The Performance of Tourism Sector and Economic Growth in Nigeria (1996-2010)

Ojo. Thompson Olabode (Ph.D), Oyekunle. Janet Oluwafunmike, Olaleye. O.A.

Abstract— **This study employs the Granger causality test within a multivariate cointegration and error-correction framework to investigate the relationship between tourism arrival, tourism receipts and economic growth in Nigeria. This study covers the annual sample from 1996 to 2010. The main findings of this study are that in the short-run there is uni-directional Granger causality running from tourism arrival and tourism receipts to gross domestic product in Nigeria. While, in the long-run tourism arrival, gross domestic product and tourism receipts are bi-directional Granger causality. Hence, sound and developed tourism sector growth that can attract investors, boost the stock market, industrialization and urbanization and improved efficiency of economic activities via tourism activities should not be left out from the process of economic growth and development in Nigeria.**

Index Terms— **Causality, Cointegration; Tourism Arrivals and Receipts; Economic Growth.**

I. Introduction

In 2006, the Nigerian Government instituted a new set of reforms in the tourism industry with the aid of the United Nations Development. This led to the creation of the "Nigeria Tourism Master Plan". The report identified amongst other things that the number of international visitors to Nigeria had been static over the last 15 years because of factors like stodgy entry visa processes, lack of information on Nigeria amongst tour operators in the west, bad road networks, and the dilapidated state of many of Nigeria's historic sites. Shamefully, six years after the master plan had been drawn, the commentary on Nigeria's tourism industry will probably be worse. Though there has been a major influx of global hotel brands into Nigeria in the past five years, especially in Lagos, the commercial capital of Nigeria, the average cost of these rooms puts it out of reach of the average holiday maker from Europe and America especially in these hard times. The tourism master plan advocated for partnership programs between the internationally operated hotels in Nigeria and tour operators in the west to use spare capacity in these hotels at favorable rates. Five years after, the tourism and hospitality industry still represents a meager 0.5% of Nigeria's GDP (NTDC, 2013).

If properly developed and encouraged, tourism can help refocused Nigeria economy globally, especially in developing country like ours where attention is being directed to serve as revenue for economic diversification (Awodele & Ayeni,2011) . This will benefit Nigeria as a whole, as well as the local economy in the face of the present global oil misfortune (Bankole & Odularu, 2006). In view of this, it is very important to note that if tourism is sustainably developed in Nigeria by providing all supporting and essential infrastructure that are lacking, this sector will collectively enhance tourism experience of potential tourists.

At present, Nigeria is facing a worse energy cum oil crisis of its history; Nigeria's petroleum oil revenue is expected to decrease in the next few years. Tourism development can be a useful tool for obtaining efficiency in economic growth and hence enhancing our GDP. This paper aims at determining the relationship between tourism arrival and tourism receipts to gross domestic product in Nigeria.

2. Data and Model Specification.

This paper presents the analysis of the empirical results of the study Performance of Tourism Sector and Economic Growth with specific reference to Nigeria for the period 1996-2010. The data used here is secondary time series data covering the period 1996-2010. The analysis considers annual data for Nigeria. The source of data is the World Development Indicators database. Tourism arrivals (TR), Tourism Receipts (TR) and GDP are the variable used in the estimation of the model. The period of study was chosen because of availability of data for the specified years also because in Nigeria, capturing of tourism data began around the year 1994.To measure the long run relationship between the variables, it is necessary that the data should be integrated of same order. Augmented Dicky Fuller unit root is used to check the order of integration. Johnson co-integration test and vector error correction model are used to determine the relationship between variables and granger causality test is used to determine the direction of causality among the variables. The following log linear model is estimated.

$$\Delta \ln GDP_t = \beta_0 + \sum_{t=1}^{p} \sigma_1 \Delta TA_{t-1} + \sum_{i-o}^{q} \sigma_2 \Delta \ln GDP_{t-1} + \beta_1 \ln GDP_{t-1} + \beta_2 \ln TA_{t-2} + \varepsilon_t \quad (1)$$

$$\Delta \ln GDP_t = \beta_0 + \sum_{t=1}^{p} \sigma_1 \Delta TR_{t-1} + \sum_{i-o}^{q} \sigma_2 \Delta \ln GDP_{t-1} + \beta_1 \ln GDP_{t-1} + \beta_2 \ln TR_{t-2} + \varepsilon_t \quad (2)$$

Where;

ln is Natural Logarithm GDP is Real Gross Domestic Product for Nigeria in $US, TR is tourism receipts In $US, TA is International Tourism Arrivals, TR is Tourism Receipts for Nigeria in $US, Δ is First Difference Operator and ε is the error term. This present study estimated these two equations separately where 'Tourists Arrivals' and Tourists Receipts' are independent variables and GDP is the dependent variable as indicated by equation (1) to (2).

The short run dynamics of the models is specified as follows:

$$\ln GDP_t = \beta_0 + \sum_{t=1}^{p} \beta_1 \ln GDP_{t-1} + \sum_{t=0}^{q} \beta_2 \ln TA_{t-1} + \varepsilon_t \quad (3)$$

Manuscript received.

$$\ln GDP_t = \beta_0 + \sum_{t=1}^{p} \beta_1 \ln GDP_{t-1} + \sum_{t=0}^{q} \beta_2 \ln TR_{t-1} + \varepsilon_t \quad (4)$$

Where the variables are as previously defined and p and q are ARDL orders which are selected. The corresponding ECM model is specified below;

$$\Delta \ln GDP_t = \beta_0 + \sum_{t-1}^{p} \sigma_1 \Delta GDP_{t-1} + \sum_{t=0}^{q} \sigma_2 \Delta \ln TA_{t-1} + \phi ECM_{t-1} + \varepsilon_t \quad (5)$$

$$\Delta \ln GDP_t = \beta_0 + \sum_{t-1}^{p} \sigma_1 \Delta GDP_{t-1} + \sum_{t=0}^{q} \sigma_2 \Delta \ln TR_{t-1} + \phi ECM_{t-1} + \varepsilon_t \quad (6)$$

Where:

σ_1, σ_2 are the short run dynamics coefficient of the model, ϕ is the speed of adjustment and ECM is the error correction term estimated from equation (1).

The optimum lag structure of the first difference regression is selected using Alkaike Information Criteria (AIC).
In Johansen-Juselius approach, $\Pi = \alpha\beta' \ is \ (n \times n)$ coefficient matrix called the impact matrix and contains information about the long-run equilibrium relationship between the said variables. α is the parameter denoting the speed of adjustment to disequilibrium, while β is a matrix of cointegrating vectors. Johansen-Juselius cointegration approach offered two likelihood ratio (LR) test statistics, namely trace test, $LR(\lambda_{trace}) = -T\sum_{i=r+1}^{k} \ln(1-\hat{\lambda}_i)$ and maximum eigenvalues test, $LR(\lambda_{\max}) = -T\sum_{i=r+1}^{k} \ln(1-\hat{\lambda}_{i+1})$, where T represents the total numbers of observations and $\hat{\lambda}_i$ are the eigenvalues $(\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_k)$.

The common practice for the multivariate Johansen-Juselius cointegration test is to determine the lag structure for the VECM system. In this respect, Hall (1991) pointed out that the choice of lag structure in the VECM system is vital because too few lags may lead to serial correlation problem, whereas too many lags specified in the VECM system will consume more degree of freedoms thus lead to small sample problem. For this reason, the optimal VECM system for multivariate Johansen-Juselius cointegration test was determined by minimizing the system-wise Akaike's Information Criterion (AIC). The AIC was used because Liew (2004) and Lütkepohl (2005) found that AIC performed better than any other information criterions when the estimated sample size is relatively small (e.g. less than 60 observations). The AIC statistic indicates that 2 years lag is the optimal lag length for the multivariate Johansen-Juselius cointegration test.

The direction of causality between the variables is investigated by applying the VECM Granger causality approach after confirming the presence of cointegration between the variables. On the same lines, Granger (1969) argued that vector error correction method (VECM) is more appropriate to examine the causality between the series if the variables are integrated I(1). The VECM is restricted form of unrestricted VAR (vector autoregressive) and restriction is levied on the presence of the long run relationship between the series. The system of error correction model (ECM) uses all the series endogenously. This system allows the predicted variable to explain itself both by its own lags and lags of forcing variables as-well-as the error correction term and by residual term. The VECM equations are modeled as follows:

$$(I-L)\begin{bmatrix} Y_t \\ TA_t \\ TR_t \end{bmatrix} = \begin{bmatrix} \varphi_1 \\ \varphi_2 \\ \varphi_3 \end{bmatrix} + \sum_{i=1}^{\rho}(1-L)\begin{bmatrix} a_{11_i} a_{12_i} a_{13_i} a_{14_i} \ldots a_{118_i} \\ b_{21_i} b_{22i} b_{23i} b_{24i} \ldots b_{118_i} \\ c_{31i} c_{32_i} c_{33i} c_{34i} \ldots c_{118i} \end{bmatrix}\begin{bmatrix} Y_{t-1} \\ TA_{t-1} \\ TR_{t-1} \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \end{bmatrix} + \left[ECT_{t-1}\right] + \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \end{bmatrix}$$

Where μ_{it} are random terms and supposed to be normally distributed with zero means and constant variances. The established long run relation between the series is further confirmed by the statistical significance of lagged error term i.e. ECT_{t-1}. The estimates of ECT_{t-1} also shows the speeds of convergence from short run towards the long run equilibrium path. The vector error correction method ($VECM$) is appropriate to examine causality between the variables once series are found to be cointegrated and then causality must be found at least from one direction. The $VECM$ also distinguishes causality relationships between short-and-long runs. The $VECM$ is also used to detect the causality in the long run, short run and joint i.e. short and long runs respectively.

The $t-$statistic of the estimate of lagged error term i.e. ECT_{t-1} with negative sign is used to test the long run casual relation and the joint χ^2 statistical significance of the estimates of the first difference lagged independent variables is used to investigate short run causality. Tourism receipt Granger causes economic growth if $\alpha_{22,j} \neq 0 \ \forall_i$ are found statistically significant. On the contrary, if $\beta_{22,j} \neq 0 \ \forall_i$ is statistically significant then causality runs from economic growth to tourism receipts. The rest of causal hypotheses can be inferred similarly. The joint causality i.e. long-and-short runs are investigated by using Wald or $F-test$ for the joint significance of the estimates of lagged terms of the independent variables and the error correction term. The presence of short-and-long runs causality relation between the variables is known as measure of strong Granger-causality (Shahbaz et al. 2011 & 2013).

3. Emprical Findings and Discussion

This study intends to investigate the relationship between economic growths, tourism arrival (TA) and Tourism Receipts (TR) in Nigeria from 1995 – 2010. Time series data usually have a tendency to be non-stationary, and the estimated results may indicate spurious results. To determine the order of integration between the variables, test of unit root has been carried out, there are several unit root test available to solve the problem of stationerity, however, we have used Augumented Dickey Fuller test at level and at first difference. The results in table-1 indicate that the variables are non-stationery at level, thus carry unit root. When the unit root is tested at first difference, estimates show stationery properties, which mean the variables, are integrated of order 1, $I(1)$.

Table 1: Stationarity Tests: Unit Root Test

Order of Integration : ADF TEST IN LEVELS						
ADF test with intercept only				ADF test with trend and intercept		
Variable	ADF statistic	Probability	Order of integration	ADF Statistic	Prob.	Order of integration
LNGDP	-0.623832	0.8373	Not I(0)	-4.186618	0.0320	Not I(0)
LNTA	-1.336797	0.5836	Not I(0)	-1.289504	0.8497	Not I(0)
LNTR	-1.265383	0.6163	Not I(0)	-0.630647	0.9595	Not I(0)
Order of Integration : ADF TEST IN FIRST DIFFERENCE						
ADF test with intercept only				ADF test with trend and intercept		
Variable	ADF statistic	Probability	Order of integration	ADF Statistic	Prob.	Order of integration
LNGDP	-4.274987	0.0062**	I(1)	-3.925068	0.0405**	I(1)
LNTA	-3.127875	0.0476**	I(1)	-3.677017	0.0599***	I(1)
LNTR	-3.634401	0.0194**	I(1)	-4.880551	0.0088**	I(1)

NOTE: ** Order of integration at 5% significant level; * Order of integration at 10% significant level**

Since the variables in the model are now stationery and are integrated of same order we now apply the Johansen co-integration test to determine the long term relationship between the variables. The " VAR " method is used to determine the original lag length and stability condition. The “"AIC "criteria determine the lag length and Because of the number of observations, the test could not go beyond two lags and thus lag two with a lower value becomes the optimal lag length. This was also confirmed by the HQ criteria which also estimated 2 lags, hence it support the “$lag\ 2$” as the optimal choice, The rule of thumb here is that the lowest value of AIC is chosen when trying out the number of lags. The test was done firstly with one lag which gave a value of -1.945323 and then two lags which gave a value of -2.215089. Once the optimal lags were established, the second step was to apply the Johansen co-integration in order to establish a cointegration relationship between the three variables. Johansen co-integration, in Table 2 and Table 3 presents both the trace and maximum eigenvalues.

Table 2: JOHANSEN CO-INTEGRATION TEST (TRACE STATISTICS)

Hypothesized Number of CE(s)	Eigenvalue	Trace Statistic	5%Critical Value	Prob.**
None*	0.82954	112.1692	57.24487	0.00000
At most 1*	0.66483	61.46736	35.01090	0.00000
At most 2*	0.53556	29.56987	18.39771	0.00008
At most 3*	0.29915	7.098749	3.752466	0.01684

Trace test indicates 4 co-integrating equations at the 5% level, * denotes rejection of the hypothesis at the 5% level and ** Mackinnon-Haug-Michelis (1999) p-value.

Table 3: JOHANSEN CO-INTEGRATION TEST (MAXIMUM EGIEN VALUES)

Hypothesized Number of CE(s)	Eigenvalue	Max-Eigen Statistic	5%Critical Value	Prob.**
None*	0.82954	61.81195	36.72407	0.00000
At most 1*	0.66483	32.59550	25.24301	0.00331
At most 2*	0.53556	24.46201	15.13657	0.00258
At most 3*	0.29915	7.088674	3.771346	0.01332

Max-eigenvalues test indicates 4 cointegrating equations at the 5% : * denotes rejection of the hypothesis at the 5% level : ** Mackinnon-Haug-Michelis (1999) p-value.

The presence of co-integration show long-run relationship between the variables. This indicates that there exists an error correction model, which combines the short run effects with the long run and indicates how much of previous disequilibrium is removed in the current year. The results of the Vector Error Correction Model (VECM) given in Table IV gives results of long run and short run causalities as well as the ECM. The coefficients of ECM explain a one period lag of the cointegrating vectors between GDP and TA and GDP and TR. The ECM coefficient of TA is positive and insignificant indicating that TA has no long run causality on GDP or in other words, there is no long run causality between the two. As for TR, the coefficient of ECM is negative and significant at one percent level, meaning there is a long run causality running from TR to GDP. This also ensures that the adjustment process from the short run deviation is small. In other words, only 3 percent of the disequilibrium in GDP from the previous period’s shock will converge into long run equilibrium in the present period.

The short run causality is determined by the probability of chi-square where the null hypothesis indicates presence of short run causality and the alternative; no short run causality. If the probability value is less than 5%, we fail to reject null and accept the presence of short run causality. From the results, probability of chi-square for TA is (0.7142) which is greater than 5% meaning we reject the null and accept the alternative that there is no short run causality between TA and GDP. However, the results of TR show a chi-square probability of (0.0002) indicating the presence of short run causality running from TR to GDP. In other words, there is both the short and long run causality running from TR to GDP and no causality from TA to GDP in both the short and long run period.

The estimated coefficients of TA and TR are -0.210237 and -0.448882 respectively. These also confirm the short run impacts explained above. The coefficient of TA is negative and insignificant, implying no short run impacts on the economy of Nigeria. While on the other hand impact on the economy of Nigeria is confirmed by significance of the TR coefficient. A unidirectional relationship from TR to GDP is also confirmed.

Table 4 : VECM Granger Causality Anaysis

Dependent Variable: DLNGDP			
		ECM	Prob.Chi-square
DLNTA	-0.210237 (0.26824) [-0.78378]	0.170101 (0.983616) [0.172935]	0.7142
DLNTR	-0.448882 (0.12844) [-3.49483]	-0.400474 (0.125915) -[3.18050 5]	0.0002*

Standard errors in ( ) & t-statistics in [ ]; *indicates significance at one percent level

The results of the unidirectional relationships confirms those found by Isla, et.al (2011), Kaplan, et.al (2011), Mishral, et.al (2009) and Bowden and Payne (2009) who used the method of OLS; Shahbaz, et.al (2010), Sadorsky (2010), who used ARDL approach.

4. Diagnostic Test Results

Various tests have been undertaken to ensure that the model used in this study are not spurious and misleading. This was done to ensure efficiency**.** The residuals were first tested for stability and the results are given on table 5 below. The analysis is based on the fact that if t statistic is greater than critical value we can reject the null of unit root and accept the alternative of no unit root. The critical value used in this case is that of Engel Granger which 3.04. Therefore since 3.04 is less than the absolute value of t in this case; 3.14 at 5 percent significance level it means unit root does not exist. Therefore the estimated model is not spurious.

Table 5: Residual Unit Root Test Results

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.238798	0.0017
Test critical values:	1% level	-4.121990	
	5% level	-3.144920	
	10% level	-2.713751	

Variable	Coefficient	Std. Error	t-Statistic	Prob.
U(-1)	-1.451343	0.277037	-5.238798	0.0004
C	-0.003205	0.009835	-0.325854	0.7513

4.1: Normality Test Results

A good regression is supported by normal distribution of residuals. This test was carried out under Jacque Berra (JB) under the null hypothesis; residuals are normally distributed and alternative; residuals are not normally distributed. If the probability of JB is greater than 5 percent we fail to reject the null and accept that residuals are normally distributed. In this case, the results gave a probability value of 0.606 and 0.769 for Jacque Berra of which is greater than 5 percent for both model 1 and 2. Therefore we fail to reject null and conclude that residuals are normally distributed.

4.2: Arch Test under Heteroscedasticity

Under this test, the null hypothesis is there is no arch effect and the alternative is there is arch effect. A probability value of more than 5 percent would mean there is no arch effect. In this case, probability of chi-square is used under observed R-squared. Table 6 and 7 give the results for model 1 and 2 respectively.

Table 6 Heteroscedasticity Test: ARCH model 1 (GDP and TA)

F-statistic	0.436186	Prob. F(2,8)	0.6610
Obs*R-squared	1.081571	Prob. Chi-Square(2)	0.5823

Table 7 Heteroscedasticity Test: ARCH, Model 2 (GDP and TR)

F-statistic	0.578224	Prob. F(2,8)	0.5827
Obs*R-squared	1.389286	Prob. Chi-Square(2)	0.4993

The results above indicate that for both models, the probability is greater than 5 percent, therefore indicating no arch effect. The probability values for both models are 0.5823 and 0.499 respectively

4.3 Serial Correlation Test

The Breusch-Godfrey Serial Correlation LM Test was used in this study to test for autocorrelation. In the same way, the probability of chi-square was used and the results are indicated in tables 8 and 9 for model 1 and 2 respectively. The null hypothesis: there is no serial correlation was tested against the alternative; model has serial correlation.

Table 8 Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	2.245840	Prob. F(2,5)	0.2014
Obs*R-squared	6.151898	Prob. Chi-Square(2)	**0.0461**

Table 9 Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	0.400686	Prob. F(2,7)	0.6843
Obs*R-squared	1.000159	Prob. Chi-Square(2)	**0.6065**

Table 10 Breusch-Godfrey Serial Correlation LM

TestResults

F-statistic	1.018496	Prob. F(2,5)	0.4256
Obs*R-squared	3.763099	Prob. Chi-Square(2)	**0.1524**

The results of serial correlation test using the Breusch-Godfrey test show that model 1 had serial correlation. This was confirmed by the probability value of 0.0461 which is is less than 5 percent (table 9). This was corrected by running the model in first difference and removal of intercept. The results of the test after this application are indicated in table 10. The probability value of 0.6065 was found, which means the model now had no serial correlation, that is to say fail to reject null. Table 6 on the other hand show that there is no serial correlation in model 2 as indicated by a probability value of 0.1524 which is greater than 5 percent. Therefore, we cannot reject the null hence the model has no serial correlation.

5. Conclusion

This paper set out to investigate the need for the enhancement of the Nigerian tourism and tourist attractions for sustainable development. Results as explained above have confirmed tourism led growth hypothesis for Nigeria. In other words, there is a possibility of the economy of Nigeria to grow from injections from tourism sector. The results have also shown that this tourism led growth dominates in the long run than in the short run as shown by a negative unidirectional causality from tourism receipts to GDP. The results are consistent with the findings of Ercan (2011) who examined the potential contribution of tourism to the economic growth of Istanbul economies. The results indicated that tourism contributes significantly to the current level of GDP and the economic growth of Nigeria as a country. Similar conclusions were also found by Ikein et.al., (2008) for the oil, democracy and the promise of true federalism.

References

[1] Awodele, O.A & Ayeni, D.A. (2011). Managing risk in tourism development project: A case study of Nigeria. Journal of Construction Project Management and Innovation 1(2), 105 – 129.

[2] Bankole, A.S. & Odularu, G.O. (2006). Achieving the millennium development goals: Issues and Options for the Nigeria's tourism industry. PASOS. Revista de Turismo y Patrimonio Culture 4(3), 429 – 436.

[3] Bowden, N., Payne, J.F., (2009), The Causal relationship between US energy consumption and real output: a disaggregated analysis. *Journal of Policy Modeling* 31, 180 – 188.

[4] Ercan, M.A. (2012). Challenges and conflicts in achieving sustainable communities in historic neighborhood of Istanbul. *Habitat International*, 35(2), 295 – 306.

[5] Hall,S.G. (1991) The effect of varying length VAR models on the maximum likelihood estimates of cointegrating vectors. Scottish Journal of Political Economy, 38(4), pp. 177-187.

[6] Ikein, A.A.,Alamieseigha, D.S.P., & Azaiki, S.S. (2008). *Oil, democracy and the promise of true federalism.* Maryland: University Press of America.

[7] Islam, F., Shahbaz, M., Alam, M., (2011) , Financial Development and Energy Consumption Nexus in Malaysia: A Multivariate Time Series Analysis, MPRA Paper 28403, University Library of Munich, Germany.

[8] Kaplan. M., Ozturk,I., Kalyoncu, (2011), Energy Consumption and Economic Growth in Turkey; co-integration and causality analysis. *Romanian Journal of Economic Forecasting* 2, 31-41.

[9] Lutkepohl, H. (2005). N*ew Introduction to Multiple Time Series Analysis*, Berlin: Springer, Verlag.

[10] Mishra, V., Sharma, S.S., Smyth, R., (2009), Is economic development export-led or import-led in the Pacific Island Countries? Evidence from panel data models. Pacific Economic Bulletin 25, 46-63.

[11] Sadorsky, P., (2010), The impact of financial development on energy consumption in emerging economies. Energy Policy 38,2528-2535.

[12] Shahbaz,M,. Islam, F., Islam, M.M, (2010), The impact of financial development on energy consumption in Pakistan: evidence from ARDL bound testing approach to co-integration. In: Proceedings of the Second International Conference on the role of Social Sciences and Humanities in Engineering (COHSE) 2010, 12-14 November 2010, Bayview Beach Resort, Penang, Malaysia.

[13] Shahbaz M, Mutascu M, Azim P. (2013) Environmental Kuznets Curve in Romania and the Role of Energy Consumption. Renewable and Sustainable Energy Reviews 2013; 18: 165-173.

Ojo. Thompson Olabode (Ph.D), Department of Statistics, School of Applied Sciences, The Federal Polytechnic , P.M.B. 231, Ede, osun-state. Nigeria

Oyekunle. Janet Oluwafunmike, Department of Statistics, School of Applied Sciences, The Federal Polytechnic , P.M.B. 231, Ede, osun-state. Nigeria

Olaleye. O.A., Department of Statistics, School of Applied Sciences, The Federal Polytechnic , P.M.B. 231, Ede, osun-state. Nigeria