Estimating Inbound Tourism Demand for Kenya: The Gravity Approach

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Abstract

Tourism is a significant economic sector in Kenya in terms of its contribution to the Gross Domestic Product, employment and foreign exchange earnings. However, the determinants for inbound tourism demand for Kenya are barely understood. This study aimed at estimating the inbound tourism demand for Kenya with respect to the main markets (UK, Germany, Italy, France, Switzerland, USA, Canada, Japan and India), which accounted for about 70 per cent of hotel bednights by inbound tourists in 2007. The study adopted a gravity model approach. The System General Methods of Moments was applied to a dynamic panel data for the period 1987-2006 to identify the main determinants of the tourism demand for Kenya. The results reveal that income per capita in tourist generating countries, habit persistence and word-of-mouth effect, distance, tourism prices, visa fees charges and security are key determinants of tourist demand for Kenya. Per capita income in Kenya was found not to be statistically significant. There is need to reinforce word-of-mouth campaigns and repeat visits by improving quality of services and leveraging customer relationship management, and reducing cost and time of travel for tourists. The study also emphasizes the need for product and market diversification. Further research on supply-side determinants and the effect of tourism prices for competing destinations is suggested.

Abbreviations and Acronyms

AIDS	Almost Ideal Demand System
CPI	Consumer Price Index
CRM	Customer Relations Management
GDP	Gross Domestic Product
GMM	General Methods of Moments
GoK	Government of Kenya
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
KTB	Kenya Tourist Board
KTDC	Kenya Tourist Development Corporation
MDR	Market Development Representative
RMSE	Root Mean Squared Error
TMRP	Tourism Market Recovery Programme
TSA	Tourism Satellite Account
UNCTAD	United Nations Conference on Trade and Development
VAR	Vector Auto-regressive Model
WTO	World Tourism Organization

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1. Introduction

1.1 Background

International travel and tourism is widely recognized as the world's largest export earner (World Tourism Organization, 2001). The foreign exchange receipts from international tourism exceed that from petroleum products, automobiles, telecommunication equipment and textiles. The sector is labour-intensive, directly employing about 74 million people around the world. Tourism plays an important role in stimulating investments in other sectors (Naudé and Saayman, 2004; Proenca and Soukiazis, 2005; World Tourism Organization, 2005). It stands out as the only major sector in international trade in services, in which developing countries have consistently had surpluses (United Nations Conference on Trade and Development, 1998; Williams, 2002). According to the United Nations Conference on Trade and Development (1998), as early as 1994 when services were negotiated for the first time in the international trade agreements, 119 out of 127 countries agreed to liberalize tourism. There was no other service sector in which countries made as many commitments.

In Kenya, tourism contributes about 20 per cent to the foreign exchange earnings and 11 per cent to the Gross Domestic Product (GDP) (Republic of Kenya, 2007; Ikiara, 2001). It employs about 253,000 people in the modern wage sector and about 500,000 in the informal sector (World Travel and Tourism Council, 2007). Tourism stimulates growth in sectors such as agriculture, handicraft and construction (Ministry of Tourism and Wildlife, 2007). Between 2003 and 2007, tourism in Kenya attained an average annual growth rate of 9.8 per cent compared to 5.4 per cent for Africa and the global growth of 3.2 per cent (Ikiara *et al*, 2005; Republic of Kenya, 2008). In 2006, tourism grew by 14.7 per cent and overtook horticulture to become the leading foreign exchange earner at Ksh 56.2 billions, while the estimated tourism earnings in 2007 was Ksh 65.4 billions (Ministry of Tourism and Wildlife, 2007). The sector has demonstrated potential for quick gains based on the available resources. Consequently, tourism has been recognized as one of the sectors that will drive economic growth towards achieving Vision 2030.

1.2   Statement of the Problem

Despite the significance of tourism in Kenya, the sector has largely developed on the basis of ad hoc policies and strategies that are not grounded on research. Little attention has been paid to investigate tourism demand for Kenya. Without clear understanding of the nature of tourism demand and its determinants in Kenya, it would be difficult to formulate appropriate policy strategies that will ensure that the sector fulfils the expectations of Vision 2030.

Tourism strategies in the past gave little regard to the fact that the tourism sector is highly volatile and sensitive to diverse exogenous and extraneous factors, hence the erratic growth. This is well exemplified by the ethnic clashes of 1997 and the terrorist bomb attacks of 1998 and 2002, which led to major declines in the tourism sector. After such down-turns, there has been a tendency to come up with arbitrary and quick-fix solutions that are not sustainable in the long run. Some of the strategies that have been adopted, such as reduction in prices marked with severe undercutting practices among service providers proved to be counter-productive. This, for instance, resulted into run-down facilities and poor quality services, earning Kenya the tag of a cheap destination. A clear understanding of tourism demand will therefore lead to formulation of strategies that reinforce critical determinants of tourism growth.

1.3   Objectives of the Study

Given the above backdrop, the over-arching aim of this study is to estimate inbound tourism demand for Kenya with the following specific objectives:

(i) Identify the key determinants of inbound tourism demand for Kenya.

(ii) Propose appropriate policy strategies to ensure increased and sustainable inbound tourism demand for the country.

1.4   Justification

The substantial contribution of tourism to the Kenyan economy justifies the interest in explaining the determinants of tourism demand, hence the factors that influence the decisions of tourists to choose Kenya as a destination place. A better knowledge of these factors will help policy

makers design more adequate strategies to develop this sector further. This will be particularly important in regard to the Vision 2030, which seeks to make Kenya one of the top ten long-haul tourist destinations offering high-end, diverse and distinctive tourist experience.

Tourism, being a major item of export trade in services, has a great potential for easing the balance of payment deficit for the country. Moreover, Kenya has an array of tourism resources, most of which are readily available to the local communities, such as natural and cultural heritage and can be optimally utilized for socio-economic development of these communities. This would consequently lead to poverty alleviation and employment creation.

This study also seeks to contribute to the literature on tourism demand modelling in Kenya, which is currently scanty. Modelling of tourism has mainly been applied to the developed destinations, whereas little interest exists for developing countries, especially the African destinations (Naudé and Saayman, 2004). There is evidence of only one study on tourism demand in Kenya conducted by Ikiara *et al* (2005) using time series data. Thus, this study builds on the existing study by utilizing a gravity model approach that separately puts into account the impact of distance and tourism prices on inbound tourism demand in relation to different key markets for Kenya. In addition, the rapidly changing global trends in tourism, such as the growing preference of several short-breaks to long vacations, calls for investigation on determinants of inbound tourism demand.

2. Overview of Tourism Sector in Kenya

2.1 Tourism Development in Kenya

Development of modern-day tourism in Kenya dates back to the pre-colonial times when sport-hunting enthusiasts started to visit Kenya's wilderness. Demand for this specific activity increased over time, leading to the need for conservation and protection of wildlife. Consequently, the Nairobi National Park was gazetted as the first protected area in 1946. It was closely followed by the gazettement of Tsavo National Park in 1948 (Akama, 1999; Ministry of Tourism and Wildlife, 2007). Parallel to the emergence of wildlife tourism, white settlers in the highland areas of Kenya started to travel to the coast for relaxation, creating demand for accommodation facilities and services. With development of these facilities and establishment of more wildlife protected areas, visitations from both within and outside the country increased. At the time of independence, over 50,000 annual tourists were recorded (Sindiga and Kanunah, 1999; Akama, 1999).

Soon after independence, tourism started to emerge as a significant socio-economic sector. The importance of the sector was accentuated by the falling international prices of export commodities such as tea and coffee, which the government had identified to provide foreign exchange earnings. The tourism sector was naturally seen as a viable alternative for Kenya's international trade (Akama, 1999). To facilitate its growth, the government initiated a process of establishing an appropriate policy and institutional framework. Through an Act of Parliament, the Kenya Tourist Development Corporation (KTDC) was established in 1965 as a state corporation with the mandate of financing investment in the sector (Ministry of Tourism and Wildlife, 2007). The thrust of tourism development at this stage was Kenyanization, whereby Kenyans were being supported to invest in tourism. A fully-fledged Ministry in charge of tourism was established in 1966 with the mandate of developing tourism and conserving wildlife. To deal with the emerging challenges related to the tourism sector, the government formulated tourism policies embodied in Sessional Paper No. 8 of 1969, dubbed Development of Tourism in Kenya, which served as the blueprint of tourism development in the country and has guided the Ministry of Tourism and Wildlife in discharging its mandate for many years (Ministry of Tourism and Wildlife, 2007).

The Licensing Section of the Ministry was charged with regulating the fast growing industry through Hotels and Restaurants Act, Cap. 494 and Tourist Industry Licensing Act, Cap. 381. The Marketing Section of the Ministry dealt with the marketing and promotion of the country as a tourist destination. A number of tourist offices were established in key tourist generating regions and countries, mostly based in Europe; that is London, Paris, Frankfurt, Stockholm, Zurich and Rome. Other offices included New York and Los Angeles in the USA, and Sandton in South Africa. A steady growth in both tourist arrivals and earnings was realized up to the early 1990s. In 1995, the first major decline in the sector was recorded. By this time, different tourism stakeholders had started to express the need for review of the existing policy framework, given the emerging trends and challenges in the tourism sector (Sindiga, 1999; and Ministry of Tourism and Wildlife, 2007).

With the support of the Japanese International Cooperation Agency (JICA), the Ministry of Tourism and Wildlife developed a draft National Tourism Master Plan in 1995. One of the Plan's recommendations that has been implemented is the establishment of the Kenya Tourist Board (KTB) with the mandate of marketing Kenya as a tourist destination both internationally and locally. With this development, the tourist offices abroad were closed down and KTB adopted the approach of using Market Development Representatives (MDRs) based in the key markets.

Towards the end of 2002, work to develop a comprehensive tourism policy started, involving a process of consulting all players in the tourism sector and taking into consideration the new global trends in the tourism sector. A draft tourism policy finalized by 2005 is yet to be formalized, and the process of developing a commensurate legislative framework is on-going. Issues addressed by the policy include: sustainable tourism development, diversification of tourism products, market diversification, and equitable distribution of tourism resources, among others. Implementation of some of the recommendations has been ad hoc and lacking a coordinated approach (Ministry of Tourism and Wildlife, 2007).

Tourism growth over the years on basis of the different existing policy and legislative framework is shown in Figure 2.1 on trends in tourist arrivals and earnings.

Quite evident from the graph is the steady growth in both arrivals and receipts in the 1980s. A major decline in 1998 can be observed. This was not surprising given that the preceding year, 1997, was largely

Figure 2.1: Tourism trends (arrivals and receipts), 1983-2007
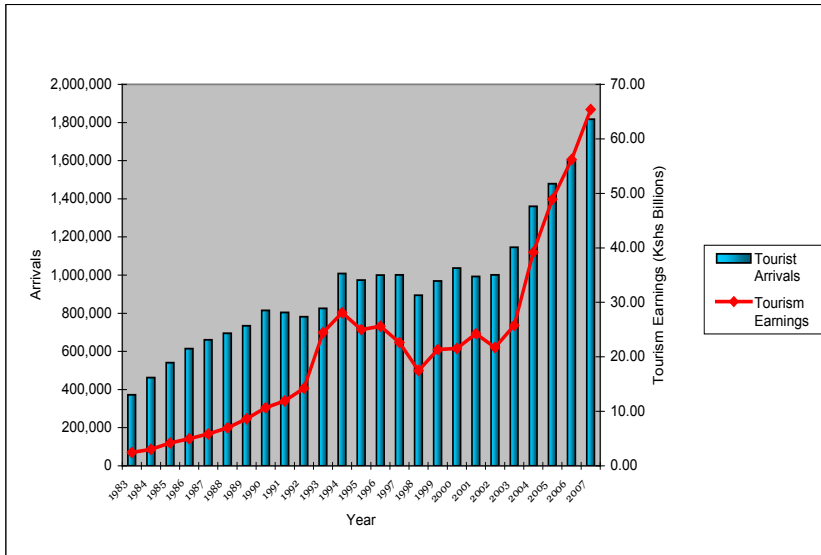

Source: Economic Survey (various)

characterized by ethnic clashes, 'election fever', and adverse weather conditions. Another marked decline occurred in 2002. This was mainly attributed to terrorism-related attacks, resulting to travel advisories on Kenya by a host of tourism generating countries (Ministry of Tourism and Wildlife, 2007).

In response to the 2002 slump, the government with the support of the European Union devised a Tourism Market Recovery Programme (TMRP) funded to a tune of Ksh 500 million. It involved repositioning Kenya in the key European markets with varying allocation of the funds. The implementation of this plan was widely lauded as successful, given the rebound experienced in the industry during the ensuing years. Concerns on how to sustain this growth started to emerge based on recognition that the tourism sector is highly volatile, and competition in the international market is stiff.

2.2   Main Tourism Markets for Kenya

Kenya as a tourist destination has been mainly dependent on inbound tourism as opposed to domestic tourism, with the former averaging around 80 per cent from 1983 to 1996. This was followed by a decline in inbound tourist overnight stays up to 2003. Inbound overnight stays

Figure 2.2: Comparison between overnight stays by inbound and domestic tourists
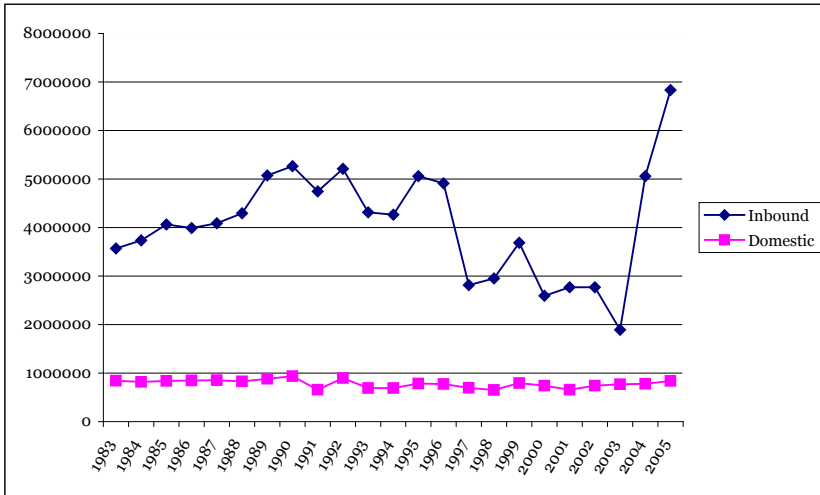
Source: Statistical Abstracts (various)

grew tremendously after 2003, while domestic overnight stays remained static. This is illustrated by the comparison between overnight stays by both tourists from outside the country and Kenyans in Figure 2.2.

Kenya has been recognized as a popular destination, offering beach and wildlife products by tourists especially from Western Europe and North America. The government has invested heavily in marketing tourism in these regions, initially through tourist offices abroad and then through the Kenya Tourist Board. Figure 2.3 shows percentage shares taken by different inbound tourist markets as computed from arrivals by air in 2006.

As observed from the above figure, the UK market accounts for the largest share of about 18 per cent. It is followed by the USA, Germany and Italy, each accounting for 9 per cent. The other key medium and long-haul tourist generating countries for Kenya are France, India, the Netherlands, Canada and Japan. The main regional markets for Kenya's tourism are South Africa, Tanzania and Uganda (Kenya Tourist Board, 2007).

Figure 2.3: Key tourist markets for Kenya in 2006
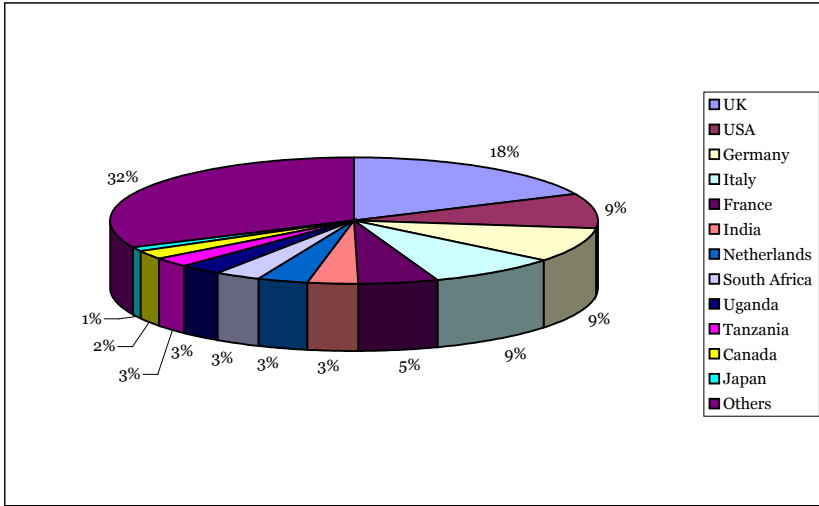
Source: Kenya Tourism Board (2007)

3. Literature Review

This section reviews the existing theoretical and empirical literature on tourism demand.

3.1 Theoretical Literature

According to Giacomelli (2006), the neoclassical (or Marshallian) consumer theory has so far represented the theoretical cornerstone of empirical research on tourism demand. This theory assumes that destinations provide a homogeneous tourism good, which is characterized by a certain price that is composed of two components, that is stay and transport. Assuming "separability" of the allocation process, individuals originating from a given country allocate their tourism disposable income according to destinations' price competitiveness. The theory formed a basis of establishing empirical models in the 1960s, mainly consisting of a single equation, aimed at estimating aggregate tourism figures for a given destination. Giacomelli further notes that, starting from the 1990s, an advanced class of neoclassical models emerged. These new models saw a shift of the analytical focus from destinations to origins using a system of equations and models as opposed to single equation.

The most commonly used system model in tourism is the Almost Ideal Demand System (AIDS) model of Deaton and Muellbauer (Mello *et al*, 1999; Durbarry, 2001; 2002). The use of the AIDS model is essentially due to the flexibility of its cost functional form. Given that the model incorporates both the axioms of consumer choice and the stage budgeting process, it is used to explain the allocation of tourism expenditure among different destinations. It is therefore especially suitable for explaining a country's outbound tourism demand. If the model is to be used to estimate inbound tourism demand, then a series of AIDS models have to be estimated for all the source markets under consideration, and the key destination included in all the models. This would then be followed by deriving average elasticity of demand from all the models. The exercise would not only be time-consuming but also highly constrained by data availability, hence impractical for estimating inbound tourism demand (Durbarry, 2001; 2008).

In view of the foregoing, single equation models with a proper theoretical foundation are deemed more appropriate than the AIDS model in estimating inbound tourism demand. In this regard, the gravity models, which are based on standard trade theories, are gaining ground

(Durbarry, 2001; Maliugina, 2006; Khadaroo and Seetanah, 2007; Durbarry, 2008). Gravity models originated from Newtonian physics, where gravitation is a force which increases with mass of two objects and decreases with distance between them. The first application of this analogy in economics is traced back to works of Tinbergen in 1962 and Pöyhönen in 1963, who postulated that trade flows between countries follow this principle, where the volume of trade flow is determined by two opposite forces–the economic size of countries, and trade impediments between them (Helmers and Pasteels, 2005; Walsh, 2006). Thus, the volume of trade can be estimated as an increasing function of the national incomes of trading partners, and a decreasing function of the distance between them. The latter, normally referred to as 'distance decay function', states that the interaction between two places decays with increased distance between them' (Linders, 2005). Besides the proxies of national incomes and geographic distance, gravity models allow inclusion of country-specific factors that influence trade flows (Durbarry, 2001; Ruiz and Vilarrubia, 2007; Khadaroo and Seetanah, 2007).

The Gravity models have been successfully used in explaining many types of flows in economics, including commodity shipping, tourism, commuting and migration (Bergstrand, 1985; Evenett and Keller, 1998). Consequently, they have gained popularity and have been referred to by Eichengreen and Irwin (1996) as the 'workhorse for empirical studies of international trade'. Evidence exists on the use of gravity-type spatial interaction models in appraising travel demand between a set of locations and, accordingly, allocating flights routes (Bonnefoy, 2005).

As pointed out by Durbarry (2001), the commonly used form of the gravity model applied in international trade theory is expressed as:

$$PX_{ij} = \beta_o (Y_i)^{\beta_1} (Y_j)^{\beta_2} (D_{ij})^{\beta_3} f(A_{ij}) \, u_{ij} \quad \text{.......................................(1)}$$

Where PX_{ij} is the value of trade flow from country i to country j, Y_i (Y_j) is the nominal value of GDP in country i (j), D_{ij} is the distance between the two countries, $f(A_{ij})$ is a function containing a vector of additional variables aiding or resisting the flow between i and j, and U_{ij} is a log-normally distributed error.

Researchers (Harris and Màtyàs, 1998; Bergstrand, 1985) observe that Gravity models, though previously criticized for their lack of theoretical underpinnings, have lately received much progress and now rest on a solid theoretical foundation. It has been shown that the gravity model framework is consistent with a number of standard trade theories

such as Heckscher-Ohlin and Monopolistic competition (Anderson, 1979; Deardorff, 1995; Evenett and Keller, 1998; Walsh, 2006). The first formal attempt to derive the gravity equation directly from a theoretical model was made by Anderson (1979), who used the Armington assumption that products were differentiated by country of origin. He demonstrated how to derive a gravity equation using the properties of a Cobb-Douglas expenditure system when each good is produced by one country only. Anderson's approach was subsequently applied and extended by Bergstrand (1985) who derived a reduced-form equation for bilateral trade flows using CES preferences over Armington-differentiated goods.

Departing from neoclassical assumptions of the traditional Heckscher-Ohlin-Samuelson model, Helpman (1987) proposed an alternative approach where he assumed monopolistic competition and product differentiation among firms in all industries rather than countries. The main role of monopolistic competition in Helpman's (1987) model is to ensure that different countries specialize in production of different varieties of differentiated products due to existence of economies of scale at the firm level, which enhances the incentives for foreign trade.

Bergstrand (1985) integrated Helpman's (1987) monopolistic competition framework with non-homothetic preferences to obtain a more general formulation of the gravity equation than in the earlier theoretical models. He was the first to derive the gravity equation in the augmented form that included per capita incomes, which were given a demand-side explanation in his model. Deardorff (1995) derived the gravity equation in its basic form with complete specialization in production at the country level. This was based on insight that the gravity equation can be derived without referring to product differentiation and monopolistic competition, if each good is produced in only one country and tastes are identical and homothetic.

Based on these theoretical foundations, Durbarry (2001) argues that the gravity model is appropriate for estimating tourism demand in a particular country, as it allows taking into account the peculiarities of tourism services. These are: 1) tourism destinations are not perfect substitutes of each other and, 2) travel activity involves eating, entertainment, transportation and currency exchange costs, besides direct expenditures on living. While using an augmented standard gravity model and Haussman and Taylor estimator, Walsh (2006) shows the appropriateness of the Gravity model in estimating tourism demand in the context of trade in services. Moreover, the models empirically perform

well and consistently exhibit high explanatory power (Bergstrand, 1985) and therefore suited for policy analysis (Harris and Màtyàs, 1998). It is on the basis of this strength that the Gravity model was adopted in this study to examine the effects of the various determinants of inbound tourism demand for Kenya.

3.2   Empirical Literature

According to Archer (1994) as quoted by Fretchling (2001), estimation and forecasting of demand generally aims at underpinning its determinants and 'predicting the most probable level of demand that is likely to occur in future in the light of known circumstances, or when alternative policies are proposed, to show what different levels of demand may be achieved.' It helps in discerning certain future events or environments more clearly, which is in turn useful in reducing risks of decisions. Tourism economists generally agree that the need to estimate and forecast demand in tourism is higher than in any other sector, given its unique nature (Fretchling, 2001; Song and Witt, 2006; Durbarry, 2002; Garin-Munoz, 2007).

According to WTO (2005), tourism demand, above all, depends strongly on the economic conditions in major generating markets. When economies grow, levels of disposable income will usually also rise with a relatively large part of it being spent on tourism. Expenditure on recreational travels is met from discretionary income among other competing uses such as debt reduction, investments, home entertainment equipment and other luxurious personal items (Crouch and Dolnicar, 2005; Proenca and Soukiazis, 2005; Garcia, undated). WTO (2005) further observes that tightening the economic situation often results to decreased tourism spending. This observation is empirically corroborated by, for instance, Song and Witt (2006) while forecasting tourism demand for Macau using Vector Autoregressive Model (VAR), where they find that a shock in GDP causes an impact in tourism demand that lasts for about 4 years. On the other hand, Walsh (2006) in his assessment of the impact of the income of exporting countries found GDP to be a significant factor in relation to commercial and transport services. He argues that income for the exporting country should be positively related to the country's abilities to produce more services for export.

As an alternative measure for the size of an economy, population is also commonly used as a key exogenous variable in the gravity equation. While estimating barriers to services trade using a standard gravity

framework, Walsh (2006) found that population of the importing country positively influences imports of travel services, meaning that larger countries produce more travellers and import higher values of travel services. He also found that though the population of the exporting country is statistically significant, it exerts a strong negative effect on trade. He argues that a negative coefficient on the exporter population is counter-intuitive and may reflect the importance of small high profile destinations such as Cyprus and Malta.

Tourism prices comprising both the travel cost to a given destination and the cost of living at that destination significantly influence tourism demand (Mervar and Payne, 2007). The cost of travel to a destination is largely influenced by the distance from the source markets (Durbarry, 2001). Distance between the source market and the destination is also normally used as a proxy to explain other factors that include time taken to travel and cultural distance. Travel time is a major consideration made by tourists in their decision making process and is increasingly becoming important with the changing consumer trends, whereby tourists nowadays prefer several short vacations to nearby destinations rather than long holidays taken in long-haul destinations. Lately, there has been an emergence of low cost carriers to short-haul destinations in line with this trend. To reduce the time taken to travel in relation to long-haul destinations, direct flights are normally introduced. Cultural distance refers to costs emanating from cultural misunderstanding and cultural clashes in trade. Tourists normally perceive the culture of far-flung destinations to be unfamiliar, hence an impediment (Garin-Munoz and Montero-Martin, 2007; Helmers and Pasteels, 2005; Khadaroo and Seetanah, 2007).

In his study of tourist expenditure in the UK using gravity based model, Durbarry (2001) uses distance to proxy the cost and time of travel to the destination. Most estimated gravity models show a strong negative effect of distance on international trade, with typical estimates indicating that a 1 per cent increase in the distance between two countries is associated with a fall of over 0.7 per cent in the trade between those countries (Walsh, 2006; Kimura and Lee, 2004; Maliugina, 2006).

The cost of living in a destination is normally measured by the destination consumer price index (CPI) in relation to the origin CPI (Garcia, undated). The use of CPI is based on the assumption that prices for tourism goods and services tend to move in the same direction as overall consumer prices (Divisekera, 2003). In line with this, tourism

demand has been found to be very elastic and easily influenced by monetary operations, with revaluation impacting tourism revenues and demand adversely. It decreases incoming tourism demand and increases outgoing tourism demand. Devaluation, on the other hand, increases incoming tourism demand while decreasing outgoing tourism demand. Karingi and Ndung'u (2000) observe that unlike previously when exchange rate was controlled, it has now become an important variable in determining the level of export trade in an open economy such as Kenya's.

In their study, Garin-Munoz and Montero-Martin (2007) combine the aspects of consumer price index and exchange rate to construct an index expressing the cost of living of tourists in Balearic Islands relative to the cost of living in the origin country adjusted by exchange rate. The real exchange rate obtained by adjusting the CPI ratio for the differences in exchange rates between the origin and destination countries is used as a proxy for tourism prices by, among other researchers, Lim and McAleer (2001) while modelling the determinants of international tourism demand for Australia.

A review of literature reveals use of a lagged dependent variable as a measure of habit persistence and 'interdependent preferences' (Garin-Munoz and Montero-Martin, 2007). These researchers identify two main reasons for including previous consumption as an explanatory variable of the model. They note that there is less uncertainty associated with holidaying in a country that one is already familiar with, compared with travelling to an unvisited foreign country. The other reason is because knowledge about the destination spreads as people talk about their holiday, thereby reducing the uncertainty for potential visitors to that country. Because of these reasons, if people are satisfied with a destination, they may be more likely to come back and tell others about their favourable experiences related to the destination.

The government policies and regulations governing the tourism sector play a significant role in determining the level of visitations in a destination. The World Economic Forum (2007) sees visa requirements and bilateral air service agreements into which a particular government has entered with other countries as determinants of tourism flows. Abolition of visa requirements for visitors from the European Union and some other countries by the Ukrainian government was reported to have increased arrivals by 2 to 2.5 times (Maliugina, 2006).

Croes (2000) observes that marketing and promotional expenditures, though an important variable from a tourism policy perspective, have not been generally included in most studies aimed at modelling tourism demand. Ikiara *et al* (2005), found availability of tourism resources for tourism marketing and promotion to be a key determinant of the performance of Kenya's tourism. Their results indicated that a 1 per cent increase in public expenditure on overseas tourism marketing leads to a 0.38 per cent overall increase in tourism revenue.

Some studies on international trade flows deploying Gravity model (for instance, Kimura and Lee, 2004; Walsh, 2006) show that existence of a common language and culture plays a role in boosting bilateral trade. Kimura and Lee (2004) found that a common language dummy variable in their gravity equation has a positive coefficient and is significant at the 1 per cent level. Walsh (2006) found a common language to be one of the most important determinants of trade between two countries.

Over the last few years, security has become a major determinant for tourism demand for destinations around the world (Levantis and Gani, 2000; WTO, 2005). This is clearly evident from the slump in international tourism following the historic terrorist attack at the World Trade Centre in the US in September 2001 (WTO, 2005). In their attempt to quantify the effect of tourism crises in respect to Scotland, Eugenio- Martin *et al* (2004) assert that different markets respond differently to different types of crises. They underscore that an understanding of the behaviour of a particular market in the face of a given crisis would be instrumental in informing crises management policy decisions and practices.

Naudé and Saayman (2004) argue that infrastructure and facilities in a country can affect both the relative prices and the quality of tourism products. According to Ikiara *et al* (2005), the road infrastructure plays a critical role in determining tourism performance in Kenya, with a percentage increase in the length of all-weather roads leading to about 6 per cent increase in tourist receipts. Telecommunication infrastructure is increasingly becoming important as a determinant of tourism demand, with the expansion of the online travel market (Buhalis, 2003). Proenca and Soukiazis (2005), in their study of tourism demand for Portugal, use the ratio of public investment to GDP as a proxy to capture the welfare effects emanating from public infrastructure networks. The available accommodation capacity per year was observed to be the most important supply side factor in attracting tourism.

3.3   Overview of the Literature

The literature reviewed indicates that studies on tourism demand are mainly based on the traditional consumer theory and they apply either single or system equations. Most of these studies have shown income of the tourist generating countries, tourism prices and lagged dependent variables to be critical determinants for inbound tourism demand. Other key factors that have been found to influence inbound tourism demand include tourism marketing expenditure, insecurity and entry restrictions. Different proxies have been used in examining these variables. The income of the tourist generating countries is commonly proxied by either GDP or GDP per capita. Measurement of tourism prices, which comprise both the cost of travel to the destination and cost of living in that destination, has presented a challenge to researchers due to unavailability of data on reliable indicators such as airfares and cost of travel packages.

Whereas the Gravity model has been used extensively in explaining many types of trade flows, its application in tourism is a recent phenomenon (Durbarry, 2001; Durbarry, 2008; Khadaroo and Seetanah, 2007). As pointed out by a number of researchers (Anderson, 1979; Deardorff, 1995; and Evenett and Keller, 1998), the model was initially criticized for lack of a theory but has now been provided by theoretical underpinnings based on standard trade theories. The main premise for the use of gravity model approach in tourism is the fact that tourism is increasingly becoming a major item of international trade. The key variables for gravity equations are the economic sizes of both the importing and exporting countries and the distance between them. A vector of additional variables either aiding or impeding trade flows between the two countries is normally taken into account.

This study adopted the Gravity model approach in its estimation of a panel data based on nine key tourism markets for Kenya, which accounted for about 70 per cent hotel bed nights by inbound tourists.

These markets are UK, USA, Germany, Italy, France, Switzerland, India, Canada and Japan. The determinants that were subjected on investigation in this study are: Lagged dependent variable, GPP per capita for both Kenya and the source markets, distance between Kenya and the source markets, tourism prices, visa fees and insecurity. Tourism marketing expenditure, though deemed an important factor, was not estimated due to unavailability of data on the same over a number of years.

4.   Methodology and Data Sources

According to literature on econometric modelling of tourism demand, there is no standard measure of tourism flows that is universally accepted (Proenca and Soukiazis, 2005). However, tourism demand is commonly measured in terms of:

- number of tourist visits from a tourist generating country to a destination country;

- tourist expenditure by visitors from the origin country in the destination country; and,

- tourist nights spent by visitors in the destination country.

Though seen as an imprecise measure of tourism demand, hotel bed nights are widely used by researchers (Mervar and Payne, 2007). This study adopts this measure due to the availability of disaggregated data by the different markets for Kenya and lack of data on expenditure by source markets.

As regards the choice of explanatory variables, the study follows the recent studies on estimating tourism demand using the gravity model, for instance, Durbarry, 2001; Maliugina, 2006; Khadaroo and Seetanah, 2007 and Durbarry, 2008.

4.1   Model Specification

Following Matyas (1998), this study adopted the gravity model whose specification is given as:

$$Y_{ijt} = \alpha_i + \gamma_j + \lambda_t + \beta_1 X_{ijt} + \beta_2 X^*_{it} + \beta_3 X^{**}_{jt} + \ldots + u_{ijt} \ldots\ldots\ldots\ldots\ldots(2)$$

where,

- Y_{ijt} is the dependent variable such as the number of tourists from country i to country j at time t or hotel bed nights occupied by tourists from country i in country j at time t;

- X_{ijt} are explanatory variables in all three dimensions i, j and t ;

- X^*_{it} are explanatory variables with variation in dimensions i and t (characteristics of the sending country such as GDP per capita);

- X^{**}_{jt} are explanatory variables with variation in dimensions j and t (characteristics of the receiving country j);

- α_i is the sending country effect, which does not change with time and is the same for any receiving country;

- γ_j is the receiving country effect;

- λ_t is the time effect; and,

- u_{ijt} is a white noise disturbance term.

When estimating such a model, specific effects (α, γ and λ) can be treated as random variables (error component approach) or fixed parameters (fixed effect approach) (Durbarry, 2001; Maliugina, 2006).

To estimate inbound tourism demand for Kenya, the Gravity model was used in a log-linear functional form as follows:

$$\ln HBN_{KEit} = \alpha_0 + \alpha_1 \ln HBN_{KEit-1} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln GDP_{KEt} +$$
$$\alpha_4 \ln DIST_{KEi} + \alpha_5 \ln P_{KEi} + \alpha_6 \ln VISA_{it} + \beta_1 INSEC_t + \upsilon_{KEit} \ldots \ldots (3)$$

where the dependent variable is the natural log of the hotel bed nights in Kenya by tourists from sending country *i*. This variable is denoted by $HBN_{KEit.}$. The independent variables are defined in Table 4.1.

4.2 Data Sources

The study used panel data of 20 years (1987-2006) for nine major tourist source markets for Kenya; that is UK, Germany, Italy, France, Switzerland, USA, Canada, Japan and India. Data on hotel bed nights by tourists from these markets was obtained from Economic Surveys for various years. Data on economic variables GDP per capita and consumer price indices was obtained from the World Economic Outlook (IMF) database. The consumer price indices were adjusted with the exchange rates to give the cost of living in Kenya in relation to the country of origin. Data on visa fee charges was sourced from the Department of Immigration. The dummy on insecurity was generated by the author, whereby a value of 1 indicates existence of tourism insecurity in a given year and 0 otherwise.

Due to unavailability of disaggregated data on tourism marketing expenditures for a number of years, the variable was not estimated. Also, for the Swiss market, two years (2005 and 2006) were dropped due to inconsistent data, hence the panel is unbalanced. The pooling of time series and cross-sectional data allows for higher degrees of freedom in

the estimation process, country-specific effects, application of dynamic specification, and reduced multicolinearity (Harris and Màtyàs, 1998; Proenca and Soukiazis, 2005; and Garin-Munoz and Montero-Martin, 2007).

The System-General Methods of Moments (system-GMM) of Blundell and Bond (1998) was applied for estimation and testing purposes to Equation (3). The system-GMM is a system of equations based on the levels equation and the first differenced equation. It uses the lagged differences as instruments for the equation in levels alongside lagged levels variables for the equation in first differences. Using first differences removes the individual effects.

System-GMM has superior properties in terms of small sample bias and root mean squared error (RMSE), especially for persistent series. It is an efficient estimator for dynamic panel data and has better control of endogeinity of all the explanatory variables than other estimators (Windmeijer, 1998). In addition, System GMM solves the problem of measurement error, omitted variables and allows users to discard error correction models (Bond *et al,* 2001).

To validate this estimation technique, it was subjected to the requisite diagnostic tests. The consistency of the estimation depends on whether the lagged values of the endogenous and exogenous variables are valid

Table 4.1: Definition of independent variables

Symbol	Description of Variable	Expected Sign
HBN_{KEit-1}	Lagged dependent variable (hotel bed nights by tourists from country i in year t)	+
GDP_{it}	GDP per capita in a sending country i in year t	+
GDP_{jt}	GDP per capita for Kenya i in year t	+
$DIST_{KEi}$	Distance between the economic capital of country of origin and Kenya measured in kilometres	-
P_{KEit}	Cost of living in Kenya vis-à-vis the country of origin	-
$VISA_{it}$	Visa fees charged on tourists from sending country i visiting Kenya in year t	-
$INSEC_{t}$	Dummy representing a shock due to insecurity - 1 indicates presence of insecurity in year and 0 otherwise	-

instruments in the regression. The Sargan test of over-identifying restrictions as derived by Arellano and Bond (1991) was therefore done. The test should reject the null hypothesis of validity of instruments for the model to be well specified. This methodology also assumes that there is no serial correlation in the error term, for it to be consistent. This should be evidenced by existence of negative first order autocorrelation, AR(1) in the differenced residuals with no evidence of second order serial correlation, AR(2), in the residuals (Windmeijer, 1998)

5. Estimation Results and Discussion

The empirical results from the estimation are shown in Table 5.1.

The results show that the model performs satisfactorily. The magnitudes and signs of the coefficients are as expected. No signs of serial correlation are found, and the Wald test denotes the joint significance of the explanatory variables.

The results reveal that habit persistence is important for explaining inbound tourism demand for Kenya. The results indicate that a 1 per cent increase in hotel bed nights in a particular year leads to a 0.66 per cent increase in hotel bed nights during the following year. This is attributable to habit persistence and word-of-mouth effects. This implies that some of the tourists who visit Kenya in a particular year tend to come back the following year. There are also those who recommend Kenya to others as a destination of choice, given the quality of their tourism experience in Kenya. This finding is supported by various studies with dynamic specification (such as Proenca and Soukiazis, 2005; Khadaroo and Seetanah, 2007) and Garin-Munoz and Montero-Martin, 2007), which found lagged dependent variable (hotel bed nights) to be statistically significant in explaining international tourism demand.

The estimated coefficient for the income variable for the countries of origin has the expected sign, and thus consistent with the fundamentals of the gravity model. It is also a significant factor in explaining inbound

Table 5.1: Estimation results
(Dependent variable is hotel bed nights in Kenya)

Independent Variables	Description of variables	Coefficient	Std Error	t-value
LHBN(-1)	Log of lagged hotel bed nights	0.656***	0.1231	5.33
LGDPi	Log of GDP per capita for the country of origin	0.628***	0.1202	5.23
LGDP$_{KE}$	Log of GDP per capita for Kenya	0.027	0.1155	0.235
LDIST	Log of distance between Kenya and country of origin	-1.906***	0.5677	-3.36
LVISA	Log of visa fees	-0.259***	0.0539	-4.81
LP	Log of tourism prices	-0.314**	0.113	-2.78
INSEC	Dummy on insecurity	-0.054*	0.0319	-1.69
CONSTANT		16.7381	5.102	3.28

Note: For the coefficients ***, ** and * denote significance at 1 per cent, 5 per cent and 10 per cent level, respectively.

Table 5.2: Diagnostic tests

Test	Coefficient	P-value
Sargan test (p-value)	21.31	0.127
AR(1) test (p-value)	-2.799**	0.005
AR(2) test (P-vaue)	1.607	0.108

*Note: ** denotes significance at 5%*

tourism demand to Kenya at 1 per cent level. However, the absolute value of the coefficient (0.63) is less than unity, implying that tourism to Kenya is considered a non-luxury service by consumers from her key markets. According to the result, an increase in per capita income of one per cent in the tourist generating countries will lead to 0.63 per cent increase in hotel bed nights in Kenya. Results of previous studies that are closely comparable include Garin-Munoz and Montero-Martin (2007). In their study on the role of transport infrastructure in international tourism development using a gravity model, they found an income coefficient of 0.92 while modelling international tourism demand for the Balearic Islands and Khadaroo and Seetanah (2007), with income elasticity of 0.81.

The estimated coefficient (-1.9) for distance variable has the expected negative sign and is significant at 1 per cent level. It indicates that tourist arrivals are influenced by the distance between Kenya and the country of origin. Kenya's main markets are located in Europe, which is relatively near compared to Americas and the Far East. This finding confirms the tendency of tourists to visit short haul or medium haul destinations more than long haul destinations due to the increased cost and time of travel. This is in line with findings of other studies such as Durbarry (2008), who found UK neighbouring countries having an effect of increasing tourist arrivals significantly (68%). The findings also fulfil an important axiom of the gravity model where interaction between two places is expected to reduce with distance, *ceteris paribus*.

According to this estimation, tourism prices as proxied by the CPI ratio adjusted by the exchange rate between Kenya and the countries of origin was found to be significant at 5 per cent level. The coefficient shows that a 1 per cent positive change in this indicator leads to 0.31 per cent decrease in hotel bed nights. This result is in line with a number of studies, which show destinations' tourism prices as a key determining factor for tourism demand. This includes Khadaroo and Seetanah (2007), who found price

to be significant for inbound tourism demand for selected destinations across the world with a coefficient of -0.73. Garin-Munoz and Montero-Martin (2007) found a coefficient of -0.76 for tourism prices in respect to the Balearic Islands. A much lower coefficient of -0.19 was obtained by Giacomelli (2006) in his investigation of time variant determinants of international tourism demand.

The visa fee charges were found to be significant in explaining inbound tourism to Kenya at 1 per cent level. This study reveals that a 1 per cent increase in visa charges causes a 0.25 per cent decline in hotel bed nights by Kenya's main markets. Related findings are by, for instance, Maliugina (2006), who by using a dummy variable as opposed to actual visa charges, found the probability of tourist arrivals to Ukraine being doubled with waiver of visas for her main markets.

The dummy variable INSEC has been included to reflect the impact of the terrorism attacks, political instability and other insecurity incidences in Kenya on inbound tourism. The results confirm the expected negative sign and show that it is significant for explaining the number of tourist inflows in Kenya at 1 per cent significant level. The negative sign of this dummy's coefficient indicates that tourism demand to Kenya would decline in case of a shock related to insecurity. This is evident from past incidences such as the Likoni clashes of 1997, and the terrorist bomb attacks of 2002. This is well corroborated by other studies, for instance, Naudé and Saayman (2004), who found political stability to be a significant determinant for total tourist arrivals to Africa with a coefficient of 0.18, and Garin-Munoz and Montero-Martin (2007), whose results indicated the September 11 (2001) bomb attack in the US had a negative effect and a coefficient of 0.09 on the tourism demand for the Balearic Islands.

6.   Conclusions and Recommendations

6.1   Conclusions

Tourism has become an important item in international trade for Kenya over the years. The demand for international tourism for Kenya is influenced by several factors, which currently are not adequately understood. Lack of insight on these factors may have hindered formulation of appropriate policy strategies to develop tourism in the country. The primary aim of this study was to estimate the inbound tourism demand in Kenya with respect to nine of her main tourism markets. To contextualize inbound tourism within international trade, the gravity model approach was taken, in which the model has disaggregated hotel bed nights as the dependent variable while explanatory variables comprise a lagged dependent variable, per capita income for the origin countries and Kenya, distance between Kenya and these countries, tourism prices, visa fees and a dummy on insecurity. The model was applied on a panel data of different markets for a period of 20 years (1987-2006) and was estimated using the System-GMM, given its superior properties for estimating panel data. Tourism marketing expenditure was not included as a variable due to constraints in regard to disaggregated data.

The estimation results reveal the importance of the income of tourists, habit persistence and word-of-mouth effect, distance, tourism prices, visa charges and security as determinants of tourism inflows in Kenya. The study shows that repeat visits and word-of-mouth effect comprise a major determining factor for inbound tourism demand, hence the importance of quality of service. The coefficients of income per capita in origin countries indicate that Kenya's tourism is a non-luxury service in respect to her main markets. Distance between Kenya and the tourism markets are highly significant as per the findings, probably because the traditional markets are concentrated in Europe. Tourism prices and visa fee charges were found to be statistically significant in explaining inbound tourism demand for Kenya. The study also shows insecurity incidences, both within the destinations and in the markets, to be a determinant of inbound tourism demand. Based on these findings, the following policy recommendations are made.

6.2   Recommendations

The policy implication of the positive lagged hotel bed nights is the need to keep the number of repeat tourists and word-of-mouth referrals high through provision of quality service. This can be achieved by constant improvement and upgrading of the quality of tourism products and services. The government can help in this by conducting regular inspection and standardization of tourism facilities and skills in the sector. There is also need to develop and upgrade tourism infrastructure to ensure that tourists enjoy their stay, and have a quality experience in Kenya. Another important strategy would be to enhance branding, and differentiating Kenya as a premier tourist destination. In addition, it would be imperative to thoroughly know the market to enable focusing of marketing efforts, and monitoring and quantifying their impact. In this regard, the government and tourism suppliers should leverage customer relationship management (CRM) as a key component of their marketing strategies.

It would be advisable to focus the on-going tourism market diversification efforts to countries with high and rapidly growing income per capita to avoid any vulnerability associated with economic conditions in traditional markets. One of the main challenges for the implementation of this policy in the case of Kenya is that the powers of promotion and distribution remain largely in the hands of travel agents, especially in Europe. Thus, it would be important to help Kenyan tourism suppliers establish links with trade partners in other regions besides Europe. Another key strategy would be to promote adoption of e-Tourism to enable travel suppliers in Kenya bypass foreign intermediaries, thereby reducing transactional costs and leakages. This should, however, be complemented with aggressive direct consumer campaigns in the new markets to create awareness of Kenya as a destination of choice.

Reducing the cost of travel and time is paramount. Currently, tourists from the lucrative long-haul markets such as USA and Japan use connecting flights via other cities, thus taking over 15 hours to reach Kenya. There is need to expedite bilateral air service agreements, among other arrangements, to facilitate introduction of direct flights with competitive air fares, preferably by Kenya Airways. Consequently, the airline would increase its market share and ward off competition from flag carriers in destinations such as South Africa and Egypt. To appeal to the long-haul markets, it is imperative that their product needs are

ascertained and developed to lure them to Kenya as opposed to nearby destinations. This would be in line with the Vision 2030, which aims to make Kenya a top ten long-haul tourist destination. To increase visitation from both short-haul and medium-haul source markets, there is need for introduction of no-frills airlines. This will not only increase visitations from these countries, but will increase the possibility of travel involving multiple destinations. Relational marketing through loyalty programmes, especially targeting business travellers, would be useful in retention of customers.

There is need to provide quality services to enhance the value for money for products offered, like introducing unconventional products that will be competitive against other destinations. Related to this is the need to address the visa issue to encourage raising tourist numbers to the desired level. Reduction or waiver of visa charges in the long term for children travelling with parents could be considered, in order to lower the cost of travel packages.

Tourist safety and security in Kenya needs to be strengthened by increasing the number of tourist police, and building their capacity in handling clients. There should be coordination between the Tourist Police Unit, Kenya Tourism Federation Safety and Communications Centre and Kenya Wildlife Service, among others. Given that some of the incidences that have affected the tourism sector in Kenya are ethnic-related upheavals in the Rift Valley and at the Coast, there is need to address the underlying causes for such strife. This would include establishing a mechanism that ensures that local communities benefit from the tourism sector. International terrorism could be mitigated through enhancement of security apparatus at the entry points and tourist facilities, and through adoption of modern technology.

Given the data constraints faced in this study, it is recommended that the system of tourism statistics in the country be improved. There is need to establish a Tourism Satellite Account (TSA), since it will facilitate future studies and policy analysis with data on both tourism demand and supply sides. It is imperative for government agencies such as the Department of Immigration, Ministry of Tourism, and the Kenya National Bureau of Statistics, among others, to collaborate and come up with a comprehensive and reliable statistical system for the tourism sector.

6.3   Suggestions for Further Research

For further research, there is need to investigate the impact of tourism prices of alternative destinations. This will inform policy strategies in addressing competition and increasing Kenya's market share, both globally and in the region. It is also recommended that, to complement this demand function, an investigation on determinants from the supply side be conducted. This could consider factors such as attractions and tourism infrastructure vis-à-vis competing destinations. To inform policies on tourism marketing expenditure, it would be important to factor in a variable on this and estimate it accordingly.

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Appendix

Key markets' GDP per capita (2006) and distance from Kenya

Country	GDP per capita (US$)	Distance (Km)
Switzerland	51770.61	5,877.21
USA	44190.49	14,118.92
UK	39213.08	7,022.54
Canada	38951.46	12,155.93
France	35899.48	6,104.43
Germany	35203.87	6,171.91
Japan	34188.04	10,831.60
Italy	31790.63	5,278.83
India	796.83	4,733.11

Sources: World Economic Outlook (2007), Mapcrow Travel Distance Calculator- www.mapcro.info.