a time series analysis. Further, Fayissa, Nsiah and Tadasse (2007) examine the effect of tourism on economic growth in sub-Saharan African countries with the application of dynamic panel data analysis. Thus, it is as a result of this explicit gap in the literature that we intend to fill with the use of panel granger causality approach in determining the direction of causality between tourism and economic growth in Africa.

Furthermore, after perusing through the literature, we find out that there is a gap in establishing the long run relationship between tourism-exports and economic growth, especially at the panel data level. Balaguer and Cantavella-Jorda (2000) evaluate the role of tourism in the long run economic development of Spain using Johansen time series cointegration approach. One can understand the reason why most studies have not use panel cointegration approach because it is relatively new in panel data analysis. It is as a result of this that this study tends to establish the long run relationship between tourism-exports and economic growth in Africa. Therefore, the establishment of the direction of causality and the long run relationship in the tourism-export led growth hypothesis would serve as our major contributions to the existing literature and specifically in trade in service literature.

Tourism in Africa

Tourism is one of the major global economic activities. Tourism is said to be an important ingredient for economic development through its impact on employment generation, enhancement of infrastructure provision, generation of income taxes, exports and by acceleration global peace (Eilat and Einav, 2003). According to Sinclair (1999), the contribution of tourism to development is well documented and tourism is now among the fastest growing industries in the world. Competition among destinations has intensified to attract more and more tourists.

Tourism growth has been impressive in recent years and this has shown in the number of tourism arrivals in all countries that increased from 25.3 million in 1950 to 69.3 million in 1960 and later to 165.8 million in 1970. Despite the drag in the growth rate of tourist arrivals since 1970, world tourist arrival multiplied by a factor of about 27 between 1950 and 2000 (see table 1). Thus, from 25.3 million in 1950, international tourist arrivals reached 763.2 million in 2004, with an average annual growth rate of 6.4 per cent. In terms of global tourism receipts, the world witnessed an increase in tourism receipt from US$2.1billion in 1950 to US$17.9billion in 1970 and later rose to US$106.5 billion in 1980. Due to more and more arrivals in the world and with their accompany expenditure, international tourism receipts increased from US$105 billion in 1980 to US$479.2 billion twenty years after. This increasing trend continues till 2004, where the total global tourism receipts amounted to US$622.7billion. Thus, tourism is one of the most flourishing sectors in the world given that its global receipt have grown by 12 per cent over the last ten years (Durbarry, 2001). This has led to the case where many countries are setting targets in attempts to gain the additional income, foreign currency, employment and tax revenue that the sector can provide.

It is as a result of this that many African countries have started tapping the potentialities that is embedded in tourism and hospitalities. According to Kester (2003), tourism has the potential to contribute significantly to economic growth and development in Africa. Naude and Saayman (2004) opined that Africa's cultural and natural resource endowment are such that it ought to be benefiting largely from tourism, while Christie and Crompton (2001) believe that African has "exceptional" tourism potentials and that it is increasingly contributing to the continent's gross domestic products (GDP) and exports.

Table 1: International Tourism Arrivals, 1950-2004 (million)

Year	World	Africa	America	Asia & Pacific	Europe	Middle East
1950	25.3	0.5	7.5	0.2	16.8	0.2
1960	69.3	0.8	16.7	0.9	50.4	0.6
1970	165.8	2.4	42.3	6.2	113.0	1.9
1980	278.2	7.3	62.3	23.6	117.5	7.5
1990	441.0	15.2	92.8	57.7	265.3	10.0
2000	680.6	28.2	128.2	114.9	384.1	25.2
2001	680.4	28.9	122.1	120.7	383.8	25.0
2002	700.4	29.5	116.6	131.1	394.0	29.2
2003	689.7	30.8	113.1	119.3	396.6	30.0
2004	763.2	33.2	125.8	152.5	1416.4	35.4

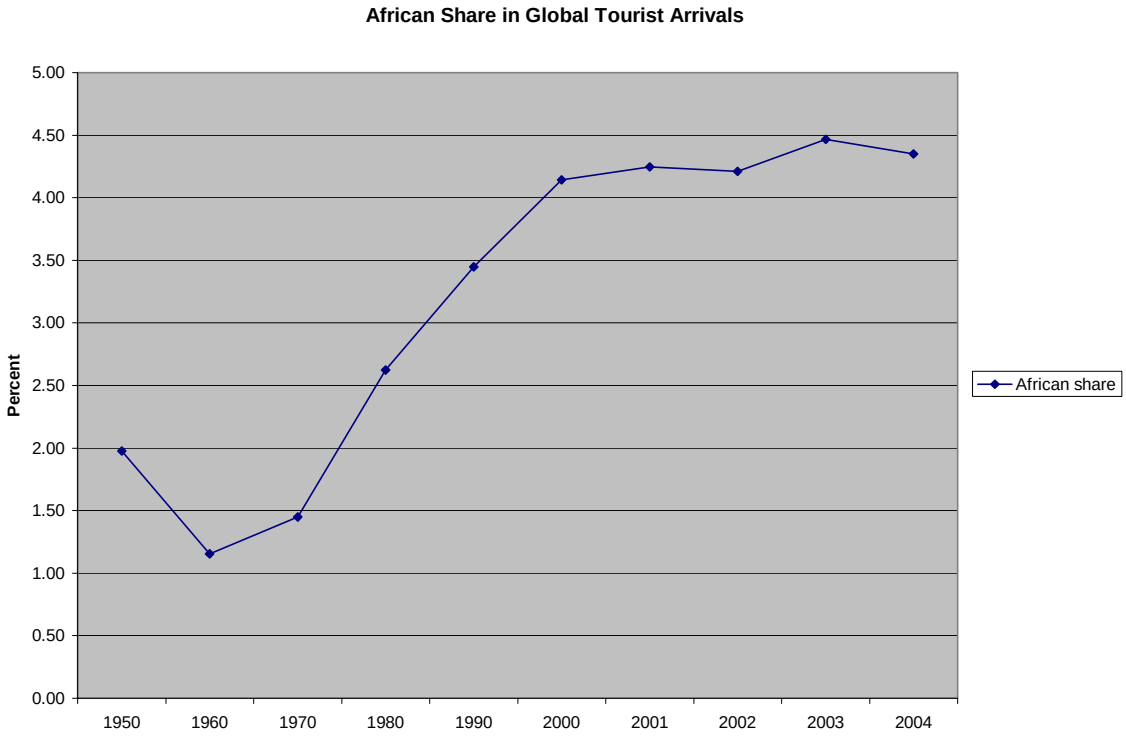
Source: World Tourism Organisation (2005)

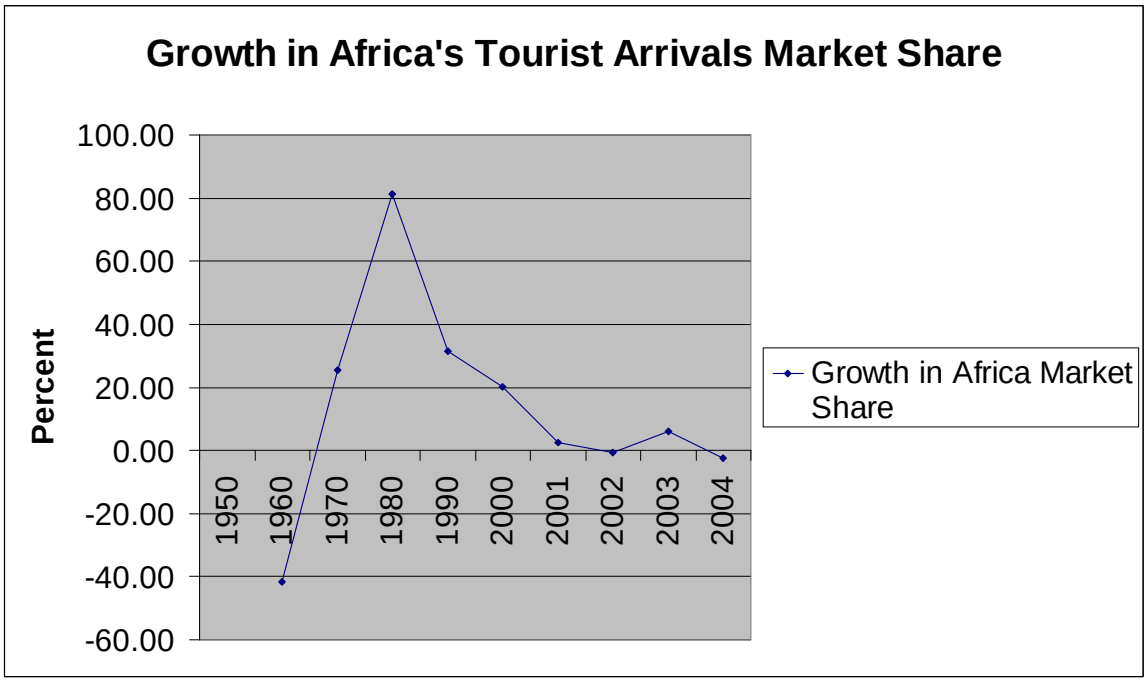
Table 2: International Tourism Receipt, 1950-2004 US$ (billion)

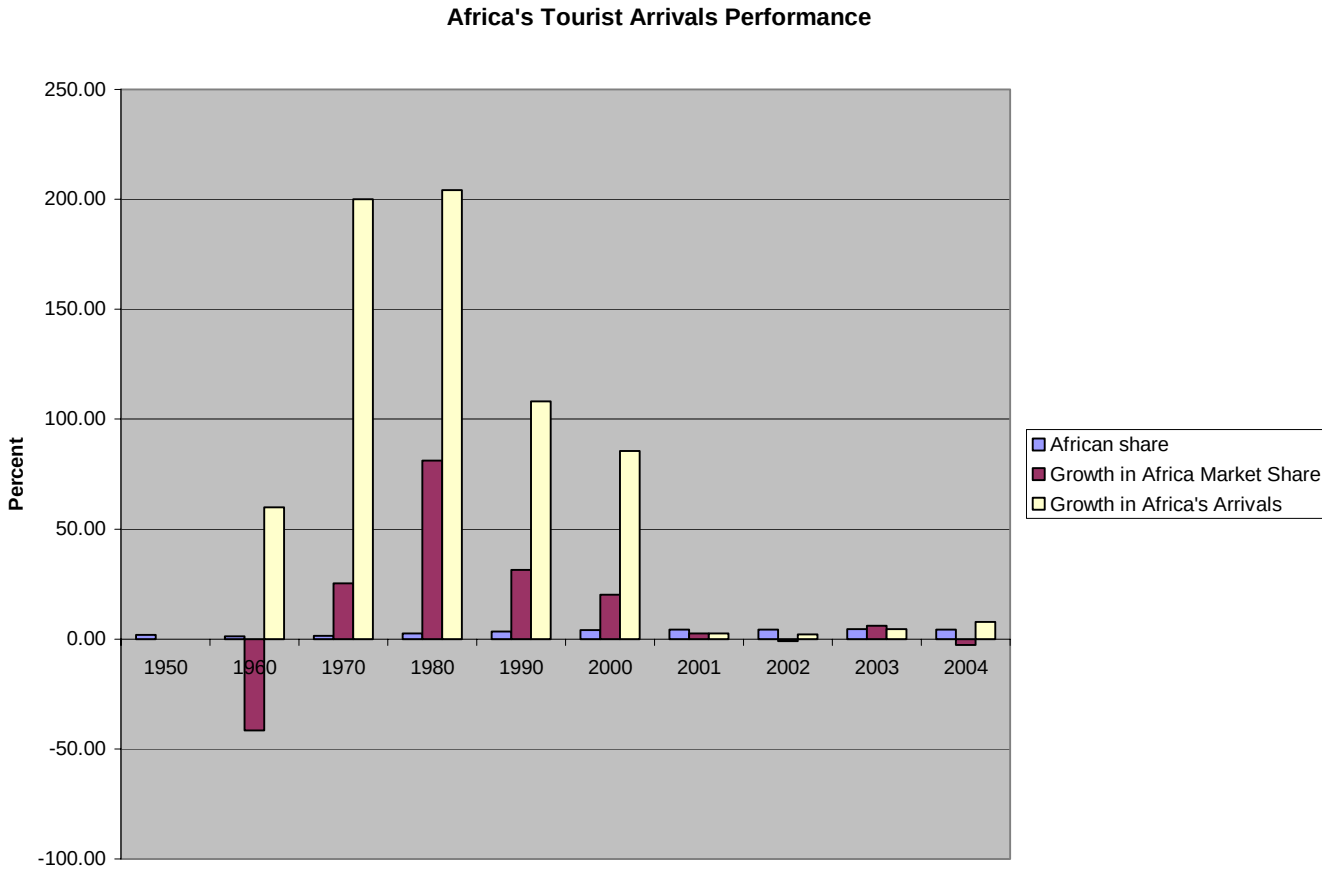
Year	World	Africa	America	Asia & Pacific	Europe	Middle East
1950	2.1	0.1	1.1	0.04	0.9	0.03
1960	6.9	0.2	2.5	0.2	3.9	0.1
1970	17.9	0.5	4.8	1.2	11.0	0.4
1980	106.5	3.4	24.7	11.3	63.7	3.5
1990	273.2	6.4	69.3	49.7	145.6	5.1
2000	479.2	10.6	131.0	90.4	231.6	15.6
2001	467.0	11.5	119.8	93.5	226.7	15.5
2002	481.6	11.8	113.7	99.1	241.2	15.7
2003	524.2	15.5	114.1	94.9	282.9	16.8
2004	622.7	18.3	131.7	125.0	326.7	21.0

Source: World Tourism Organisation (2005)

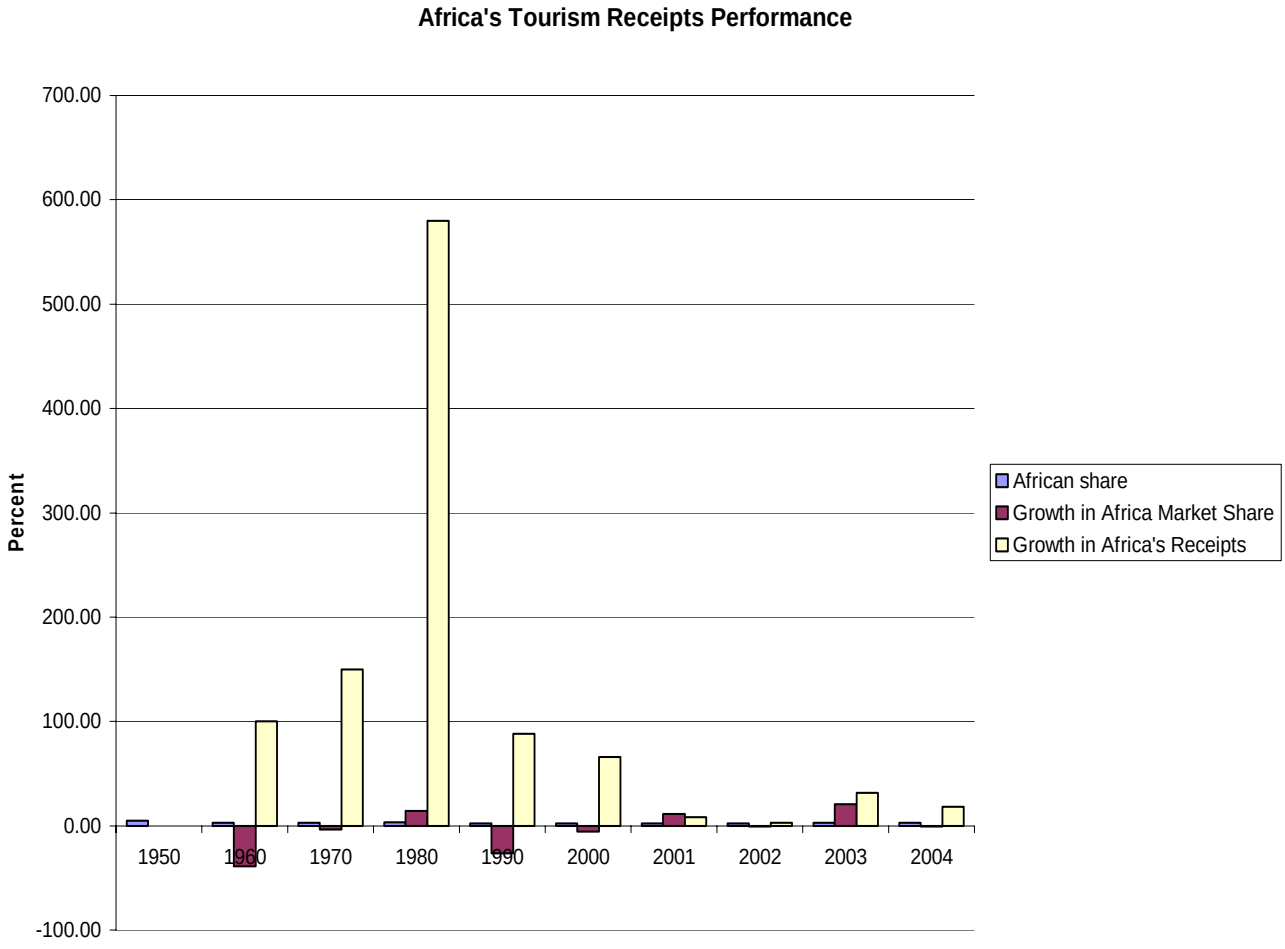
International tourist arrivals to Africa destinations increased from just 500,000 in 1950 to over 15 million in 1990 (see table 1 above). This increase in arrivals continued, reached 28.2 million in 2000 and later rose to 33.2 million in 2004. This really shows that Africa tourist arrivals have been growing overtime. According to WTO (2003) figures, Africa tourism has grown significantly since 1990. In terms of the continent's receipts on global tourism, table 2 shows that African's receipts on international tourism rose from US$100 million in 1950 to US$3.4 billion in 1980, which later increased to US$6.4 billion in 1990. By 2000, African tourism receipts have risen to US$10.6billion and reached US$18.3 billion in 2004. These incremental trends in African arrivals and receipts literarily depict that Africa is performing in term of tourism, but when we look at its share in the global tourism, we can see that though it share in international tourist arrivals increased from 1.98 per cent in 1950 to 4.25 per cent in 2001, which is about 130 per cent increment. This latter fell in 2002 to 4.21 per cent and picked up by 2004 to 4.4 per cent of the global tourist arrivals (see figure 1). In terms of the growth rate, the continent witnessed a negative growth in 1960 of about 42 per cent of its arrivals. This later change to a positive growth rate of about 81 per cent in 1980 (the peak), afterwards, there the growth rate has been increasing at a decreasing rate till 2004 when she witnessed a negative growth rate in arrivals of 6 per cent (see figure 2).


African Share in Global Tourist Arrivals
Percent
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1950
1960
1970
1980
1990
2000
2001
2002
2003
2004
African share


Growth in Africa's Tourist Arrivals Market Share
Percent
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
1950
1960
1970
1980
1990
2000
2001
2002
2003
2004
Growth in Africa Market Share



The case of the growth rate of Africa's tourist arrivals is not different with her receipts, as she experienced a negative growth rate of her receipt in 1960 (39 per cent) and by 1990, it has reduced to –27 per cent and later to –0.7 per cent in 2004 (see figure 4).



Regionally, there are differences in the performance of these regions in the continent. According to WTO figure (2003), there has been considerable improvement in tourism in Africa, especially in 1990, particularly that of southern Africa that has grown by about 300% between 1990 and 2002 (see table 3 below). However, North Africa still remains the most attractive regional destination, capturing 1.5% of the total international tourism market share (Naude and Saayman, 2004). Worth of noticing is that as the tourist arrivals in Africa increased in 2001 that of the world tourism decreased during the period. The report of WTO (2003c) indicates that there had been an increasing trend in tourism in Africa despite the SARS virus that affected the Asia counties and the war in Iraq.

Central Africa remains the least tourist arrivals destinations in the continent followed by the West African destinations. This might be due to the inadequate infrastructural facilities that are available for tourism in these destinations.

Table 3: Africa's International Tourist Arrivals by Region

	1990	**1995**	**2000**	**2002**	**2003**	**2004**	**1995***	**2004***
Africa	15,160	20,438	28,154	29,492	30,763	33,222	100	100
North Africa	8,398	7,271	10,202	10,407	11,092	12,791	35.6	38.5
West Africa	1,352	1,913	2,451	2,728	2,762	2,960	9.4	8.9
Central Africa	365	357	665	627	677	788	1.7	2.4
East Africa	2,842	4,906	6,600	6,927	7,251	7,483	24.0	22.5
South Africa	2,203	5,991	8,235	8,804	8,980	9,199	29.3	27.7

Source: World Tourism Organisation (2004)

Review of the Literature

As it is in the export-led growth hypothesis, a tourism-led growth hypothesis postulates the presence of several arguments for which tourism export would become a main determinant of overall long run economic growth. Hitherto, it is argued that tourism brings in foreign exchange that can be used to import capital goods in order to produce goods and services in the economy, which in turn leads to economic growth. This means that it is possible for tourism to provide a remarkable part of the necessary development financing. If the earnings from tourism could be used to import capital goods or basic inputs for producing goods in any area of the economy, then, one can say that earnings from tourism are playing a fundamental role in economic development. Of course, given these potentials of tourism, it become obvious that non-tourist regions will also gain from it, as a result of the distribution of a country's wealth.

However, recently, it is now acknowledged that tourism could contribute to a rise in income and economic development as it is in the export-led growth hypothesis. First, it has the potential of enhancing efficiency through increased competition among firms and other international tourism destinations (Bhagwati and Srinivasan, 1979; Krueger, 1980; Balaguer and Cantavella-Jorda, 2000), and secondly, it facilitates the exploitation of economies of scale in local firms (Helpman and Krugman, 1985; Thornton, 2000).

Further, it is seen that the bulk of the tourist's expenditure is spent on the consumption of non-traded goods and services in the host country and there exist factors that can either have a positive role or an unfavourable impact on economic growth. These non-traded goods and services are not exportables in the traditional sense due to the fact that their prices are not determined in the global market, but rather in the domestic market. The consumption of these non-tradable goods and services by tourists has effect on the relative price and availability of these non-tradable goods and services for the domestic consumers.

In the literature, a lot of articles have been written on the relationship between tourism growth and welfare where tourists consume non-tradable goods and services and these studies adopt mostly static framework. Hazaru and Kaur (1993) argue that in a Komiya (1963) type first-best model, tourism is always welfare improving. Also, Hazari and Ng (1993) show that in a monopoly power framework, tourism may be welfare reducing, in another article, Hazari and Sgro (1995) developed a dynamic model in which a favourable impact of a buoyant world demand for tourism would have a positive effect on the long run growth of a small economy. This favourable impact is generated by tourism behaviour as a time-saving device that allows

domestic population to consume now rather than later due to the requirement of a lower saving rate.

Balaguer and Cantavella-Jorda (2000) examine the role of tourism in the long run economic development of Spain, in which the tourist-led growth hypothesis was tested. Their result indicates that economic growth in Spain is sensitive to persistent expansion in international tourism. The increase in this activity has produced multiplier effects over time. External competitiveness has also been seen in the model to be a fundamental variable for Spanish economic growth in the long run. From their empirical analysis, it can be inferred, the positive effect of tourism on income and adequacy of supply.

Fayissa, Nsiah and Tadasse (2007) examine the impact of tourism on economic growth and development in Africa using a panel data analysis. They discovered that tourism receipts significantly contributed to the current level of gross domestic product and the economic growth of sub-Saharan African countries as with investment in physical and human capital. Their findings indicate that African economies could enhance their short-run economic growth by strategically strengthening their tourism industry.

Eugenio – Martin, Morales and Scarpa (2004) consider the relationship between tourism and economic growth in Latin America countries from 1985 to 1998. They based their analysis on panel data approach and the Arrellano-Bond estimator for dynamic panels, in which they obtained estimates of the relationship between economic growth and growth in tourist per capita conditional on main macroeconomic variables. Further, they identified that tourism sector is adequate for the economic growth of medium or low income countries, though not necessarily for developed countries. Then, they invert the causality direction of the analysis. Rather

than explaining economic growth, they explained tourism arrivals conditional on GDP and other covariates such as safety, prices and education level, and investment in infrastructures. Using generalized least square AR(1) panel data model, their results indicate that low income countries seem to need adequate levels of infrastructures, education and development to attract tourists. While the middle income countries need high levels of social development like health services and high GDP per capita levels. They conclude that price of the destination in terms of exchange rate and purchasing power parity (PPP) is irrelevant for tourism growth.

Sequeira and Campos (2005) carried out a study on the relationship between international tourism and economic growth using a panel data approach and find out that on the average, tourism-specialized countries grow more than others, but this is inconsistent with economic theory, in particular, endogenous growth theory suggests that economic growth is linked with; sectors with high intensity in research and development (R & D) and thus high productivity, and large scale economies**.** Thus, they went further in treating the endogenity problem and discovered that contrary to previous studies, tourism on its own cannot explain the higher growth rates of the tourism-specialized countries.

Ledo and Iglesias (2007) study the tourist activities and local development in the Spanish urban settlement system. They intend to find out the relationship between the function of tourism, population growth and the socio-economic development, taking into account the type of tourist activity which is dominant. They concluded that tourism is running as an urban and territorial development factor, generating significant changes in the system of settlement but it nether acts the same way nor has the same impact on all municipalities or in all cities.

Methodology

The methodological approach that we have used in this study is different from what is usually used in the literature of tourism and economic growth. Most of the literature on the tourism-export led growth hypothesis have adopted panel regression analysis in testing the validity of the hypothesis (see Sequeiroa and Campos, 2005; Ledo and Iglesias, 2007; Fayissa, Nsiah, and Tadasse, 2007; etc). However, due to recent development in the analytical framework of trade in service sector and in econometric analysis, the use of panel regression analysis cannot depict the direction of causality and long run relationship between tourist exports and economic growth. The panel regression analysis can only give the effect through the degree of association between tourism exports and economic growth. Thus, in order to ascertain the direction of causality between tourism exports and economic growth, one would need an estimation technique that can give appropriate causality estimation. The panel granger causality test could be used to carry out the causality test between tourism exports and economic growth.

Though, the panel granger causality test will be used to determine the direction of causality in this study, we also intend to ascertain the panel properties of the data in order to show that the panel data do not random walk. Further, to be able to use the result of this study to predict the future occurrence between tourism and economic growth in Africa, we are going to establish the long run relationship in the model through the panel cointegration test. This study covers the period from 1995 to 2004 for thirty six African countries[1]. We have used real gross domestic product (RGDP) to measure economic growth while tourism expenditure (Texpenditure) and

[1] We intend to cover all countries in Africa, but data are available for the following countries: Algeria, Angola, Benin, Botswana, Burundi, Cameroon, Cape Verde, Chad, Congo Rep., Cote d'Ivoire, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Tunisia, Zambia, Zimbabwe.

tourism receipt (Treceipt) have been used to capture tourism- exports. The data for the analysis were sourced from World Bank – World Development Indicators, 2007.

Panel Unit Root Test

Unit root test in time series analysis is a usual phenomenon among applied researchers and has become an integral part of econometric analysis. However, unit root in the panel data analysis is recent (Maddala and Wu, 1991; Hadri, 1999; Choi, 1999; etc). Bharagava et al. (1982) advocate a test for random walk residuals in a dynamic model with fixed effects. They suggested a modified Durbin-Watson (DW) statistic based on fixed effects residuals and two other test statistics based on differenced OLS residuals. Quah (1994) suggested a test for unit root in a panel data model without fixed effects where both N (number of country) and T (length of time series) go to infinity at the same rate such that N/T is constant. This model was generalized by Levin and Lin (1992) to allow for fixed effects, individual deterministic trends and heterogeneous serially correlated errors. They assumed that both N and T tend to infinity, but, T grows faster than N with $N/T \rightarrow 0$.

According to Phillips and Moon (1999) despite the fact that the literature grew from time series and panel data, the way in which, N, the number of cross section units and T, the length of the time series, tend to infinity is crucial for determining asymptotic properties of estimators and tests proposed for non-standard panels.

Furthermore, it is important to mention that micro panel data deals with large N and small T, while the macro panels deal with large N and large T, thus, it is appropriate here to give attention to non-stationarity. Basically, time series fully modified estimation techniques that account for endogeneity of the regressors and correlation and heteroscedasticity of the residuals can now be combined with fixed

and random effects panel estimation methods. Part of the distinguishing results that are found with non-stationary panels are that a lot of the test statistics and estimators of interest have normal limiting distribution. This case is difference from that of the non-stationary time series literature where the limiting distributions are complicated functional of Weiner Processes.

However, many of the unit root tests that are applied in the time-series literature have been extended to panel data. When the panel data are both non-stationary and heterogeneous, issues of combining individual unit root tests applied on each time series are tackled by Im, Pesaran and Shin (2003), Maddala and Wu (1999), and Choi (1999a). Thus, Kao (1999) opined that one can avoid the problem of spurious regression by using panel data. Even in the case of spurious regression in panel data, it is different from that of time series spurious regression literature, given that its estimates give a consistent estimate of the true value of the parameter as both N and T tend to ∞. This is due to the fact that the panel data estimator averages across individuals and the information of independent cross-sectional in the panel tends towards a stronger overall signal than the pure time series case.

Levin and Lin Tests

This test for the properties of the panel data in any panel analytical method. It indicates whether there is white noise or unit root in the panel or not, the specification is given below:

Consider the model

$$Y_{it} = \rho_i Y_{it-1} + Z_{i't}\Upsilon + \mu_{it},\ i = 1, - - -, N; t = 1, - - -, T \quad \text{---------- (1)}$$

Where Z_{it} is the deterministic component and V_{it} is a stationary process. Z_{it} could be zero, one the fixed effects, U_{it} or fixed effect as well as a time trend, t. The Levin and Lin (1992) (LL) tests assume that U_{it} are IID $(0, \delta^2 u)$ and pi = P for all. This means

that the coefficient of the lagged dependent variable is assumed to be homogeneous across all cross-section units of the panel. Also, the individual processes are cross-sectionally independent. The null hypothesis is that each series in the panel contains a unit root, i.e. $H_0 : \rho = 1$ against the alternative hypothesis that all individual series in the panel are stationary, i.e. $H_i : \rho \angle 1$

Let $\hat{\rho}$ be the OLS estimator of ρ in equation (23) and define

$Z_t = \left(Z_{it,---,}Z_{Nt}\right)'$, $h(t,s) = Z'_t(\sum_{t=1}^{T} Z_t Z'_t)^{-1} Zs$, $\tilde{\mu}_{it} = \mu_{it} - \sum_{s=1}^{T} h(t,s)\mu_{is}$ and

$\tilde{y}_{it} = y_{it} - \sum_{t=1}^{T} h(t,s) y_{is}$.

Then we have:

$$\sqrt{NT}(\hat{\rho}-1) = \frac{\frac{1}{\sqrt{N}}\sum_{i=1}^{N}\frac{1}{T}\sum_{t=1}^{T}\tilde{y}_{it-1}\tilde{\mu}_{it}}{\frac{1}{N}\sum_{t=1}^{N}\frac{1}{T^2}\sum_{t=1}^{T}\tilde{y}^2{}_{it-1}} \quad \text{---------- (2)}$$

And the corresponding t-statistic, under the null hypothesis is given by:

$$t_\rho = \frac{(\hat{\rho}-1)\sqrt{\sum_{i=1}^{N}\sum_{t=1}^{T}\tilde{y}^2{}_{it-1}}}{Se} \quad \text{---------- (3)}$$

Where $Se^2 = (1/NT)\sum_{i=1}^{N}\sum_{t=1}^{T}\tilde{\mu}^2{}_{it}$

Virtually all the existing non-stationary panel literature assumes cross-sectional independence. It is true that the assumption of independence across i is rather strong, but it is needed in order to satisfy the requirement of the Linderberglevy central limit theorem. Moreover, as pointed out by Quah (1994), modeling cross-sectional dependence is involved because individual observations in a cross-section

have no natural ordering. Conley (1999) presented a model called spatial model of dependence among agents using a metric of economic distance that provides cross-sectional data with a structure similar to time-series data. He proposed a generalized method of moments (GMM) using such dependent data and a class of nonparametric covariance matrix estimators that allow for a general form of dependence characterized by economic distance.

Im, Pesaran and Shin (IPS) Tests

This is another test of stationarity of panel data variables in the model. The Levin and Lin test is restrictive in the sense that it requires ρ to be homogeneous across i. As Maddala (1999) pointed out, the null may be good for testing convergence in growth among countries, but the alternative restricts every country to converge at the same rate. Im, Pesaran and Shin (1997) allow for a heterogeneous coefficient of y_{it-1} and propose an alternative testing procedure based on averaging individual unit root test statistics. IPS suggest an average if the augmented DF (ADF) tests when μ_{it} is serially correlated with different serial correlation properties across cross-sectional units, i.e. $\mu_{it} = \sum_{j=1}^{\rho_i} \varphi_{ij}\mu_{it-1} + \varepsilon_{it}$. Substituting this μ_{it} in equation (23) we get

$$y_{it} = \rho_i y_{it}-1 + \sum_{j=1}^{\rho_i} \varphi_{ij}\Delta y_{it}-1 + Z'_{it}\gamma + \varepsilon_{it} \quad \text{---------- (4)}$$

The null hypothesis is that each series in the panel contains a unit root, i.e. $H_0 : \rho_i = 1$ for all i and the alternative hypothesis is that at least one of the individual series in the panel is stationary, i.e. $H_1 : \rho_i \angle 1$ for at least one i. The IPS t-bar statistic is defined as the average of the individual ADF statistics as:

$$\bar{t} = \frac{1}{N}\sum_{i=1}^{N} t\rho_i \text{ ---------- (5)}$$

Where $t_{\rho i}$ is the individual t-statistic for testing $H_0 : \rho_i = 1$ for all i in equation (26). It is known that for a fixed N:

$$t_{\rho i} \Rightarrow \frac{\int_0^1 W_{iz} dW_{iz}}{\left[\int_0^1 W_i{}^2{}_z\right]^{1/2}} = t_{iT} \text{ ..... (6)}$$

as $T \to \infty$, where $\int W(r)dr$ denotes a weiner integral with the argument r suppressed in equation (28). IPS assumes that t_{iT} are IID and have finite mean and variance. Then,

$$\frac{\sqrt{N}\left(\frac{1}{N}\sum_{i=1}^{N} t_{iT} - \frac{1}{N}\sum_{i=1}^{N} E\left[t_{iT} / \rho_i = 1\right]\right)}{\sqrt{\frac{1}{N}\sum_{i=1}^{N} Var\left[t_{iT} / \rho_i = 1\right]}} \Rightarrow N(0,1) \text{ ..... (7)}$$

As $N \to \infty$ by the Lindeberg-levy central limit theorem .

Hence:

$$t_{IPS} = \frac{\sqrt{N}\left(\bar{t} - \frac{1}{N}\sum_{i=1}^{N} E\left[t_{iT} / \rho_i = 1\right]\right)}{\sqrt{\frac{1}{N}\sum_{i=1}^{N} Var\left[t_{iT} / \rho_i = 1\right]}} \Rightarrow N(0,1) \text{ .....(8)}$$

As $T \to \infty$ followed by $N \to \infty$ sequentially. The values of $E\left[t_{iT} / \rho_i = 1\right]$ and $Var\left[t_{iT} / \rho_i = 1\right]$ have been computed by IPS via simulations for different values of T and ρ_i's . IPS also suggested a group men Lagrange multiplier test for testing $\rho_i = 1$. In Monte Carlo experiments, they show that the average LM and t-statistics have better finite sample properties that the LL tests.

The LL and IPS tests require $N \to \infty$ such that $N/T \to 0$, i.e. N should be small enough relative to t. This means that both tests may not keep nominal size well

when either N is small or N is large relative to T. In fact, the simulation result of Im, Pesaran and Shin (1997) show that both IPS and LL have size distortions as N gets large relative to T. Breitung (2000) studies the local power of LL and IPS test statistics against a sequence of local alternatives. Breitung finds that the LL and IPS tests suffer from a dramatic loss of power if individual specific trends are included this is due to the bias correction that also removes the mean under the sequence of local alternatives. Breitung suggests a test statistic t that does not employ a bias adjustment whose power is substantially higher than that of LL or the IPS test using Monte Carlo experiments. The simulation results indicate that the power of LL and IPS tests is very sensitive to the specification of the deterministic terms.

Residual Based LM Tests

Hadri (1999) proposed a residual-based Lagrange multiplier (LM) test for the null that the time series for each i are stationary around a deterministic trend against the alternative of a unit root in panel data. Consider the following model:

$y_{it} = Z'_{it}\gamma + r_{it} + \varepsilon_{it}$ ---------- (9)

Where Z_{it} is the deterministic component, r_{it} is a random walk,

$r_{it} = r_{it-1} + u_{it}$

$uit \square IID(0, \sigma^2 u)$ and ε_{it} is a stationary process. Equation (31) can be written as:

$y_{it} = Z'_{it}\gamma + e_{it}$ ---------- (10)

Where,

$$e_{it} = \sum_{j=1}^{t} u_{ij} + \varepsilon_{it}$$

Let $\hat{e}_{it}$ be the residuals from the regression in equation (32) and $\hat{\sigma}^2 e$ be the estimate of the error variance. Also, let S_{it} be the partial sum process of the residuals, $S_{it} = \sum_{j=1}^{t} \hat{e}_{ij}$. Then, the LM statistic is

$$LM = \frac{\frac{1}{N}\sum_{i=1}^{N}\frac{1}{T^2}\sum_{t=1}^{T} S^2{}_{it}}{\hat{\sigma}^2 e}$$

It can be shown that

$$\mathrm{L}\, LM \rightarrow E\left[\int W_i^2 Z\right]$$

As $T \rightarrow \infty$ followed by $N \rightarrow \infty$ provided $E\left[\int W_i^2 Z\right] \angle \infty$.

Also,

$$\frac{\sqrt{N}(LM \rightarrow E\left[\int W_i^2 Z\right])}{\sqrt{Var\left[\int W_i^2 Z\right]}} = N(0,1)$$

As $T \rightarrow \infty$ followed by $N \rightarrow \infty$.

Consider the nonstationary dynamic panel data model

$$y_{it} = \alpha i0 + \alpha i1 + y^0{}_{it}$$
$$y^0{}_{it} = \beta y^0{}_{it-1} + u_{it}$$

With $\beta =$ exp (C/T). Moon and Phillips (2000) focused on estimating the localizing parameter C and β, which characterizes the local behaviour of the unit root process. Information about C is useful for the analysis of the power properties of unit root tests, conitegration tests, the construction of confidence intervals for the long run autoregressive coefficient, the development of efficient detrending methods and the construction of point optimal invariant tests for a unit root and cointegrating rank. Moon and Phillips (2000) show that when C≤ 0, it is possible to estimate this local

parameter consistently using panel data. In turn, they show how to extract the deterministic trend efficiently using this consistent estimate of C.

Panel Cointegration Test

This study adopted the Pedroni (Engle-Granger based) cointegration tests that was introduced by Pedroni (1999, 2004) because it proposes several tests for the null hypothesis, which allow for the consideration of heterogeneity. The Engle-Granger (1987) cointegration test is based on an examination of the residuals of a spurious regression performed using I(1) variables, but in the case where the variables are cointegrated, then, the residuals will be I(0). Contrary to this is a case where the variables are not cointegrated, which makes the residuals to be I(1). It is Pedroni (1999, 2004) and Kao (1999) that extended this Engle-Granger cointegration framework to the panel data analysis.

Pedroni proposes several tests for the cointegration that allow for heterogeneous intercepts and trend coefficients across cross-sections. Let us consider the regression below:

$$y_{it} = \alpha_i + \partial_{it} + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \ldots + \beta_{mi}x_{mi,t} + \varepsilon_{i,t} \qquad (11)$$

For t = 1, …. , T; i = 1, …. , N; m = 1, …., M; where y and x are assumed to be integrated or order one, e.g. I(1). The parameters α_i and ∂_{it} are individual and trend effect that may be set to zero if desired.

In the case of null hypothesis of no cointegration, the residuals $\varepsilon_{i,t}$ will be I(1). However, the general method is to obtain residuals from equation (11) and then test if the residuals are I(1) by running the auxiliary regression,

$$\varepsilon it = \rho i \varepsilon it - 1 + \mu it \qquad (12)$$

or

$$\varepsilon_{it} = \rho_i \varepsilon_{it-1} + \sum_{j=1}^{\rho_i} \psi_{ij} \Delta \varepsilon_{it-j} + \mu_{it} \qquad (13)$$

for each cross-section, Pedroni describes various methods of constructing statistics for testing for null hypothesis of no cointegration ($\rho_i = 1$). Two alternative hypotheses can be distinguished: the homogeneity alternatives, ($\rho i = \rho$) < 1 for all I (that Pedroni called within-dimension test or panel statistics test), and the heterogeneity alternative, ($\rho_i < 1$) for all I (which is called the between-dimension or group statistical test).

The Pedroni panel cointegration statistics $\square_{N,T}$ is constructed from the residuals of either equation (12) or (13). Eleven statistics are generated with varying degree of properties (size and power for different N and T) are generated. The standard statistic is asymptotically normally distributed in Pedroni panel cointegration framework,

$$\frac{\square_{N,T} - \mu\sqrt{N}}{\sqrt{V}} \Rightarrow N(0,1) \qquad (14)$$

Where μ and V are Monte Carlo generated adjustment terms.

The Results

The descriptive result is shown in table 4 below. From the table, it could be seen that the average real GDP for the 36 selected African countries in this study is about $14.8 billion during the period under review, while the corresponding tourism expenditure and receipts are $294 million and $481.8 million, respectively. There is high disparity in the real GDP of the selected countries and this could be seen in the standard deviation which is high, though this is relatively low for tourism expenditure.

Table 4: Descriptive Analysis

	RGDP	**Texpenditure**	**Treceipt**
Mean	14767.56	294.13	481.76
Median	4125.10	112.82	84.0
Std. Deviation	27930.42	545.16	1079.76
Skewness	2.9947	3.80	3.36
Kurtosis	11.8564	19.79	15.22
Jacque-Bera	1695.56	4825.64	2915.34
Observation	356	341	360

Source: Computed

The result of the panel data properties shows that real gross domestic product (RGDP), tourism expenditure (Texpenditure) and tourism receipt (Treceipt) are integrated of I(1) in the Levin, Lin and Chu t*, and Im, Pesaran and Shin panel unit root tests. But using the Hadri Z panel unit root test, they are all integrated of order zero, i.e. I(0) variables. This means that these variables that are integrated of order one, i.e. I(1) in the LLC and IPS unit root tests have their probability values not statistically significant at the conventional 5% significant level in the level but rather significant at their first difference (see table 5).

Table 5: Summary of Panel Unit Root Result

Variable	**Levin, Lin and Chu t***			**Im, Pesaran and Shin**			**Hadri Z**		
	Level	**1st Dif.**	**Order**	**Level**	**1st Dif.**	**Order**	**Level**	**1st Dif.**	**Order**
RGDP	0.87	0.00	I(1)	1.00	0.02	I(1)	0.00	-	I(0)
Texpenditure	0.10	0.00	I(1)	0.99	0.00	I(1)	0.00	-	I(0)
Treceipt	0.99	0.00	I(1)	1.00	0.03	I(1)	0.00	-	I(0)

Note: The figures in the tables are probability values

Table 3 shows the result of the Pedroni panel cointegration test. We have used the individual intercept as the deterministic trend specification and the kernel method-Bartlett has been used for the spectral estimation, while the Newey-West automatic has been selected for the Bandwidth. The Pedroni panel cointegration test provides eleven test statistics for the panel cointegration, which evaluates the null hypothesis against both the homogenous and heterogeneous alternatives.

Table 6: Pedroni (Engle-Granger Based) Cointegration Result

Alternative Hypothesis: Common AR Coefs. (Within-Dimension)				
Test	**Statistic**	**Prob.**	**Weighted Statistic**	**Prob.**
Panel V- Statistic	-2.2487	0.0318	-0.9403	0.2564
Panel rho- Statistic	5.1247	0.0000	4.2831	0.0000
Panel PP- Statistic	1.6238	0.0128	-1.3588	0.1585
Panel ADF- Statistic	1.0279	0.2352	0.5467	0.3436
Alternative Hypothesis: Individual AR Coefs. (Between-Dimension)				
Group rho-Statistic	7.0519	0.0000	-	-
Group PP-Statistic	-2.1277	0.0415	-	-
Group ADF-Statistic	0.1717	0.3931	-	-

Source: Computed

In this study, six of the eleven statistics in the Pedroni panel cointegration test reject the null hypothesis of no cointegration at the conventional size of 0.05. This means that there is cointegration in the study, which establishes long run relationship between tourism exports and economic growth in Africa. Also, the forecast ability of the tourism-export led growth hypothesis has been established in this study. That is, tourism exports could be used to forecast future economic growth in Africa and there

will not be loss of information in the prediction. Thus, there is long run relationship between tourism-exports and economic growth in Africa.

Furthermore, the panel granger causality test result shows that the causality between tourism receipt and RGDP is unidirectional from RGDP to tourism receipt, i.e. RGDP → Treceipt. This means that tourism receipt a measure of tourism exports did not cause any change to economic growth in Africa, but it is the RGDP that enhances tourism receipts (see table 7). This indicates that revenue from tourism has not been enough to contribute meaningfully to economic growth in Africa and this is due to the pace of development in tourism industry in Africa, which is still at its take off stage. However, most African governments have been using the growth experienced in their various economies to boost and redeem the bastardised image of most African destinations, which confirms the results of Odularu and Kareen (2007). Many state governments in Nigeria including the Federal Capital Territory (FCT) have allocated huge amount of their budgets to tourism development. This could also be found in many African countries such as Ghana, Kenya, South Africa, Swaziland, Senegal, Egypt, Algeria, etc.

Table 7: Panel Granger Causality Result

Null Hypothesis	**F.statistic**	**Prob.**	**Decision**	**Causality**
Texpenditure does not granger cause RGDP RGDP does not granger cause Texpenditure	3.1126 14.5946	0.0461 1.0E-06	Reject Reject	Feedback RGDP Texpenditure
Treceipt does not granger cause RGDP RGDP does not granger cause Treceipt	0.6542 3.7011	0.5207 0.0259	Accept Reject	Unidirectional RGDP → Texpenditure
Treceipt does not granger cause Texpenditure Texpenditure does not granger cause Treceipt	9.9801. 1.1974	7.E-05 0.3036	Reject Accept	Unidirectional Treceipt→ Texpenditure

Source: Computed

The causality between tourism expenditure and growth is bilateral, that is, there is a feedback causality between them, which means that as tourism expenditure in various African destinations lead to enhanced economic growth, so also does economic growth accelerate tourism expenditure in Africa. This is not surprising because as the tourists' expenditures increase in African destinations, there will be a rise in the level of economic activities, which in turn accelerate productivity and thereby economic growth. While most governments n Africa use part of their income to provide and promote tourism sites, hospitality industry and infrastructures that will enhance tourists' expenditure in the destination countries.

Conclusion

In this study, we have examined the direction of causality between tourism-exports and economic growth in Africa and at the same time show whether there is long run relationship between them. The trend of Africa's tourism-exports has been shown in comparison with other regions of the world. Further, African sub-regional tourism exports analysis is done in order to show the sub-region that accounts for the highest tourist destinations in Africa.

However, after using the panel cointegration test that is put forward by Pedroni (1999, 2004), we were able to establish that there is long run relationship between tourism-exports and economic growth in Africa, which simply means that tourism could be used by African countries to drive economic growth in the continent. Also, it is discovered in this study that there is feedback causality between tourism expenditure and economic growth, while there is unidirectional causality from economic growth to tourism receipt in the causality between tourism receipt and economic growth. This is expected because most African countries still use their income to improve the level of tourism infrastructure and sites that are available in

their countries in order to win tourists to their destination so that there will be increase in the level of economic activities in the sector, which will thereby accelerate long run economic growth.

Thus, we conclude that African tourism-exports have the potentials of translating to long run economic growth and that the economic growth that is experienced by African countries especially the oil exporting ones could be used to enhance tourism-exports. Therefore, African countries should embark on the provision of tourism infrastructure, sites, facilities e.t.c. that can enhance tourists' choice of African destinations. Enabling tourism environment that will attract investors in the tourism industry in African destination should be put in place. While the issue of security of lives and properties of potential tourist and other factors that will enhance tourism-exports should be given utmost attention.

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