The Impact of ICT investment on Tourism Export in Tanzania (1995-2010)

Gema Mwikoko and Tumsifu Elly

Abstract

The study assessed the impact of ICT investment on tourism export in Tanzania for the period of 1995 to 2010. The study used time series secondary data whereas OLS model was subjected to STATA to investigate the causal linkage relationship between ICT investment and tourism performances for the stipulated time dimension. Findings revealed the presence of positive relationship between ICT investment and tourism exports. Furthermore, the study found that inflation and investment had a negative relationship with tourism export.

The study therefore, has called upon the government to control the inflation rate as it affect the exchange rate negatively Furthermore ICT use should be encouraged throughout tourism sector to enhance its growth. The study additionally identified the government role in particular, that should spend in worthwhile tourism investment.

Introduction

The importance of Information Communication Technology (ICT) in travel and tourism has increased over the past few years. The travel and tourism area is one of those industries that are able to gain enormous synergy effects from the use of technology such as the internet (Gratzer, 2003). Other sectors such as Small and Medium Tourism Enterprises are of great importance when they use Information system in trading and provide services to consumers. This use has far reaching effects on the performance of tourism firm performance and the strategic thereof (Elly, 2011). Due to the importance of information in tourism activities, Sheldon (1997) characterized it as a life blood and an essential competitive factor in the tourism system. It is through the communication process that suppliers of various goods and services reach the potential tourists and engage them throughout the whole customer services journey. UNACTAD (2000) proclaims that e-commerce and ICT represent an opportunity for developing countries to improve their relative position and permit development through productivity gains in supply chain management and is expected to represent about 20 percent of B2B in the World.

The revolution in ICTs has profound implications for economic and social development (Shanker, 2008). It has pervaded every aspect of human life be it health, education, economics, governance, entertainment etc. Dissemination, propagation and accessibility of these technologies are viewed to be integral to a country's development strategy. The most important benefit associated with the access to the new technologies is the increase in the supply of information. Information is shared and disseminated to larger audience and it reduces the cost of production. Knowledge is produced, transmitted, accessed and shared at the minimum cost. With the reduction in the transactional costs, there is also a reduction in the degree of inefficiencies and uncertainty and it has overcome the constraints of distance and geography.

The adoption of ICT in tourism industry is transforming the role played by tourism actors such as travel agents, tour operators, and conference organizers and booking agents. ICT system provides detailed and up to date information on the availability and prices of products and could also contribute to the increased volume of sales and benefits. The application of ICT in tourism is

inevitably leading to a process of disintermediation, and contributing to industry restructuring and innovation (Kamuzora, 2006).

The internet is one of the ICT tools that transports tourism information such as tourism information stored in files, or documents in computer. In early 19th century, it was the transport technology which facilitated the growth of tourism in Europe. Towards the end of 20th century, the internet had changed greatly the way people planned their travel activities (Kamuzora, 2006). Travel and tourism can be defined as an information business, because information is one of the most important quality parameters to support tourism industry as a service market. In few other areas are the generation, gathering, processing, application and dissemination of information are important for day-to-day operation as it is for the travel and tourism industries. In fact, tourism is a hybrid industry. More than other services, tourism services are increasingly dominated by information. However, the core product is almost a physical product (Gratzer, 2003).

It would seem that the tourism industry has been fairly proactive regarding the adoption of new technologies (Example the Internet). Recent advancements in telecommunication, Networking databases, data processing and electronic marketing provide new opportunities for tourism businesses and are significantly impacting on traditional tourism business models. The use of Information and Communication technologies (ICT) adds value to tourism services and products and support the development of the industry networks and cluster. ICT/E Business has the ability to impact the whole tourism value chain (example, information on destination, accommodation and transportation package tours and services) and affect process management and service delivery in the global tourism sector. (Hinson, 2007).

Tourism enterprises are increasingly using information system (IS) among others as a tool for competition. Thus, innovation in ICT and subsequent use among tourism firms and tourists are on increase (Buhalis as cited Elly, 2008). Tourism sector as being among the information intensive business has a great deal in usage of ICT and information system use. The growing business modal such as selling directly on the Internet, Web based travel agencies, Internet portal and other e-commerce application are making it possible for tourists and tourism firms to request and offer highly customized and dynamic products and services (Elly, 2011).

Establishment of ICT in Tanzania

The information communication and technology (ICT) sector was formed through the merger of the telecommunication and information technologies sectors in 2003. The mission of the ICT sector was to provide more affordable access to a range of ICT services to as many people as possible so as to enhance sustainable socio-economic development and to participate in the global networked economy. Also, the establishment of ICT caused a necessary change of the old license framework, which had been in place since telecommunication liberalisation in Tanzania was introduced the new license framework (AfriISPA, 2005) goal was to provide more affordable access to a range of ICT services, from voice to high-speed internet access to the majority of the people who can afford it. The old license framework was not flexible enough to couple with the ICT sector due to facilitating the monopoly of the Tanzania Telecommunication Company Limited (TTCL), which is owned by the government. Also, Data operators and ISPs were prohibited from providing Voice Over IP (VOIP) services.

Tourism in Tanzania

Tanzania is the country that has many tourist attractions. More than 25 per cent of Tanzania's land is covered with magnificent game reserves and national parks. There are 13 national parks, 29 game reserves, 40 controlled conservation areas and marine parks. Tanzania is a also home to the famous Roof of Africa-Mount Kilimanjaro. Tanzania was awarded 7th position among 45 top destinations to be visited 2012 by the New York Times. The tourist industry currently supports 30,000 jobs and generates 25 percent of Tanzania's foreign exchange (the second foreign earner after agriculture). Tanzania expected to receive one million tourists by the end of 2011 and generate about USD1.7 billion (about Sh2.7 trillion) in revenue (TTR, 2010).

The newly published WTTC has indicated that the share of travel and tourism to Tanzanian economy is expected to drop to 7.9 percent by 2020 from 8 percent recorded in 2010. However, the investment in the sector is Tsh 864.8bn or 13.4 percent of total investment by 2010. Tourism sector currently generate about 17.5 percent of GDP. Tanzania earned up to 291.5 USD from travel and related activities in during the year ended 2010 (BoT, 2010).

The Tanzania Tourist Board (TTB 2010) embarked on an innovative strategy to help the growth of domestic tourism and attract more local tourists to the country's numerous tourism destinations by encouraging and promoting live musical performances and education. In order to achieve this objective, the TTB has expressed the need for both the public and the private sectors within the Tanzania tourism industry to work together to market the product and to strengthen the overall tourism services overall. The competitiveness in tourism lies in abundance and diverse wildlife, the spectacular landscape, scenery, and the existence of other economic sectors that has the potential to support tourism sector (NTP, 1999).

Statement of the Research Problem

Tourism export trade is among the ingredients that are very important in promoting international tourism and thereafter becomes potential source of economic growth for many countries in the world. Although the debate about the precise relationship between ICT and Tourism is still open, the continuing research on this issue has uncovered some important results. For example, Usoro (2007) reveal that there is potential contributions of ICT in the tourist industry and proposes that these contributions be used for future studies of less developed economies in hospitality and destination aspects of tourism. Also the study by Ogbu (2011) reveals that almost every tourism product can be sold online without the consumer necessarily visiting the place when making any choice since tourism products are not ready made goods. Booking of flights and hotel reservations can be done online through e-mail, telephone calls and other internet services thereby helping to reduce, if not remove entirely, the number of time spent processes of the old system.

Much as ICT provides relevancy to tourism industry, little is known about its contribution towards the growth of tourism sector in Tanzania. There is, therefore, a knowledge gap on this matter. So this study addresses the knowledge gap. Previous studies in this context did not explain the relationship between investment in ICT and tourism export, (Elly, 2011, Kamuzora, 2006

Research Objectives

The broad objective of the study was to determine the impact of ICT investment on Tourism export in Tanzania for the period from 1995-2010. Specifically, the study focused on the following:

i. To determine the relationship between ICT investment and tourism export.
ii. To determine the effects of inflation and investment on tourism export in Tanzania.

Research Hypothesis

Based on the stated problem, objectives of the study and the literature review, the following hypothesis were intended to be tested

i. The increase in ICT investment would cause increase in Tanzanian tourism export
ii. The increase in inflation rate would hinder the growth of Tanzanian tourism export
iii. The increase in investment would hinder the growth of Tanzanian tourism export

Literature Review

The purpose of this section is to explore theoretical underpinning studies that explain the impact of ICT in tourism export. Specifically, the chapter present first the theories, and ends with empirical literature that are relevant to the study.

Factor Endowment and the Heckscher-Ohlin Theory

In the early 1900's, an international trade theory called factor proportions theory was proposed by two Swedish economists, Eli Heckscher and Bertil Ohlin. Hence it is known as Heckscher-Ohlin theory. The Heckscher-Ohlin theory stresses that countries should produce and export goods that require abundant resources (factors) and import goods that require resources in short supply. This theory differs from the theories of comparative advantage and absolute advantage since the latter theories focus on the productivity of the production process for particular goods. On the contrary, the Heckscher-Ohlin theory states that a country should specialise production and export using the factors that are most abundant, and thus the cheapest. As earlier theories stated, the country should produce goods most efficiently. This theory is relevant to this study because Tanzania is endowed with abundant tourist attractions; hence it exports more of tourism services. Robert (2005), in his book gives several examples based on the factor endowment theory, he stated that Brazil exports coffee because it has an abundance of the soil and climatic conditions required for coffee's production; the United States and Canada export wheat because they are endowed with an abundance of temperate-zone land, which is well suited for wheat production; and India and China are huge exporters of shoes and garments because they are heavily endowed with labour.

The Virtual Incoming Agency model

The virtual incoming agency model is a model that was developed as a results of a number of research projects undertaken in Italy as well as in Mediterranean Countries over the last five years, the virtual incoming agency (or VIA) is conceived as an evolution of the concept of DMO (Petti, 2009). According to the considerations above the virtual incoming agency is conceptualized as the organization in charge of the promotion and coordination of an integrated tourism system within a tourism destination - including the creation of the necessary cultural, organization and technological conditions to ensure its effective implementation - that relies on

ICTs to undertake its functions. It is a technological and organizational (ICT-enabled and ICT-native) model for the management of tourism destinations. Can thus be considered virtual incoming agencies all the public or public-private destination management organizations, that: have as mission the integrated promotion, valorization and development of a destinations' tourism industry; make use of integrated ICT systems (i.e. Destination Management Systems or DMSs) for the management and coordination of their activities; aims at attracting visitors and tourists and to develop destination's economy and social wellbeing (Petti, 2009).

The Butler Model of tourist resort development

Butler Model saw developed for the purpose of looking at the way that tourist resorts, grow and develop. The model states that the tourist industry, like all industry, is dynamic and constantly changing. Therefore, the Butler Model is a way of studying tourist resorts and seeing how they change over time and in relation to the changing demands of the tourist industry. The model can be break down into five distinct stages as follows; Discovery Stage where by a settlement is 'explored' or 'discovered' by a small number of people who later tell others about their experience. In time other people visit and local people seize upon the new economic opportunities provided by these visitors and provide services to meet the needs of these visitors or tourists; Growth and Development Stage where by more tourists arrive having heard about the place by word of mouth, articles in Travel Supplements in papers such as The Sunday Times, brochures or tourist guides. The extra tourists attracted by the publicity and people willing to visit somewhere new will lead to the building of new hotels, restaurants, shops and services to cater for the influx of people; Success Stage where more people visit the resort, the facilities are now fully utilized. At this stage mass tourism replaces what was once the original economic function of the settlement. This may cause some resentment with people in the town who have not benefited from the new industry or from the loss of distinct identity that the settlement held before. It may appear that the local culture is being diminished by a more international and non-unique culture compared to what may have existed before; Problem Stagnation Stage where popularity may be short lived. People may become bored with the resort once its initial appeal had waned. Little of the original natural environment will remain and negative comments about what it used to be like may lead people to find somewhere new to discover. The effects of falling tourism if a resort goes out of fashion leads to economic decline and the under-utilization of tourist infrastructure. The eventual closure of some of the businesses will lead to a rise in unemployment and Decline or Rejuvenation where the tourist resort having two options; either go into decline or rejuvenate and develop more sustainable strategies based upon lower visitor numbers (BFSC, 2012).

Tanzania ICT Investment

Information Communication Technology is regarded to be a powerful tool for socio-economic development (Nielinger, 2003).Tanzania has made remarkable progress in deploying ICT. In many areas this progress has been well received by the citizens and service providers who are striving to address unmet demand and competition in newly liberalised markets. Furthermore, Nielinger, (2003) argues that fixed lines phones present the most prevalent technology. Other ICT technologies include: mobile phones, Personal Computers and Emails. However, ICT diffusion in Tanzania started in 1990s.

The tourism sector alone accounts for more than two third of all investment in ICT (Nielinger, 2003). Due to its nature it requires intensive communications. ICT in Tanzania is mainly developed in Dar es Salaam which is a commercial city and Arusha as a tourist area.

Status of ICT in Tanzania

Tanzania's tele-density is low, with the number of fixed and mobile cellular lines currently standing at 12 telephone lines per 1000 people (i.e. a teledensity of 1.2) and the mobile and fixed-line telephone subscribers (per 100 people) in Tanzania was reported at 30.91 in 2008, (WB, 2010) The Telephone lines (per 100 people) in Tanzania was last reported at 0.39 in 2010, (WB, 2011). Tanzania's Public Switched Telephone Network (PSTN), using fibre optic, microwave and satellite-based links, is now over 95 percent digital. This paves the way for allowing the provision of new services enabled by ICT. The coverage of the network infrastructure is limited to urban areas and thus lack of telecommunications and other infrastructures in rural areas remains a basic impediment to the provision of new ICT services. Tanzania has a liberalised broadcasting sector with some broadcasting operators spread over vast area nationally and even regionally while others cover local geographical areas. Although at present the programme content of the television services falls short of the sentiments expressed in the Broadcasting Services Act, 1993, and consists of mainly imported material and sports coverage, this imbalance is being addressed by both the Tanzania Communication Regulatory Authority (TCRA), and the services providers of those services.

Internet availability

The Tanzania Communication Commission (TCC) has licensed nine companies to provide public data communication services including Internet bandwidth. These data operators have isolated initiatives of connecting their Points-of-Presence (PoPs) to the global Internet backbone. As a result, Tanzania lacks cheaper and high capacity connections to the global Internet (MCT, 2003). All connections, regardless of the data service provider, are small capacity international links that connect to the global Internet backbone in different countries such as Norway and the United States. Therefore, the limited international Internet bandwidth is scarce and extremely expensive. The lack of a national Internet Exchange Point (IXP) also means that much of Tanzania's local traffic to be routed via international routes. There are presently sixteen licensed ISPs in Tanzania providing between 10,000 and 15,000 dial-up accounts in the country with many more users via Company and Government LANS and Internet cafés. Available e-readiness studies suggest that there is a large unsatisfied demand in the country for Internet access.

Hardware and software

There is no local manufactures of ICT equipment in Tanzania. All local dealers or agents import these products. There are no standards guiding the imports of both hardware and software. Few local companies are developing computer application packages. Most of the software used by both public and private sectors is imported at considerable cost. The use of open-source software is on the lower side. Generally, Tanzania has a small emerging skilled capacity to support the ICT industry in developing, selling or supporting hardware and software.

ICT and Economic Growth

Development of Information Communication Technologies (ICT) has transformed the contemporary business environment. It has led to new digitalized information economy. ICT is broad terminology referring to multiple communication technologies which range from simple and complex namely cell phone applications (SMS), digital cameras, internet, wireless (WiFi and WiMANI) and digital radios. These technologies are creating new more competitive markets

phases. (Sharker, (2008) says that ICT infrastructure plays a vital role in the social political and economic development of every country. Pazi's study (2010) has indicated that there is a high positive correlation between economic development and ICT investment. Heather (1997)says that the countries that invest more in ICT infrastructure their economies grow and contributes to socio-economic development.

Tanzania Tourism policy and strategies

The first National Tourism Policy was adopted in 1991 to provide the overall objectives and strategies necessary for ensuring sustainable tourism development in the country (URT, 1999). Nearly a decade later, there have been considerable changes on the political, economic and social fronts within the country, which raised the need for regular review of the policy. The thrust of these changes have been towards stimulating efforts to expand the private sector, in tandem with the disengagement of the Government from the sole ownership and operation of tourist facilities. Knowing the potentiality of tourism sector as a strategy for poverty alleviation, the National Tourism Policy of Tanzania was reviewed in 1999 in order to cope with the dynamisms of the tourism industry.

The general objective of the policy is to assist in efforts to promote the economy and livelihood of the people, essentially poverty alleviation through encouraging the development of sustainable and quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable and economically viable. It also sought to market Tanzania as favoured tourist destination for touring and adventure in a country renowned for its cultural diversity and numerous beaches.

Empirical Literature Review

In investigating the relationship between Information system Human resource and how they influence the capabilities for firm competitiveness, (Elly, 2011) used survey technique through a representative sample questionnaire. The population for the study comprised all Small and Medium Tourism Enterprises in Dar es Salaam. The finding showed that Information system human resource (ISHR) had a significant influence on performance of a firm that favours the development of Information System Human resource. The study found that the size of the firm has no influence whatsoever on competitive advantage of the firm.

Tiwari (2011), on his study on tourism, export and Foreign Direct Investment (FDI) as means of Growth, uses panel ordinary least square estimation technique to assess the impact of tourism receipt, export and FDI on economic growth of four Asian countries namely India, Pakistan, China and Russia from 1995-2008. The findings shows that there is a positive impact between tourism and growth but FDI has negative impact on economic growth but the impact of export of goods and services on economic growth are inconclusive. He concluded that tourism works as a complementary sector so, its role should be taken into account in the strategic and promotional policies adopted by the government and policy makers. The study by Kamuzora (2006), on E-Commerce for Development and e-tourism as a showcase, analyses ICT in tourism especially the internet as a tool for ICT for development in developing countries particularly Tanzania. It was a purposive survey study with International organizations dealing with tourism. 307 respondents were tourists involved and 100 tourists were interviewed. The finding shows that only 2.5 percent of the organizations accessed internet with broadband while the World average is 25 percent. The development in digital ICTs have revolutionalized many human activities especially the

internet is becoming more point of convergence in the tourism value chains for the distribution of information as well as transaction flows.

Considering the great contribution of tourism in development, Jiménez (2009) analyses how tourism and export as a means of Growth. The study expanded the existing research by considering both exports and tourism as potential influencing factors for economic growth. Using data from Italy and Spain over the period 1954-2000 and 1964-2000 respectively, both exports of goods and tourism exports were included in the same model. Standard co integration and Granger causality techniques were applied. The main results revealed that there is a significance of both exports and tourism towards long term growth with some peculiarities for each country. The trade of goods had been proven as a means of growth for countries in-bound tourism as non-traditional exports, also contributed to countries economic growth.

Ogbu (2011) examined the importance of ICT in the development of tourism in Nigeria. It was revealed that almost every tourism products can be sold online without the consumer necessarily visiting the place before making any choice since tourism products are not ready made goods. Booking of flights and hotel reservations can be done online through e-mail, telephone calls and other internet services thereby helping to reduce if not remove entirely the time wasting processes of the old system. It is therefore obvious that its adoption is necessary for proper inclusion of these benefits and for sustainable tourism.

Usoro (2007) observes that there is a need for an examination of the level of use of ICT tools for tourism in less developed economies who are in need of these tools (such as web tools) at least to compete in today's global market. The paper reveals from literature the potential contributions of ICT in the tourist industry and proposes that these contributions be used in future study in less developed economies to determine the supply of hospitality and destination aspects of tourism. Tahayori (2000) examined the role of information and communication technology in tourism industry and revealed that the exchange of information was very important at every stage in the sales cycles of the tourism product where by information must be able to flow quickly and accurately among the clients, intermediaries and each of the tourism suppliers involved in serving the client needs. As a result, ICT had become an almost universal feature of the tourism industry. Its power allows information to be managed more effectively, and transported worldwide almost instantly. As a result, it has had (and continues to have) a major effect on the methods of operation of the tourism industry. However, it had not affected equally all functions and sectors equally. It has the greatest impact on the marketing and distribution functions, while leaving others which need more human contact relatively untouched. Similarly certain sectors; such as the airlines, have been keen adopters of technology, using it to help to manage and streamline their operations and to gain strategic advantage.

Shanker (2008) in his study," ICT and Tourism; Challenges and Opportunities" reveal that ICT has a potential impact on tourism business. Therefore, the role of ICT in tourism industry cannot be underestimated and it is a crucial driving force in the current information driven society. It had provided new tools and enabled new distribution channels, thus creating a new business environment. ICT tools had facilitated business transaction in the industry by networking with trading partners, distribution of product services and providing information to consumers across the globe. On the other hand consumers were also using online services to obtain information and

plan their trip and travel. Information was the key element in the tourism industry. ICT pervades almost all aspects of tourism and related industry. The use of Geospatial Information Technologies in the recent years across the globe for varied purposes is popularly known and Tourism industry has not been an exception in availing its advantages. It can be used by tourist professionals to define the boundaries of the proposed tourist site as well its surrounding areas and the communities living in it. It can also get information on roads linking to the sites and availability of other utilities like water, power, market etc. Such technologies are also useful for site management and monitoring.

Gorica (2000) examined the Impact of ICT in Tourism Emerge Market; and some Implications from the Case of Albania. The Questionnaire method was used for two groups. The first group was the group of touristic enterprises, while the second groups were tourists and citizens. The questionnaires contained some questions which demand a respondent to identify, in general, the role of ICT and of Internet. In particular, stop to tourist ventures, which revealed the changes they have undergone their businesses over time. Two hundred questionnaires had included businesses such as villas, hotels, travel agencies, travel agencies, bars and restaurants, resorts, etc. The second group included 200 citizens, and tourists encountered in the tourist areas. The study revealed that the use of ICT and the Internet has brought a revolution in the tourism industry. ICT and internet has brought facilities for customer service, and logistical management of enterprises. But not only that, ICT and the internet, have facilitated, and have cut many undertakings address the economic burden for commercials and advertisements and payments for marketing agents. Today, through ICT and internet marketing is provided with a minimum cost, and in many cases free of charge, through social networks. This means that the management of enterprises, after the entry of ICTs and the internet has changed the strategy. In addition to these, ICT and internet have brought about a better working condition to all operators providing services in the tourism industry, bringing better quality and fast services and faster in time and well placed to customers. In this way there are more benefits for themselves, because of the range of services, and ever expanding, in quality, as well as quantity, by offering opportunities for all social groups and social classes. In Albania, currently tourism, has taken an important role in the economy, although it is fragile, and not very stable during this transition period. Most of touristic enterprises in Albania, are not more than 15 years old a period that enough, for information regarding the benefit of ICT and the internet.

Technology has a great impact on different industries like tourism as Masoomeh (2006) analyzed the contribution of Electronic Satisfaction in tourism industry, looking on how customers were satisfied with services offered on-line. It was a purposive survey study using both interview and questioners for data collection. The study reveled that online services offered were better than traditional travel agencies. E-tourism could satisfy tourists in each of the factors like good site design includes having fast friendly unclustered sites also contribute to customer satisfaction. Badnjevic (2006) examined the ICT awareness in Small Enterprises in Indian tourism branch. It was field survey study which uses both quantitative and qualitative ways such as questionnaires, interviews; simple observation and literature were reviewed. 40 companies were selected in different cities like New Delhi, Hyderabad, Bangalore and Bombay and were required to be using ICT in some ways and to be situated in city. The finding showed that the boom of Information Communication Technology (ICT) in India had brought a positive impact to the economy. The ICT level was found to be relatively high for developing country but low when considering the

opportunities in India. Other factors which affected ICT awareness positively were technological development trend and national economy. The negative factors were lack of education within companies, bureaucracy, physical infrastructure problems and social cultural norms of the particular country.

Papanis (2011) analysed the Role of alternative types of tourism and ICT strategy of Lesvos in promoting economic growth especially for tourism economy based regions. It was a case study used survey data collected from Greek and foreign tourists and were descriptive analysed. The findings indicate the critical role of alternative types of tourism for development of the tourism sector. It is due to its natural beauty of Lesvos Island is the primary reason for visiting. Religious tourism is a very important factor of tourist's development, and Lesvos attracts thousands of Greek pilgrims each year, who visit Saint Raphael's Monastery and Agiasos for the famous icon of Archangel and Virgin Mary.

The above reviewed studies by various researchers in ICT and Tourism development did not cover all aspects, therefore they left the gap which calls for other studies to be conducted. The impact of ICT investment for firm competitiveness and how the knowledge and skills in using these ICT tools such as internet can results to improvement in travel and tourism sector (Kamuzora, 2006; Elly, 2011). Others looks on how can tourism industry contribute to development of the country's local population (Papanis 2011).
From this observation, it is clear that the impact of ICT investment on tourism export in Tanzania has not been researched earlier hence there is no doubt about its importance.

Methodology

This study was quantitative in nature as it provides information and explanation that were adequate to answer the objectives. The study used descriptive method in answering the research questions. Annual time series data was used for the variables of tourism export and ICT import which were obtained purposively. The data were mainly secondary data covering the period from 1995 to 2010, and they were obtained from various data base sources such as BoT, UNCTAD, TIC, NBS and WB. The sources were planned to give a clear picture of Tourism export and how ICT contribute to it. The final stage of the study would again expect to use documents such as academic papers and relevant publication from different sources for data analysis.

The study made use of both descriptive and econometric analyses. It has deployed multiple methods whereby the usual OLS method can be used to each equation separately. To achieve the study objectives, some computer programs and statistical software such as STATA 10 has been used to assist in data analysis. The model that was used in this study based on the model that was developed by the Jordanian Ministry of Information and Communication Technology, which was used to measure the impact of ICT on Productivity. It is a regression equation which took the following form;

$$LP= \beta_0+\beta_1 Labor+\beta_2 (K)_{Ict}/L +\beta_2 (K)_{non\text{-}Ict}/L+\beta_4 FK+\beta_5 comp+ \beta_6 ICT+\varepsilon$$

Where:
LP= Labor productivity
(K) non-ICT/L: =Capital-Non-ICT per Labor (Non-ICT capital intensity to Labor)

(K) ICT/L=Capital-ICT per Labor (ICT capital intensity to Labor)
FC=Foreign Capital
Comp=Company Type
ICT=ICT =Index indicator (covers the ICT Adaption, Readiness, E-government and E-business); each one is a combination of sub indices.
ε= error term

Model specification

This study has deployed a model analysis in which the relationship between ICT and Tanzanian tourism exports will be analyzed using the following model;

$$TE = \beta_0 + \beta_1 ICT_{inv} + \beta_2 INF + \beta_3 INV + \varepsilon$$

Where
TE=Tourism export receipts (% of total exports)
ICT inv=Information and communication technology invested
INV= General Investment
ε = Error term

Estimation Techniques

To investigate the relationship between ICT and Tourism exports, STATA software package was used and different estimation techniques were applied

Unit Root Test

This methodology has been used many times in earlier works in the literatures to test for trend stationary. In this study the test for trend stationery ware applied for all four variables that are found in the model. The Dickey Fuller (DF) test was applicable if error terms are uncorrelated. In case the error terms are correlated, DF test is useless.

Co-integration

The co-integration technique was used in this study to test for a long run relationship among the variables which are tourism exports, ICT investments, Inflation and Investment. If the linear combinations of the variables happen to be 0, then the variables were expected to be co-integrated (Said, 2008).

Error correction model

Error correction method was used in this study to estimate the speed at which a dependent variable (TE) returns to equilibrium after a change in independent variables. Therefore, this model was useful for estimating both short term and long term effects of one time series data on another.

Findings, Analysis And Interpretation

Distribution of the data

Prior to empirical estimation of the model in investigating the impact of ICT investment on tourism export, data transformation was carried out to establish the normality and stationary of the data. First the descriptive statistics for the data were undertaken for the variables in levels. The presence of means and medians can be studied for a normality assumption. Closeness to each

other will indicate that the distribution is normal. Therefore, Tables 1 summarizes the descriptive statistics for the series in levels. This shows that most of the variables satisfy the normality test.

Table 6 Summary of the descriptive statistics of the data

	TE	ICTinvest	Inflation	Investment
Mean	30.21813	5.330625	9.875	9.93
Median	29.38	6.045	7	8.55
Maximum	39.68	7.47	27	18.04
Minimum	20.02	1.4	5	6.08
Std. Dev.	5.533065	1.787186	6.520481	3.58
Skewness	-.0026906	-1.022167	1.470098	1.24
Kurtosis	2.340963	2.836047	4.180507	3.13
Observations	16	16	16	16

Source: Researcher's computation

Correlation matrix

The analysis to test linear relationship among the variables was conducted using a Correlation Matrix. The result of this test is presented in Table 2,

Table 7 Correlation matrix

	TE	ICT invest	Inflation	Investment
Tourism Export	1			
ICT (invest)	0.5826	1		
Inflation	0.3704	-0.2553	1	
Investment	0.0582	0.1499	0.3182	1

Source: Researcher's computation

The correlation matrix (Table 2) shows that most of the variables are positively correlated except for the relationship between inflation with ICT investment. There is a weak correlation between tourism exports and investment in Tanzania.

Unit root tests

This part presents and discusses the result of the unit root test on each of the variables in the model. The Augmented Dickey Fuller test for the presence of unit root is performed on the variables levels and the results are presented in Table 3,

Table 8 Results of Stationarity test

Variable	ADF test statistic at level	ADF test statistic at First difference	Order of integration
TE	-2.003 (0.2852)	-5.315 (0.0000)	I(1)
ICT invest	-2.195 (0.2079)	-5.751 (0.0000)	I(1)
Inflation	-4.194 (0.0007)	-	I(0)
Investment	-3.084 (0.0277)	-	I(0)

Source: Researcher's own computation

i) McKinnon (1980) critical values are used for rejection of null hypothesis of the unit root.
ii) Critical value for Augmented Dickey Fuller indicating significance at 5% and the bracketed number represent probability values.
iii) I (0), I (1), means that the variable was stationary at level and after being differenced once, respectively.
The result above in table 3 shows that all variables are stationary. This implies that there is no unit root for a series to be stationary.

The co integration test

To test for co-integration among time series variables, a procedure developed in Johansen (1988) and applied in Johansen and Juselius (1990) was used. The maximum eigenvalue statistic was used to determine whether there was a co-integration among the variables. Thus co integration test indicates the presence of long run equilibrium among time series data. Result from the co-integration tests are presented in table 4 below,

Table 9 Johansen test for co intergration

Eigenvalue	LL	Trace stat	5% critical value	Maximum rank
	-112.7409	69.1697	47.21	0
0.95376	-92.7605	29.2089*	29.68	1
0.64349	-86.0564	15.8007	15.41	2
0.60189	-80.0697	3.827	3.76	3
0.25503	-78.1560			4

Source: Researcher's computation
Following the results in Table 4 above in which the maximal eigenvalue statistics are reported, cointegration is accepted at rank 1 and therefore indicate that there is long run equilibrium among the time series data.

Error correction model

The presence of co integration between variables as shown in table 4 suggests a long term relationship among the variables under consideration. Then, the Vector Error Correction model can be applied. Therefore, through building an error-correction model (ECM), the dynamic co-movement among variables and the adjustment process toward long-term equilibrium may be examined. The long run relationship between tourism export, ICT investment, inflation rate and investment in the period 1995 to 2010 is displayed in table 5 and 6 below

Table 10 Co-integration equations

Equation	Parms	chi2	P>chi2
_ce1	3	251.44	0.0000

Source: Researcher's own computation

Table 11 Vector error correction model results

	Coefficient	STD Error	Z-statistic	Probability
TE	1			
ICTinvest	-2.075011*	0.413704	-5.02	0.000
Inflation	-0.6229157	0.2278146	-2.73	0.006
Investiment	-1.802287*	0.293568	-6.14	0.000
Constant	-27.72562			

Source: Own computation

Note: *= significance at 1 percent level of significance

In Table 6, all the coefficients, except for inflation coefficient were significant at 1% level of significance. The increase in the tourism export is associated with the increase in the investment. Thus, 1% increase in investment in the long run is likely to decrease tourism export by 1.8 percent. Also, for 1% increase in ICT investment can cause tourism export to be reduced by 2.08 percent.

Interpretation of the results

This section reports the econometric results on the impact of ICT on tourism export in Tanzania during the period under review. The general model shows that a variable of ICT investment is significant in explaining changes in tourism export except inflation and investment variable. Results are shown in Table 7 below,

Table 12 Estimated OLS results

Dependent variable: TE	Coefficient	STD Error	t- Statistic	Prob.
ICT invest	1.527149**	0.672098	2.27	0.042
Inflation	-0.2107**	0.154863	-0.88	0.037
Investment	-1.001**	0.3778	-2.65	0.023
Constant	26.73881	8.743215	3.06	0.01

Source: Researcher's own computation

Note: **= significance at 5 percent level of significance

Diagnostic tests

The results of preferred model in Table 7 show that the goodness of fit is satisfactory as indicated by the R-squared of 69 percent. This result shows that the observed tourism export for the period of analysis is explained by the independent variables by 69 percent and the remained 31 percent is explained by other variables excluded by this analysis. These include poor infrastructure, low GDP growth, changes in exchange rate, low financial capital and political instability

In addition, model specification is significant since the probability of rejecting is zero given by Prob. (F-statistic) of 0.0020. This implies that the model is significantly explained by the explanatory variable hence acceptable in overall terms. There is also no indication of serious autocorrelation problem basing on the information given by the Durbin- Watson (D-W) statistic of 2.133544 which is equal to conventional mark of 2.

Interpretation of estimation results

The coefficient of ICT investment was positive and significant at 5 percent level. This indicates that one percent increase in ICT investment would lead to 1.52 percent increase in tourism export. This is substantially supported with economic theories whereby the increase in ICT investment will induce improvement in information and communication sector which is one of the contributors to economic growth of Tanzania. The result is also consistent with the hypothesis that increase in ICT investment will cause increase in Tanzania tourism export.

The coefficient of inflation is significant at 5 percent level and has a negative sign. This accepts the hypothesis that, increase in inflation rate will hinder the growth of Tanzania tourism export. Therefore, the result suggests that 1 percent increase in inflation rate will cause a 0.21 percent decrease in tourism export. The main reason for this could be the fact that the increase in inflation has a tendency to negatively affect exchange rate of the country. This situation tends to make domestic export to look cheap when they get exchanged with foreign currency. Factors that may cause inflation may be higher cost of production, low production, government higher expenditure, low availability of inputs and higher growing demand of goods and services.

The findings on investment are also significant at 5 percent level of significance, and have the negative coefficient. The results show that 1 percent increase in investment will cause a decrease of 1 percent in tourism exports. The explanation for a negative relation between tourism export and investment are due to the fact that many of investment coming to Tanzania are going to the mining sector. Liberalization policies on investment that started in 1990s in Tanzania and up today yield positive results. The stock of FDI is skewed to favour mining sector by 40 percent, manufacturing 22 percent and only 13 percent goes to tourism sector (TIC 2001). The investment in tourism sectors is like hotels which mainly use fixed cost which resulted to the delay to offset hence very minimal contribution to tourism export. Example of tourist hotel is Kilimanjaro Kempinski of which has less than 15 years since its establishment for it to payback. On top of that, investment shows to have a negative relation with tourism export. Some of the investments are worthwhile, as for instance, it would not pay much to invest in a hotel which is not close to the tourist attractions. But also some investment would take long to re-coop.

Conclusion and Recommendations

Conclusion of the study

The general objective of the study has been to determine the impact of ICT on tourism export in Tanzania for the period from 1995-2010. The findings after the analysis revealed that, ICT investment was statistically significant and positively related with Tanzania tourism export. It empirically supports the economic theories whereby the increase in ICT investment will lead to improvement in information and communication sector which is one of the contributors to economic growth of Tanzania. The result was also consistent with the hypothesis that increase in ICT investment would cause an increase in Tanzania tourism export. There is also a negative relationship between inflation and tourism export as the increase in inflation affects negatively the exchange rate hence makes domestic export to look cheaper and consequently having low

gains. The investment variable was significant although its contribution to the tourism export was negative. This was due to the fact that not all investments were worthwhile; for instance some of the touristic hotels are not built in the touristic attraction areas, hence it took longtime for them offset. Therefore, the study confirms the previous expectations that ICT has a positive impact on Tanzania tourism export.

References

Badnjevic, J. and Pudukoka, L. (2006), *ICT Awareness in Small Enterprises in the Indian Tourism Branch,* Department of applied Information Technology, University of Gotoborg, Sweden

Dosi, G. and Nelson, R. (1988), *Technical Change and Economic Theory*, Pinter Publishers Ltd, London, UK

Elly, T. (2011), *Information System and Competitive Advantage: Empirical Evidence on the Market and Resource Based Views of Small and Medium Tourism*, Mkuki na Nyota, Tanzania

Gorica, K. and Sevrani, K. (2000), *the Impact of ICT in an Tourism Emerge Market; Some Implication from the Case of Albania*, University of Tirana, Albania

Gratzer, M. (2003), *Changes in the Travel and Tourism Industry caused by the Internet-Competitive Advantage for SME Accomodation Sector.* University of Wien, Austalia

Heather, F. (1997), *Translation and Technology*, University of Loughborough, United Kingdom

Hinson, R. and Boateng, R. (2007), *Perceived Benefits and Management Commitment to E-Business Usage in Selected Ghanaian Tourism Firms,* Accra University Publishing Center, Ghana

Jiménez, I. and Pulina, M. (2009), *Tourism and Export as a means of Growth*, Christel Dettaaan Tourism and Travel research Institute, Nottingham University Business School.

Kamuzora, F. (2006), *E-Commerce for Development, E-Tourism as a showcase*, Mzumbe Book Project, Morogoro, Tanzania

Masoomeh, M. (2006), *Electronic Satisfaction in Tourism Industry*, Lulea University of Technology, Sweden

Nielinger, O. (2003), *Creating an Environment for ICT in Tanzania- Policy, Regulation and Markets.* Institute of Affaires, Humberg Germany.

Ogbu, S. Idris, S. (2011), *Information and Communication Technology (ICT): A veritable tool for Tourism Development in Nigeria.* New Busa, Nigeria.

Papanis, E. and Kitrinou, E. (2011), *the Role of Alternative Types of Tourism and ICT-Strategy for the Tourism Industry of Lesvos,* University of the Aegean, Greece

Robert. (2005). *International Economics 10th ed.* Washngton: Thomson.

Sajid, D. and Sarfraz, M. (2008),*Savings and Economic Growth in Pakistan; An Issue of Causality*, Pakistan Economic and Social Review, Vol 46, No.1, pp.17-36, Pakistan

Shanker, D (2008), *ICT and Tourism; Challenges and Opportunities*, Indian Institute of Technology, India

Sheldon, P. (1997), Tourism Information Technologies. Oxford: CAB

Tahayori, H. and Moharrer, M. (2000), *E-Tourism; the Role of ICT in Tourism Industry, Innovation and Challenges,* Shiraz University, Iran

Tanzania Internet Service provider Association Report of June 2005 on *African Internet Service regulation*

The Butler model of Tourist Resort Development by Barcelona Field Studies Center as retrieved in www.geographyfieldwork.com on Wednesday 22rd, 2012
Tiwari, A. (2011), *Tourism, Export and FDI as a Means of Growth: Evidence from four Asian*, Romanian Economic Journal
URT (1999), *Tanzania Tourism Policy*, Ministry of Natural Resource and Tourism.
URT (2001), *Tanzania Investment Report*, National Bureau of Statistics: Ministry of Investment and Empowerment, Dar es Salaam.
URT (2003), *National Information and Communication Technologies Policy,* Ministry of Communication and Transport.
URT (2008), *Tanzania Tourism Sector Survey Report,* Ministry of Natural Resource and Tourism, Dar es Salaam.
Usoro, A. (2006), *An Initial Exploratory Study into the Use of ICT in Tourism by Developing Economies as Supplied of Hospitality and Destination,* University of Paisley
World Investment Report of 2000 by UNCTAD

Appendix

APPENDIX I: Graphical representation of variables

Figure 1: Tanzania tourism export, 1995-2010

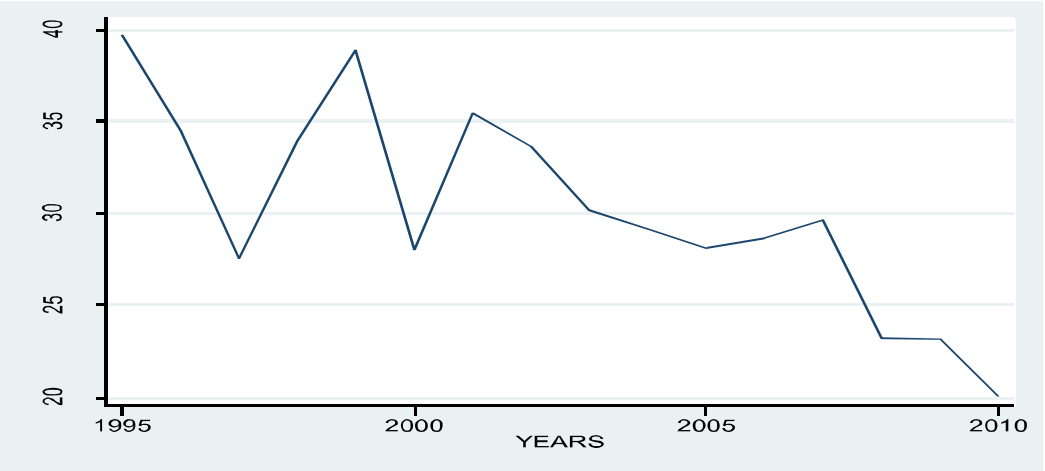


Figure 2: Tanzania ICT investment, 1995-2010



Figure 3: Tanzania inflation rate, 1995-2010

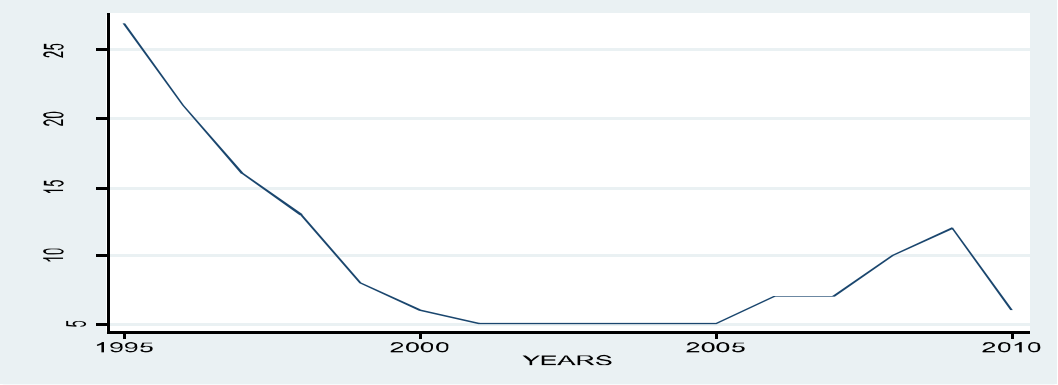
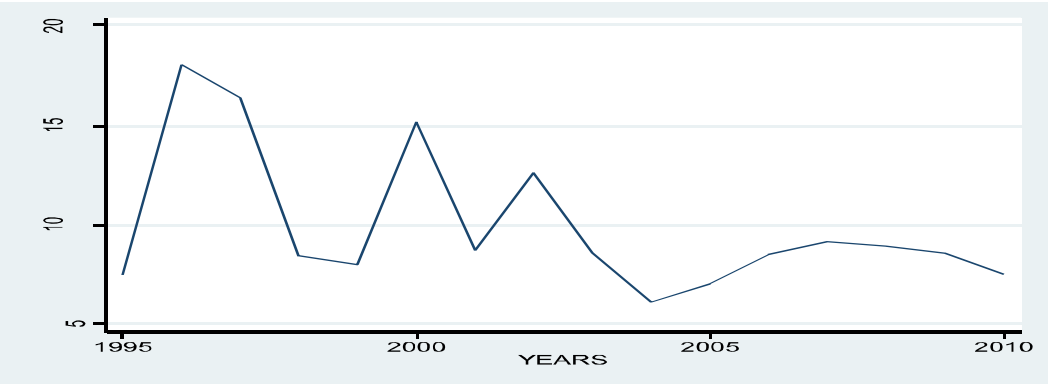


Figure 4: Tanzania investment rate, 1995-2010



APPENDIX II: Figures of variables, 1995-2010

Years	Tourism Export Rate	ICT investment	Inflation	Investment
1995	39.68	3.93	27	7.454044
1996	34.47	6.69	21	18.04186
1997	27.51	4.58	16	16.37
1998	33.92	6.05	13	8.401166
1999	38.86	7.47	8	7.984221
2000	27.99	6.49	6	15.16614
2001	35.43	6.04	5	8.69914
2002	33.64	5.74	5	12.59077
2003	30.16	6.51	5	8.563024
2004	29.14	6.44	5	6.080146
2005	28.1	6.24	5	7.003347
2006	28.62	5.54	7	8.46627
2007	29.62	6.9	7	9.129836
2008	23.18	1.4	10	8.901669
2009	23.15	2.14	12	8.549386
2010	20.02	3.13	6	7.490158