An Analysis of the Performance of International Tourism Demand in Tanzania

Benson Otieno Ndiege

Moshi Co-operative University
Moshi, Tanzania

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Abstract

This paper analyzes the performance of Tanzanian tourism industry which depends on natural heritage tourism scene particularly natural resources by assessing the trend and forecasting the international tourism demand. The number of international tourist arrivals in Tanzania is used as the proxy measure for international tourism demand. Using the data for the period of 2001q1- 2010q4 and using ARIMA model, the study asserts that the international tourism demand in Tanzania is growing though in a very low pace of about 1% per year. This is less than world average growth that has reported by World Tourism Organization (UNWTO) in 2012 to reach 4-5% per annum. Moreover, the Tanzania international tourism demand is becoming increasingly less competitive and has been fluctuating over the years. Thus to reap enough from the world growing international tourism demand the development of artificial tourism scene to supplement the natural heritage and development of new tourism products should be given more attention in a Tanzania tourism industry development.

Key Words:
Tanzania, Tourism demand, Forecast, ARIMA Model

Resumen

Este trabajo analiza el rendimiento de la industria turística de Tanzania, que depende de la escena turística patrimonio natural recursos naturales en particular mediante la evaluación de la tendencia y la previsión de la demanda turística internacional. El número de llegadas de turistas internacionales en Tanzania se utiliza como aproximación para medir la demanda turística internacional. El uso de los datos para el período de 2001q1- 2010q4 y utilizando el modelo ARIMA, el estudio afirma que la demanda turística internacional en Tanzania está creciendo aunque de muy bajo ritmo de alrededor de 1% por año. Esto es menos que el crecimiento promedio mundial que se ha informado por la Organización Mundial del Turismo (OMT) en 2012 para llegar a 5.4% anual. Por otra parte, la demanda turística internacional Tanzania es cada vez menos competitiva y ha estado fluctuando con los años. Así, para obtener lo suficiente del mundo crece la demanda turística internacional el desarrollo de la escena artificial turismo para complementar el patrimonio natural y el desarrollo de nuevos productos turísticos se debe dar más atención en el desarrollo de la industria turística de Tanzania.

Palabras clave:
Tanzania, Demanda turística, Pronóstico, Modelo ARIMA

Introduction

International Tourism demand is increasingly attracting attentions globally due to its rapid growth and importance in economic development (Amponsah and Thompson, 2014; Ngugi, 2014; Stabler *et al*., 2009; Bashagi and Muchapondwa, 2009; Brakke, 2004; Luvanga and Shitundu, 2003). Many countries have been deliberately developing their tourism industry to tap and benefit from the growing tourism demand, whereas recent reports indicate reasonable growth of tourism demand in most parts of the world. For instance UNWTO reports of November 2012 and January 2013 show that tourism activities in many countries has been increasing each year and in average an increase in the number tourists arrivals stand at 4%-5% worldwide and 3% in Africa.

Generally increase in the tourism demand results to increase in tourism expenditure and stimulate productivity as tourists needs various goods and services like transportation, accommodation, catering, and entertainments. As such the industry has grown to be an important source of national income, employment and foreign exchanges in many countries that invests in tourism industry. Research reports like that of Fawaz *et al*., (2014) and Croes and Vanegas (2008) gave the positive empirical evidence for the relationship between tourism development, economic expansion, and even poverty reduction.

Tanzania is among those countries whose economies depend largely on tourism industry (Pasape *et al*., 2014; Kweka *et al*., 2003; Luvanga and Shitundu, 2003). Tourism sector has been an important industry into the Tanzanian economy, for instance, through employment, government revenue, foreign exchange, improves balance of payment and expansion of local infrastructures (Kweka *et al*., 2003; Luvanga and Shitundu, 2003). It is explicitly explained in the Integrated Tourism Master Plan for Tanzania update of 2002, that tourism industry nearly contributes 10% of national output (GDP). In addition, tourism makes commendable contributions in the exports earning, where by about 24%-40% of total foreign exchange earnings are from the export of tourism goods and services. These arguments for tourism industry indicate that the fast development of the industry will foster for the fast economic development and poverty reduction.

As in many African countries (Amponsah and Thompson, 2014; Ngugi, 2014), in Tanzania tourism industry is basically depending on natural resources (Pasape *et al*., 2014). The country has strong attractive wildlife resources and natural geographical attractive areas which include national parks and game reserved (example Serengeti and Ruaha), mountains (example Kilimanjaro and Meru), lakes (example Victoria, Tanganyika), coastlines, craters and others many. However there is very little man made attraction areas and also there is less deliberate actions to improve the quality of resources and natural geographical attractive areas.

The matter is that in spite of the significance of tourism industry in economic prosperity scholars has shown that in many African countries the industry is underdeveloped and underutilized hence these countries are not maximizing their gain from the industry (Amponsah and Thompson, 2014; Ngugi, 2014; Naude and Saayman, 2005). Parallel to this the problem might have no immediate solution because there is no enough literature to address the performance of tourism sector in most African countries.

For the case of Tanzania for instance, we did not come across a literature which predict the future of tourism demand. That means the country can not assess its performance as well as compare itself with other parts of the world. Indeed when there are no or inaccurate prediction of tourism demand there is also inaccurate tourism industry planning, policy decisions as well as investment decisions (Pai *et al*., 2014; Saayman and Saayman, 2010). In this line therefore, the current study is set to add understanding on the performance of tourism industry in Tanzania by analyzing the trend and forecasting international tourism demand up to 2015, and hence assess the performance by comparing the results with the international statistical reports.

The researcher is motivated with the fact that in this era the Importance of forecasting tourism demands in developing countries like Tanzania is unquestionable required due to its importance for tourism planners and marketers. First of all the global wildlife has been declining with high speed due to climatic change, technological development and population growth. For example the reports by Zoology Society of London (ZSL) of October 2010, titled Evolution Lost: Global wildlife stocktake showed that, the population of animals have decreased by 30% in last four decades. As an evidence for this recently many researchers in tourism industry turning their eyes on the effects of climate change on tourism (For instance Amelung and Nicholls, 2014; Rosselló-Nadal, 2014).

Probably the developed countries are the most affected areas than developing countries in the loss of biodiversity due to the industrialization processes. The point is that, the country like Tanzania, which is endowed with natural resources, should understand how potential it is in tourism international market, as the preferred destinations worldwide. As asserted by Su and Lin (2014) that there exists a positive relationship between heritage sites and tourist numbers, where as the relationship is stronger for natural rather than for cultural heritage sites.

In this case therefore, firstly a country like Tanzania can use the opportunity of high and growing worldwide international tourism demand to make the most of its earning form its natural resources and prosper economic growth. This is possible if the country is aware of the tourism market situations which can be identified by assessing tourism demand in the country and in

other competitive country. To be competent therefore, generally it is useful for an individual country to understand its tourism demand nature and then specific factor that affect tourism demand.

Secondly since country like Tanzania depends on natural resources for tourism attractions the focus should be to maximize the utilization of resources and not to exploit them. In recent studies like Pasape *et al*. (2014), this discussion has been turned toward the awareness of ecotourism. That is, as it is explained in literature including Witt *et al*. (2013), Sookram (2009), Stabler *et al*. (2009) and Darowski *et al*. (2007), excessive, unplanned and unregulated tourism poses a danger to natural resources, such as water supply, beaches, coral reefs and heritage sites, through overuse.

In such circumstances therefore, it is the fact that consumption of tourism should be balanced with the supply of tourism or goods and services linked to tourism (Cazcarro *et al*., 2014), especially if the tourism depends on wildlife (Curtin, 2013), otherwise tourists will shift somewhere over time. Therefore forecast of tourism demand in Tanzania make a basis for assessment of the tourism demand and supply. This means the forecasting of tourism demand is crucial and gives the possibility of evaluating if the country is efficiently employing its resources, taking into consideration that natural and cultural heritage sites are most attractive tourism supply but also vulnerable to destruction, most importantly the wildlife areas tend to be fixed and they are basically non-renewable.

Literature review

The central significance of forecasting tourism demand is for ones to understand the ongoing situation and suggest way forward in tourism policy. In this line there are various studies that forecasted tourism demand in different countries. In their work, Song and Li (2008) explain that many articles used different methods in analysis and forecast of tourism demand worldwide. In support of their idea, that there are different forecasting methods, here few examples of works of Pai *et al*. (2014) used novel hybrid system that combines fuzzy c-means (FCM) with logarithm least-squares support vector regression (LLS-SVR) technologies.

Athanasopoulos and De Silva (2012) use multivariate stochastic models that capture time varying seasonality within the vector innovations structural time series (VISTS) framework to predict the tourism arrival in Australia and New Zealand. Jackman and Greenidge (2010) used structural time series modeling to forecast tourist arrivals in Barbados. Some studies have used ARIMA model in forecasting tourism demand including; Petrevska (2012), which forecasted the international tourists' arrival in Macedonia and Lin *et al*. (2011) in Taiwan and Saayman and Saayman (2010) in South Africa, just few to mention. Surprisingly the researcher did not find any previous work that forecasted international tourism demand in Tanzania. Thus this paper adds knowledge on the international tourism demand in a case study of Tanzania.

Research methods

Data and definition of tourism demand

There are different ways which can be used to capture values of the international tourism demand (see Stabler *et al*., 2009; Divisekera, 2003). The current study is developed in the assumption that population growth is directly proportion to the total consumption (Wackernagel and Rees, 2013). In the sense that increase in number of people lead increase in aggregate consumption. Therefore, increase in number of tourist arrivals results to increase in consumption of transportation, accommodation, catering, entertainments and other services and thereafter increases total tourism expenditure.

Thus the number of international tourist arrivals is used as a proxy measure for international tourism demand. This proxy measure had been used by many researchers, for example Petrevska (2012), Lin *et al*. (2011), Muchapondwa and Pimhidzai (2008), Athanasopoulos and De Silva (2012), Jackman and Greenidge (2010); Bashagi and Muchapondwa (2009) and Song and Li (2007).

The numbers of international tourist arrivals used are based on data from migration department in Tanzania. According to URT (2012), these data refer to the number of visitor arrivals (and not to the number of persons), in the sense that a person who makes several tour during a given time is counted each time as a new arrival. The data used is time series that covers the period 2001-2010. Therefore the data set covers the period of 40 quarters (from 1st quarter of 2001 to 4th quarter of 2010). This information was published in February 2012 in tourism statistical bulletin by the Ministry of Natural Resources and Tourism in Tanzania. Also as in many regions or countries, the purposes for visiting Tanzania were essentially holidays, visiting relatives, business transit and others. Also the mode of transport use are mainly air, road and very few tourists uses railways.

Method of Analysis

Time series analysis based on Autoregressive integrated moving average (ARIMA) model is used in this study. ARIMA method is one among many other methods which analyses time series data. Time series analysis is basically backward-looking, in the sense that

variable values are determined by looking upon its own past and a random disturbance terms. It has been useful in forecasting economic variables like GDP, inflation, exchange rates and unemployment rates by employing their past trends (Dobre and Alexandru, 2008; Gujarati, 1995). Likewise, tourism demand can be forecasted using its historical patterns and trend, which therefore ARIMA is relevant model (Stabler *et al.* , 2009; Song and Li, 2007).

Moreover, recently ARIMA model has dominated the forecasting of the tourism demand. According to Lin *et al.* (2011), ARIMA model is effective in forecasting tourism demand as compare to other methods like artificial neural networks (ANNs), and multivariate adaptive regression splines (MARS). This conclusion is a bit contradicting with some researchers like Peng *et al.* (2014) and Song and Li (2007), whose conclusions are that there is no superior model of prediction. But even with such differences in conclusion, both observations appreciate the role of ARIMA model in forecasting tourism demand. Therefore it is obvious that this is relevant model in prediction of tourism demand and therefore it is used in this study.

The ARIMA model was developed by George E.P. Box and Gwilym Jenkins, therefore it is also known as Box-Jenkins (BJ) methodology. The BJ model consists of three parts which are Autoregressive AR (p) model, moving average MA (q) model and ARIMA (*p, d, q*) where *p* is number of ordered autoregressive, *q* is number of ordered moving average and *d* is number of differentiation which made time series data stationary (*I (0)*). ARIMA model therefore, is the combination of the AR and MA models. According to Gujarati (1995), the models are specified as follow, where *Y* represent tourism demand (number of tourisst arrivals in Tanzania) at time *t*.

(1)Autoregressive (AR)

$$Y_t - \beta = \alpha_1 (Y_{t-1} - \beta) + \mu_t \quad (1)$$

This is the AR (1) or first-order autoregressive, where β is a mean value of *Y* and μ_t is uncorrelated error term with zero means and constant disturbance variance.

Generally the model for AR (*p*) or pth-order autoregressive is;

$$Y_t - \beta = \alpha_1 (Y_{t-1} - \beta) + \alpha_2 (Y_{t-2} - \beta) + \ldots\ldots \alpha_p (Y_{t-p} - \beta) + \mu_t \quad (2)$$

(2)Moving Average (MA)

$$Y_t = \mu + s_0 \mu_t + s_0 \mu_{t-1} \quad (3)$$

And the general MA (*q*) or pth-order moving average is;

$$Y_t = \mu + s_0 \mu_t + s_1 \mu_{t-1} + s_2 \mu_{t-2} + \ldots\ldots s_0 \mu_{t-q} \quad (4)$$

(3)ARMA; when models combine the properties of both AR and MA. For example from equation (1) and (3) we get, ARMA (1,1), and the model is written as;

$$Y_t = \theta + \alpha_1 (Y_{t-1} - \beta) + \mu_t + s_0 \mu_t + s_1 \mu_{t-1} \quad (5)$$

Where θ is constant

Finally, estimating relevant ARIMA model four stages should be completed (Gujarati, 1995). These are identification of the model, estimations of coefficients, diagnostic check and last forecast the tourism demand and compare the available information to verify or look for sensitivity of the model. The fundamental task is to identify the model by choosing *p*, *d* and *p*. In this paper all estimations of coefficients and other values are made using STATA.

Results and discussions

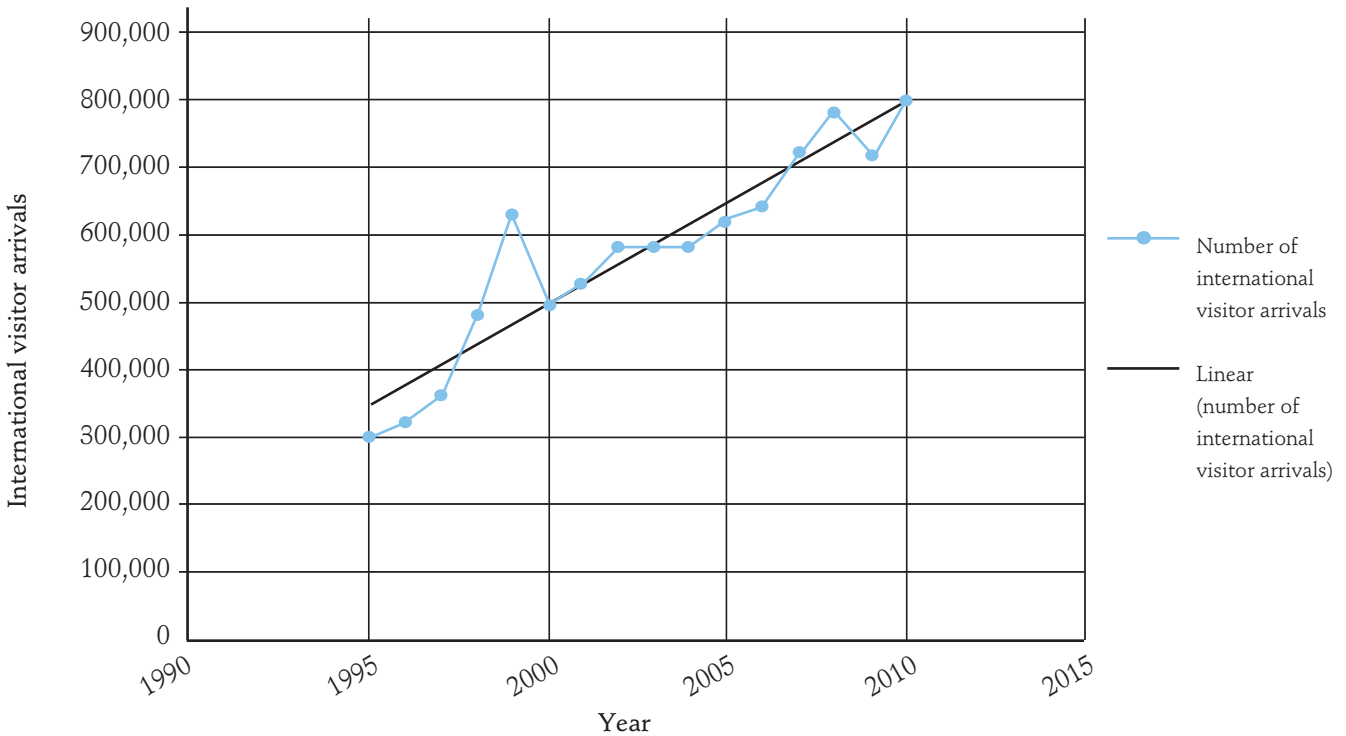
Firstly step the study analyses the trend of international tourism arrival in Tanzania using statistical descriptive method. Figure 1 show that there has been continuous increase in international tourism arrival in Tanzania for almost all the period under the study.

Despite the growth, the Tanzania international tourism demand is becoming increasingly less competitive. The Figure 2 analyses the nature of the trend whereby it shows that recently the increase is at decreasing rate. It show that before 2000's international tourism demand was increasing at increasing rate but post 2000 period it has been increasing at decreasing rate. Also the number of international tourism arrivals in Tanzania does not increase continuously but have been fluctuating over the years.

Secondly the study forecasted international tourism demand for next 5 years (2011-2015) using ARIMA model processes. In this it stated by test if the time series is stationary because it is the main assumption for BJ methodology and also to identify any special character in the data set which may affect the analysis if at all could not be taken into consideration. The results in Figure 2 represent (a) two-way graph line (b) autocorrelations of demand and (c) partial autocorrelations of demand. They do not show any apparent indication of unit root in time series. However one can observe spikes in lags 4 and 8 in figure 3 (b) and lags, 4, 8, and 12. Also in (a), (b) and (c), it is clear that there are seasonal trend in fourth quarters of time series.

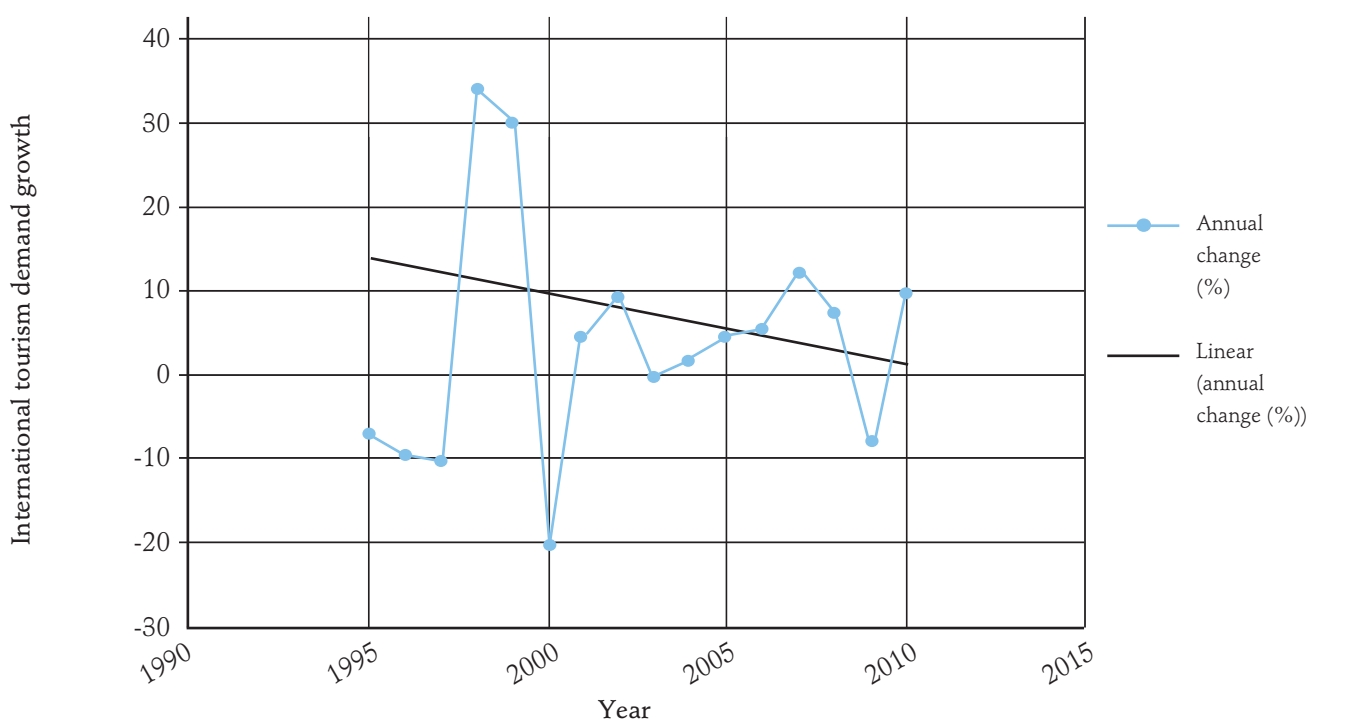
To be sure of whether time series is stationary or nonstationary, The Dickey–Fuller (DF) test was applied. In Dickey–Fuller (DF) test, null hypothesis is that there is unit root and therefore time series is non-stationary. The summary of the results in Table 1 indicates that p-value is less than 5% (see MacKinnon approximate p-value). Therefore null hypothesis is rejected at 1% significance level, meaning that the data set is stationary.

Figure 1 International visitors' trend in Tanzania



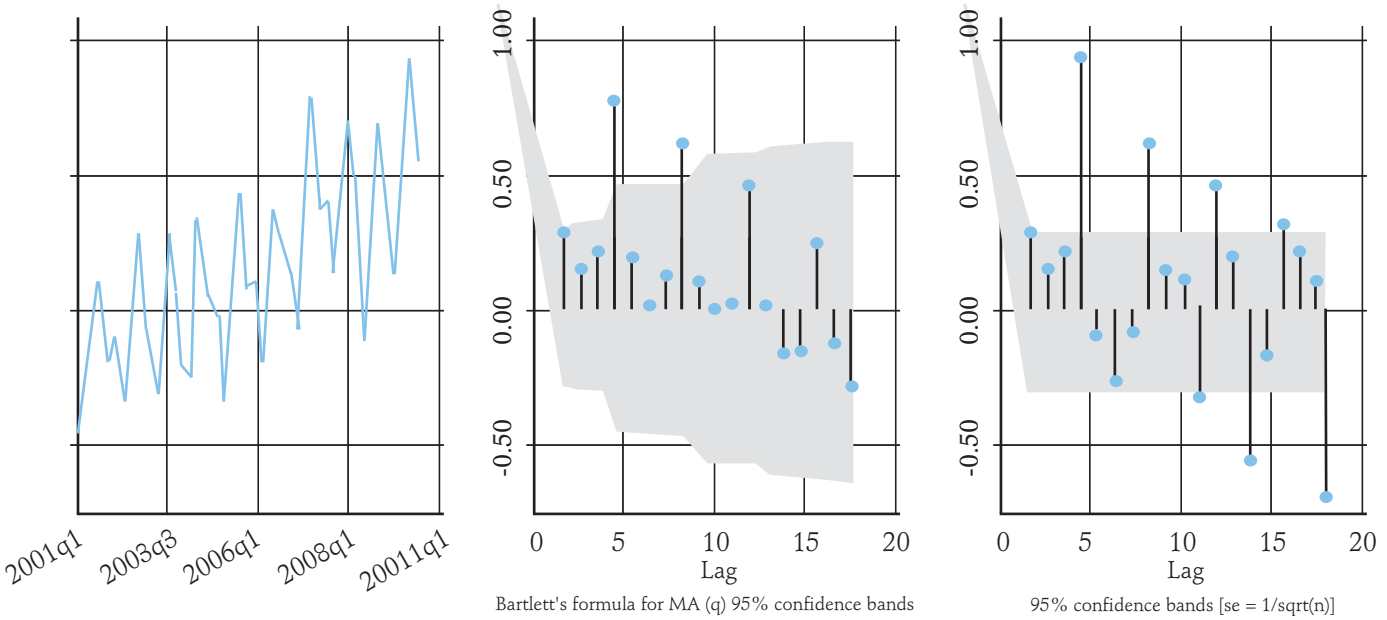
Source: Researcher's calculation using Ministry of Natural Resources and Tourism, Tourisme Division Data

Figure 2 International visitors' annual changes in Tanzania



Source: Researcher's calculation using Ministry of Natural Resources and Tourism, Tourisme Division Data

Figure 3 Two ways line, autocorrelations and partial autocorrelation graphs



(a) Two ways graph line (a) Two ways graph line (a) Two ways graph line

Source: Researcher's calculation

Table 1 Summary of Dickey-Fuller test for unit root

dfuller demand, lags (0)			Number of observations = 39	
			Interpolated Dickey-Fuller	
	Test Stadistic	1% Critical Value	5% Critical Value	10% Critical Value
Z (t)	-4.551	-3.655	-2.961	-2.613
MacKinnon approximate p-value for Z(t) = 0.0002				

Source: Researcher's calculation

Then because the seasonal trend is observed in this data, ARIMA (autoregressive integrated moving average) and SARIMA (seasonal autoregressive integrated moving average) models were used together. To accommodate SARIMA the first difference of the 4th quarter (remember s=4, for quarterly data) is taken to remove the seasonal influences (Gujarati, 1995). Various ARIMA and SARIMA models were tested to find one which is more worth, by looking at the coefficients and making diagnosis checking. Most of these were statistically insignificant. Then ARIMA (1, 0, 1) and SARIMA (1, 0, 1, S=4), found to be the better model for forecasting tourism demand in Tanzania. The results summaries are presented in Table 2.

The diagnosis check for the selected ARIMA and SARIMA model is present in Table 3. The results show low autocorrelations and partial autocorrelations coefficients, and also the Box–Pierce *Q* statistics show that no specific autocorrelation and partial autocorrelation coefficient that is individually statistics significant at 95% confidence interval. This indicate that the residuals obtained from ARIMA (1, 0, 1) and SARIMA (1, 0, 1, S=4), are purely random, and no doubt it is a good model for forecasting tourism demand in Tanzania.

Table 4 shows the forecasted tourist arrivals in Tanzania for future five years (2011-1015). The results indicate that there is continuous growth of international tourist arrivals year after year.

In average the results here indicates Tanzania international tourism demand is increasing. The growth is congruence to the report of UNWTO of 2012 which show that the world international tourist arrivals are growing.

Table 2 Estimated coefficients values for ARIMA (1,0,1) x (SARIMA (1,0,1,S=4)

	ARIMA (1,0,1)	$ARIMA_4$ (1,0,1)
Intercept	163916.1	
	(1.95)*	
AR (L1)	0.9331819	0.97387
	(9.48)*	(18.23)*
MA (L1)	-0.6510089	-0.5523139
	(-3.54)*	(-1.61)
Sigma (white noise)	(13270.72)	
	(6.17)*	
Log likelihood	-441.1145	
Wald $\chi 2$	1421.97	
Probability > $\chi 2$	0.0000	
Sample size	40	
Sample period	2001q1 - 2010q4	

Note: "z" values are in bracket and *, **, *** represents that the coefficient is statistically significant at 1%, 5% and 10% significance level respectively

Source: Researcher's calculation

Table 3 Correlogram for residual

LAG	AC	PAC	Q	Probability of Q
1	-0.1659	-0.1659	1.1852	0.2763
2	-0.0467	-0.0671	1.2816	0.5269
3	0.0351	0.0571	1.3374	0.7203
4	-0.1504	-0.1456	2.3935	0.6638
5	0,1152	0,0972	3.0308	0.6952
6	-0.2994	-0.3458	7.4604	0.2804
7	-0.1472	-0.2936	8.564	0.2855
8	0.0620	0.0417	8.7658	0.3624
9	0.0696	0.2538	9.0286	0.4346
10	0.0317	0.1097	9.0847	0.5241
11	-0.1271	-0.3585	10.021	0.5285
12	0.1869	0.0149	12.116	0.4364
13	-0.0270	-0.4154	12.161	0.5145

Note: AC = autocorrelations, PAC = partial autocorrelations and Q = Box-Pierce Q statistics

Source: Researcher's calculation

Table 4 Forecasting the tourism demand up to 2015

Date	2011	2012	2013	2014	2015
Forecasted tourist arrival	791019	798314	802800	805184	806000

Source: Researcher's calculation

Moreover, the results give the same picture as Kweka *et al.* (2003) and Luvanga and Shitundu (2003), that tourism industry is important in economic growth and poverty reduction in Tanzania. This base on assumption that inter-sectoral linkages are strong and therefore there is less leakage of money from the economy (Sinclair and Sutcliffe, 1978 cited by Stabler *et al.*, 2009).

On other hand the current international tourism demand is expected to continue to growing at the rate of about 1% per year. This is less than world average growth that has reported by World Tourism Organization (UNWTO) in 2012 to reach 4-5% per annum and is an indication of inefficient performance of Tanzania tourism industry. Likewise the growth rates of tourism demand in Tanzania seem to be lower compared to other countries in and outside Africa, since it is below Africa average.

Moreover, according to The National Bureau of Statistics (NBS) -Tanzania, the population senses of 2012 show that population growth rate is 3% per year. In such situation earnings in any key economic industry like tourism must exceed population growth rate, so as to bring economic development and poverty reduction. Moreover according to African Economic Outlook (2012) the GDP growth rate in Tanzania is projected to be 7.1% in 2014, the situation which is promising for the country's development. Obviously this projection takes into consideration the contribution of the tourism sector, then according to these results, there should be deliberate efforts to promote tourism industry.

In nut shell, Tanzania is endowed with many wildlife resources and the country can do better than this, if more stimulus factors will be applied. Generally the government should revise its policy issues specifically competition and regulations, taxation and subsidies. Also there is a need to strengthen advertisements of tourism sights and products as done by most countries. In addition there is a need to expand to the man made attraction scenes which complement natural resources tourism attraction.

Conclusion

The objective of the study was to provide analysis on tourism demand in Tanzania by assessing trend and forecasting international tourism demand and then determine whether tourism is efficiently employed as in other parts of the world in recent years, with attention that the country is depending on natural heritage as the main source of tourism attractions. The study has used number of tourist arrivals in Tanzania as a proxy measure for tourism demand. The results indicate that the growth is very low as compared to the world which is an indication that contribution of tourism sector in Tanzania economy is still low compared to most country in the world, and therefore tourism resources are underemployed. Moreover, the Tanzania international tourism demand is becoming increasingly less competitive and has fluctuating over the years.

The results are supporting the idea of Naude and Saayman (2005) that tourism industry in some African countries is significant but underdeveloped. Therefore more suitable environment likes infrastructures and artificial cites should be created to attract more tourists, and utilize wildlife resources for higher economic prosperity in Tanzania. This is congruence with the observation made in Kenya by Ngugi (2014) that the existing tourism products should also be improved in order for the country to remain competitive, the tourism infrastructure and services should be well established and of good quality. Moreover, as also said by Amponsah and Thompson (2014) and Ngugi (2014) for other African countries, The Government of Tanzania, tourism planners and business persons therefore need to understand which important factors influence international tourists' decision to visit Tanzania as their destination. Thus future researches works need to identify demand driven tourism products that can ensure visitors come to Tanzania and stay for long time.

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Author's Details

Benson Otieno Ndiege
Moshi Co-operative University
P.O.BOX 474, Moshi,
Tanzania
Phone: + 255714097134
Fax: +255-027-2750806
Email: benson.ndiege@yahoo.com