

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Information Technologies



Diploma Thesis

E-Tourism and economic growth in Kenya

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Department of Information Technologies

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Daniel Oluoch Atieno

Informatics

Thesis title

E-tourism and economic growth in Kenya

Objectives of thesis

The main goal of the thesis is to analyse current state of e-tourism systems in Kenya. The partial goal of thesis are:

- to make a research of current state of tourism marketing activities and related on-line technologies in Kenya,
- to make an analysis of barriers and opportunities to e-tourism in Kenya, and
- to design own solution based on current internet technologies to promote e-tourism.

Methodology

Theoretical part of thesis will be based on secondary data research and analysis of relevant information sources. Gathered data and facts about current state of e-tourism in Kenya will be analysed by means of SWOT or another similar tool. In the practical part, the own solution to the better utilization of modern internet technologies will be proposed. Based on theoretical part and results of author's own work, the final conclusions and recommendations will be formulated.

The proposed extent of the thesis

60 – 80 pages

Keywords

E-tourism, Internet, Intranet, software systems, marketing strategies.

Recommended information sources

- BUHALIS, Dimitrios. ETourism: information technology for strategic tourism management. Harlow, England: Financial Times Prentice Hall, 2003, xxviii, 376 p. ISBN 05-823-5740-3.
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Declaration

I declare that I have worked on my diploma thesis titled "e-Tourism and Economic growth in Kenya" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any third person.

In Prague on 27th March 2015

Daniel Oluoch Atieno

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E-Tourism a Ekonomicky růst V Keni
E-Tourism and Economic Growth in Kenya

Souhrn

Cestovní ruch je jedním z hlavních světových zaměstnavatelů a nejrychleji rostoucím odvětvím. Existuje velké množství poskytovatelů cestovního ruchu, kteří jsou motivováni tím, že poskytují lepší služby cestovního ruchu svým klientům na základě jejich zájmů. Sémantický web je jednou z hlavních technologií zvyšující funkčnost webu tím, že obohatí jeho obsah sémantickými metodami, jež mohou být zpracovány pomocí webových aplikací. E-tourism je produkt obohacený o informačně založený obchod. V oblasti zabývající se informacemi se jedná o poskytování relevantních informací k výsledkům spotřebitelů k lepšímu konečnému produktu. Poskytování kvalitně strukturované komplexní bázi znalostí pro odvozování a poradenství bude impulsem pro e-tourism. V této práci byl navrhnout jednoduchý Knowledge Base tak, aby se skládal z informací specifických pro dané domény. Vyvinuté KB ukládají skutečnosti související s cestovním ruchem v Keni, které jsou strukturované pomocí lehkých ontologií (převzato z Harmonise e-Tourism ontology) a používané v kódování akcí, administrativním dělení krajů a poskytují možnosti pro hledání činností v těchto regionech. Pravidla plánování jsou také použita k odvození nejlepších doporučení tras, činnostem jako jsou (akce, atrakce skvrny), rezervací a ubytování. Tyto vztahové objekty jsou sémanticky popsány pomocí Friend Of A Friend (FOAF) pojetí.

Tato studie je analyticky založena na základě kvalitativních dat. Špatná technologie, špatná infrastruktura, nepružnost systémů cestovního ruchu a nedostatek iniciativy vlády, jsou některými z faktorů, které brání přijetí e-tourismu v Keni. Správný zákaznický servis, zavádění lepších technologií, výkonnost a interoperabilita přes integraci cestovního ruchu systémů povede ke zvýšení cestovního ruchu. V souladu s tím budou v závěru navržena některá další doporučení, která se použijí v Kenya Tourism Board a v dalších zúčastněných subjektech cestovního ruchu v Keni.

Klíčová slova: E-tourism, ontologie, webová sémantika, dynamická nabídka balíku služeb, Keňa

Summary

Tourism is one of the world's major employer and the fastest growing industry. There exist various tourism providers which are motivated in providing better tourism services to their clients based on their interests. Semantic Web is one of the major technology which enhances the functionalities of the web by enriching its content with semantic metadata which can be processed by internet-enabled web applications. E-Tourism is one of the products for such enrichment, since it is an information-based business. In the information-based domain, the provision of relevant information to the consumer results to better end product. Thus providing a well-structured comprehensive Knowledge Base for inference and consulting will in turn be a boost to the e-Tourism business. In this thesis a simple Knowledge Base has been designed consisting of domain-specific information. The developed KB stores facts related to Kenya Tourism, which are structured using a light-weight ontology (adapted from Harmonise e-Tourism ontology) and used in encoding events, administrative partitioning of regions and provide capabilities for search of activities in these regions. Planning rules are also applied to infer best recommendations of routes, activities like (events, attraction spots), bookings and accommodations. The relationships objects are semantically described using Friend Of A Friend (FOAF) concept.

This study is analytical based on qualitative data. Poor technology, poor infrastructure, inflexibility in tourism systems and lack of government initiative are some of the factors hindering e-Tourism adoption in Kenya. Proper customer service, implementation of better technologies, efficiency and interoperability through integration of tourism systems will lead to enhancement of tourism. Accordingly, conclusion will suggest some recommendations to be applied by Kenya Tourism Board and other tourism stake holders in Kenya in the management of this sector.

Keywords: E-tourism, Ontology, web semantics, dynamic packaging, Kenya.

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Acronyms

CBR - Case-Based Reasoning

FOAF - the Friend Of A Friend project

FOL - First Order Logic

IMHO - Interoperable Minimum Harmonise Ontology

jDREW - java Deductive Reasoning Engine for the Web

KB - Knowledge Base

OO jDREW - Object Oriented java Deductive Reasoning Engine
for the Web

OO RuleML - Object-Oriented Rule Markup Language

POSL - Positional-Slotted Language

RDF - Resource Description Framework

RDFS - Resource Description Framework Schemas

SWRL - Semantic Web Rule Language

WRL - Web Rule Language

WTO - the World Tourism Organisation

W3C - World Wide Web Consortium

XML - Extensible Markup Language

Introduction

Tourism sector is one of the first services sectors to adapt and use information and communication technology (ICT) for promoting its services. In the current time, ICT has deeply affected the way business is performed and the competition between organizations (Porter, 2001). Traditionally, the major drivers of distribution of tourism services were travel agencies and tour operators (Buhalis & Laws, 2011). However, Internet and electronic Commerce developments in the late 1990s and the emergence of Tourism has tremendously changed the interaction between Business to Business (B2B) and Business to Consumers (B2C) applications (O'Connor, 1999; Smith et al., 1998). One of the major tool used in the sector of tourism is internet. Though ICT, travelers can be able to access important and accurate information pertaining to their travel as well as make reservations in the shortest time possible which are cost effective and (O'Connor, 1999).in addition, existing media features are contained in the internet with advanced capabilities of interactivity and addressability, it transforms not only the way individuals conduct their business with one another, but also the very essence of what it means to be a human being in society (Barwise et al., 2006). Millions of people mainly rely on the Internet for doing daily duties, for instance in their jobs, school work or learning, connecting or socialization purposes, entertainment, and online shopping

Since the emergence of the Internet, travel planning (e.g., travel information search and booking) has always been one of the main reasons that people use the Internet. This has been very vital because people are now able to make bookings at the comfort of their homes without the need of travel agencies. According to study done by (Türsab 2003) reveals that, a greater percentage of their customers prefers internet in booking for their travel. It is also believed that the revolution of internet has a greater impact in the tourism

development. According to research, online travel reservations and associated travel services are recognized as one of the most successful e-commerce implementations, with estimates of sales of \$73.4 billion in 2006 (Turban et al., 2008). It is evident that e-business is an essential prerequisite for successful organizations in the emerging, globally networked, internet-empowered business environment, especially for the tourism industry. Many tourism-related organizations had to go through a major business processes transformations in order to take advantage of the emerging technologies and enhance efficiency and data handling to compete in the emerging global market. However, this has not been the case of Kenyan tourism sector. This study is therefore focused in identifying these weaknesses and coming up with proper and long-time solutions of Kenya tourism sector.

2 Objectives and Methodologies

2.1 Objectives of the Study

To analyze the current state of e-Tourism systems in Kenya with regard to technological advancement with an intention of identifying the factors that hinders its growth.

To research on the current marketing strategies used in this sector and come up with proper marketing methods that are in line with the latest technologies and have been applied in the leading tourist countries.

To carry out a SWOT analysis in order to identify the opportunities that needs to be exploited and barriers which hinders the growth of e-Tourism in Kenya. Hence, enhance the competitive advantage of the sector.

To design an e-Tourism ontology based on latest technologies for instance semantic web for proper management of e-Tourism data, in order to enhance usability and interoperability of tourism systems in Kenya

2.2 Methodology

A comprehensive research will be carried out on the current systems of the Kenyan tourism sector, analyze the findings and come up with proper methods of improvement.

From the findings and results, recommendations will be made on the best technology which should be applied on the current tourism systems that will lead to its growth.

The researcher will propose the current software tools to be incorporated into the tourism system in order to visualize the process of easy access to the tourism data and information, and also to embrace the current marketing strategies.

Through the research findings, better architectures and use cases will be proposed that could be of importance in the advancements of the platforms used by Kenya's tourism sector.

Proper e-tourism application will be proposed that if implemented, will not only add value and competitive advantage with the competitors, but also add consumer's loyalty to the value.

3 LITERATURE REVIEW

3.1 Introduction

Major innovations are currently taking place in the tourism sector, these innovations can only be achieved through the application of current hardware, software and proper network. In this era, for any organization to cope, dynamization must be a top priority for the assessment of the requirements their stakeholders and immediate and effective response, these important elements can be a key to survival in such a competitive world, it also enhances customer maintainability which is a priority due to a variety of options. It is paradox that application and development of current technology implies that the more powerful and complex ICTs become, the more affordable, user friendly and efficient they become, enabling more people and different organizations to explore its use. Major innovations in technology, for instance, hardware, software and Netware is been the major drivers of the wide range of changes in Information Systems (IS). ICTs convergence effectively integrates the entire range of hardware, software, groupware, Netware and human ware and blurs the boundaries between equipment and software (Werthner & Klein, 1999). As a result, Information system have evolved from simply interrelated components which coordinate in collection, processing, storage and information dissemination into dynamic, interoperable mechanisms of collecting, processing and dissemination of intelligence within organizations and in their extensive environment (Laudon, (2013) 726-739.)(Turban and Aronson, 2001).

Technological advancement and tourism influence each other in many ways and for a number of years. Global transformation of tourism is one of the sectors that is majorly influenced by information and communication technology. The results of such developments have doubtfully led to radical changes in business practices and strategies as

well as industry structures (Porter, 2001). As suggested by (Buhalis, 2008), the establishment of the Computer Reservations Systems (CRSs), Global Distribution Systems (GDSs) and the development of the Internet in the late 1990s, respectively may have been the of dramatic transformation of the industry. This can be confirmed by major advancement in different systems and applications since these innovations were introduced.

Tourism as an international industry is considered as the world largest employer with roughly 11% of the total employment directly or indirectly attributed to tourism. It is also considered as the first worldwide industry with Europe being the first continent (Longhi, 2007). Being the biggest provider of jobs on the planet, tourism boasts a greater array of heterogeneous stakeholders than many other industries (Buhalis, 2008). E-Tourism can be seen as the digitalization of all the processes and value chains in the tourism, travel, hospitality and catering industries which enhance maximization of efficiency and effectiveness in the different organization (Buhalis, 2003). The energetic growth and development of the industry is perhaps majorly mirrored by the growth of ICTs. The accelerating and cooperative interaction between technology and tourism in recent times has brought fundamental changes in our perceptions as well as the industries we work with. As stated by (Buhalis, 2008) the advancement to the new information threshold in regard to universality and ubiquitous communications access have brought total transformation in the entire tourism industry to higher levels of interactivity whereby a greater part of management can be done by wire. The competitiveness of the tourist organizations could not have been realized without the role of ICT (UNWTO, 2001). For instance, efficient planning and traveling by tourists could not be realized without developments of search engines and faster networks. ICTs have also changed radically the efficiency and effectiveness of tourism organizations, the way that businesses are conducted in the marketplace, as well as how consumers interact with organizations (Buhalis, 2003). There have been many new entrants among the players on the tourism stage, shifts in market share and balance of power, changes in political perceptions of tourism, and a growing

recognition of the importance of tourism to an ever-increasing number of national and regional economies.

The study focuses on how ICT innovations have impacted tourism industries, it goes further to analyze the kind of developments we should put together to ensure this development goes hand in hand with the advancement of technology. The study is narrowed down to Kenya tourism sector with an aim developing the current tool that ensures the tourism data can be easily accessed in an organized, secure and consistent manner.

The theoretical context of diffusion of innovation as introduced by (Rogers 2003) explains the whole concept of innovation in e-commerce/ICT, as the process by which an innovation is communicated through certain channels over time among members of a social system. He focuses on the four key elements in the diffusion. Innovation itself can be an idea, practice or object that is perceived that is perceived as new by an individual or another unit of adoption. Communication channel is a means through which messages are transferred from one individual to another. Innovation decision period is also the length of time required to pass through the innovation-decision process. Rate of adoption is the relative speed with which an innovation is adopted by members of a social system. Finally, social system which is defined as set of interrelated units that are engaged in joint problem-solving to accomplish a common goal.

3.2 Technological Innovations

The society's use of innovation is something that cannot be achieved instantly, it increases over time and the model can be expanded to organizations (Damanpour, 2009). As explained by (Rogers 1995), innovation diffusion is comprised of four different stages which can be summarized as Knowledge acquisition, persuasion, decision and finally,

confirmation stage. Sometimes these are not rational and well-determined factors but irrational and personal image factors such as fashion, imitation, curiosity, novelty and bandwagon effects (McBride 1997, Murphy et al., 2003). In addition, the pressure from salespeople to adopt a given technology is significantly evident. This has resulted in the adoption of inappropriate or incomplete technologies. Rather than being seen as laggards, they have fear of being different (Raymond, 2001; Abrahamson, 1991; and Wolfe, 1994). These irrationalities can lead to assimilation gap (Fechman, 2000) which is often reflected in the tourism industry in the form of perceived barrier to effective implementations of internet technologies (Haug, 2003; Wooper 2003; and Peacock, 1994).

Innovation adopter characteristics and social influences shape the speed of technological adoption by individuals. Innovation diffusion is also faster if potential adopters perceive the innovation to have a relative advantage over the idea, object, practice or process it supersedes. Diffusion speed can also be enhanced by the compatibility of existing values, past experiences, and needs. Simplicity of the innovation can also increase the rate of diffusion. The degree to which the innovation can be experimented with unlimited basis and financial commitment is another significant factor. Finally, the visibility of expected benefits in early adopters is a major determinant of the rate of diffusion.

3.21 Mobile phones

The rate of smartphone users have tremendously increased worldwide, many of these users have taken advantage on the free or cheaper applications which have turned out to be major marketing tools that have created a major impact in tourism industry. In recent years, the rate of smartphone user have outshined the users of mobile phones. Smartphones are type of mobile phone that enjoys the same functionalities as mobile phones, in addition, they have more advanced functionalities with computing capabilities. Due to its computing capabilities, can be considered as handheld/portable computer. Just like computers,

Smartphones are capable to install and run different applications on different platforms (Wang, Park, & Fesenmaier, 2012).

The use of Smartphones is in a progressive growth rate (Lopez & Bustos, 2006). In the mobile phone market, smartphones are considered to be the fastest in terms of growth, this is according to the study conducted by ComScore (2012). The ComScore further reveals that over 104 million people in the US alone owned smartphones. The smartphones Apps store were first developed by Apple Inc only in 2008, lead to high loss and reduction in sales of many companies like Nokia. They are now considered the most prominent functions of smartphones. Such significant growth in smatphone have a great impact in the tourism sector. With the increasing number of users and greater incursion into people's life, smartphones have the potential to significantly influence the touristic experience. This study by (Wang et al 2012) explores the mediation mechanisms of smartphones by examining stories provided by travelers related to their use of smartphones (and associated applications) for traveling purposes.

The results reveal that smartphones can change tourists' behavior and emotional states by addressing a wide variety of information needs; in particular, the instant information support of smartphones enables tourists to more effectively solve problems, share experiences, and "store" memories. The implications of these findings are important in that they suggest a huge potential for smartphones in changing many aspects of the tourism business. Another study records that, one of every five Americans who owns smartphones, have downloaded travel related applications which comprise of 19% (Ypartnership & Harrison Group, 2010).

Smartphones have been applied in different organizations and companies for instance in airline industries, smartphones applications have become best tools for marketing. For example, these applications are capable of providing capabilities like online booking for

flights, information concerning baggage and many others. These current information and communication technologies that have enhanced distribution of services provides a better platform for tourism companies to enhance the loyalty of their customers, reduce the cost of operation and enhance corporate culture. Smartphone applications can help reduce the difficulties that have existed in the airline industries like poor quality, changing prices, perishability in flight tickets.

Smartphones provides efficiency and convenience to customers in the access of real time and management tourism information. The study shows that tourism application information account is the highest among the top 100 tourism applications on App store (Wang et al, 2012). This popularity is suspected to be due to universal usage by both business and leisure travelers. Leisure travelers always use their smartphones to search for cheaper flights that suits their budget and also to have live chats with the providers. Business travelers use smartphone applications in searching for efficient routes that helps in management in their trips. Many large airline companies with sophisticated technologies have configured their systems in such a way that when you use their application in checking for flight prices, they start updating you with flight information on offers and cheaper prices. Some have also additional features which allow tourists book flights and even search for direction maps and use mobile boarding passes. Companies like Alaska Air for instance, have “Travel App” which allows passengers to even book and change their seat selection, provide information concerning their hotel and car rental services. These applications can help companies understand their customers better by collecting tourists’ views in the form of comments and user ratings.

With all these user-friendly functions and highly growing markets for smartphones, and other technological devices, these applications have become one of the most popular topics in tourism industry. Tourist organizations or companies who want to make an impact in the

tourism markets worldwide must therefore ensure that their services are not only accessed through their websites, but also application enabled to enhance wider use.

3.2.2 WiMax

One of the newest technologies to join the fray is mobile WiMax, a version of traditional WiMax (worldwide interoperability for microwave access), which enables high-speed fixed wireless communications. Mobile WiMax proponents hope their approach will compete with cellular, Wi-Fi, and last-mile Internet-access technologies such as DSL and cable. The mobile products that have these capabilities are certified by WiMAX forum ¹ (Patton, Aukerman & Shorter, 2005) it enhance the conformance and interoperability of the IEEE 802.16 standard used. This enables users to get access to the Internet without physically connecting the computer to a wall jack. WiMAX supports the delivery of last mile wireless broadband access as an alternative to cable and DSL. WiMAX is expected to offer the highest possible coverage, up to 30 miles (Odinma, Oborkale, & Kah, 2007) providing Internet broadband wireless access to entire destinations. This will support users to have Internet access whilst at the destination without having to pay expensive data-roaming charges. WiMAX is also predicted to have its largest impact in developed countries or rural, remote locations characterized by low population density in which an adequate wired infrastructure was never developed, or cannot be developed for economic reasons (WiMAX Forum, 2004). Always-on (when users are connected to the Internet constantly) connectivity creates great opportunities for interactivity at the destination and the provision of personalized, contextualized, and location based services (LBS). The main functions of LBS for the traveller are: localization of persons, objects, and places, routing between

¹ www.wimaxforum.org

them, search for objects in proximity such as restaurants, shops, hotels, or sights, and information about travelling conditions, such as traffic-related data (Berger et al., 2003).

3.2.3 Web Design

Web design in both functionality and usability senses is also becoming of critical importance. Tourism industry is currently benefited greatly from the design to the rise of the internet. For instance, every city, country and state has their own website. On this site they can show the best things that has to will be captivating for the visitors of this sites and make that have the interest of planning physical or real visit. The Internet is a powerful marketing tool in the tourism industry and have quite a dramatic effect on the tourism industry itself. Travelers expect websites to be informative, interactive, and attractive (Chu, 2001). The success of web design depends on the quality of service they are capable to offer to the visitors. As recorded by (Kim, Lee 2004), web services can be classified into six main categories, these include: the website must be easy to understand and use; this will make it easy for the old and semi illiterate people to be able to maneuver their ways on these websites, the second quality is usefulness of the website, for instance, the website must contain the right that are unambiguous, straight forward and understandable. The third quality is information content this is related to the completeness of the site for instance, any client who happen to visit the website should be able to get access to almost all the important information he or she may need with regard to planning their trips. The fourth quality is security, most of tourism marketing websites have capabilities of online payment whereby people use their credit cards which contains a key to what they own. This is very challenging due to cyber security threat. For any organization to allow this service in their websites international security standards must be fulfilled since no single person would be willing to provide sensitive information on unverified website. Another important quality is responsiveness, the latest technological developments like smartphones, PDAs, iPads and other portable devices has made this quality very important. Responsiveness means that

any website should be able to conform to any media device. Due to the increasing number of people using their portable devices in conducting their online services, websites that are targeting these groups of people must be made responsive. The final quality also captured by (Chu) is personalization, this is the technique that enables the user to visit the website register and own an account which would help them monitor the services and even get some offers and discounts depending on their level of corporation with the company. This initiative in some cases makes customers to see themselves as shareholders or owners due to a sense of belonging given to them. In Law and Cheung's (2005) study on customers' weighting factors on hotel website contents, they found that reservation information was the most important dimension. A successful website should therefore take customers' interest and participation into consideration, to capture information about their preference, and to subsequently use the information to provide personalized communications and services (Doolin, Burgess & Cooper, 2002, Chung & Law, 2003). Hashim, Murphy and Law (2007) consolidated 25 tourism and hospitality website studies from 1996 to 2006 on website quality and features analysis and generated 74 website features. Hoteliers must therefore routinely evaluate their websites in order to ensure that the sites are efficient, appropriate, and useful to customers (Baloglu & Pekcan, 2006). Lastly, Cunliffe (2000) emphasized a poor web design resulted in a loss of 50 percent of potential sales and the negative experience lead to a loss of 40 percent of potential repeated visits.

Related to usability is accessibility which addresses the fact that web surfing is still a barrier for people with disabilities (Michopoulou et al., 2007). Examples of the physical barriers include low vision users will need large text or spatial adjustment, blind people will require screen readers, color-blindness users will need adequate contrast of text and background colours, and deaf people should have visual displays rather than pure audio presentations. Han and Mills (2006) stated that the current website design have nine themes that will affect the screen readers for the visual-impaired users. In response, the World Wide Web Consortium (W3C) has illustrated requirements for using websites and Web-

based applications, and has provided supporting information for guidelines and technical work (W3C, 2005). Hence, by exploiting this knowledge and following the Web Content Accessibility Guidelines (Chrisholm et al., 1999) from the W3C Web Accessibility Initiative (WAI), content can be presented in an accessible and customizable way, accommodating users' needs and preferences. The hospitality and tourism industries should be aware of the fact that people with disabilities and the elderly represent a growing market segment. Assistive technologies such as voice browsers can provide certain assistance for these customers to access web information (Pühretmair, 2004) for example implemented an automated call center agent (RESA) for a low-budget hotel, which enables customers to use their phones and voice to reserve hotel rooms via RESA without the need to go through any human agents. RESA can automatically select a desired room on the basis of customer's voiced criteria. Rumetshofer and Wöß (2004) introduced intelligent accessibility add-on that allows users to create their personal profiles with their special needs, and the update depends on the user's input and action over time. System environments and navigation styles can also be automatically managed. Nevertheless, these technologies need further customization before they can totally match with users' needs. To attract business and provide convenience to the physically challenged customers, tourism web designer should consider the needs from every group of users and to design websites to address inclusion.

3.3 Impact of E-commerce in Tourism

E-commerce in travel and tourism is at a continuous growth each day which provide opportunity to this industry to groom and grow. Due tremendous development of Information technology, the emergence of e commerce is evident through many companies which are switching to e-Businesses through their websites, internet, online software or applications etc. In as much as of e-commerce enjoys a greater benefits in the development of tourism, there are several challenges that are also experienced. One of the major

challenge is how to transform traditional buyers to e-commerce buyers. The purpose of this research is to determine the benefits of adopting e-commerce in tourism sectors and the barriers which hinders firms from venturing into e-Business.

Tourism being one of the back bones of the economy in both developed and developing countries is considered one of the major sources of foreign exchange. This industry is growing very rapidly and millions of people and organizations are directly and indirectly associated with this industry. According to (World Economic Forum, 2009) 9.9 percent of global GDP is represented by tourism industry, it also represent 10.9 percent of world exports, and in investment it represent 9.4 percent of the total investment done in the world. The use of internet is rapidly growing day by day and as per International Telecommunication union (2009), as the number of people subscribing to online continue to grow day by day. Hence, internet will be effective tool to promote and open up new opportunities for travel and tourism industry sector though e-commerce. The emergence of customer-generated Web 2.0, lead to a complete transformation of content on many forums, newsgroups, social media platforms, and crowd-sourcing systems to offer another opportunity for industries contacting tourism and businesses to “listen” to the voice of the market from a vast number of business constituents that includes customers, employees, investors, and the media (Doan et al. 2011; O’Rielly 2005). This shows how, e-commerce encompasses major sectors and components that are involved in doing any kind of business. The use of internet in tourism presents many advantages that makes it a very important aspect in tourism. The few benefits includes fast and easy to access destination, get the price of the package, search and view popular destinations and get more insight about destination etc. as well as it generates income for many people around the globe. However, internet sometimes cannot be fully accurate as it can give some contradictory or false information, information may also be outdated, due to cybercrimes that are taking place over the internet, and some people may end up being conned. This are few of many limitations of the use of internet in tourism. The major growth of internet has enabled it to

be the most popular tool that humans cannot afford to do without. Through portable gadgets internet has become part and parcel of people's daily life. As a result, this has been the best source of business where tourism industries have tapped through the application of e-commerce. From its definition e-commerce encompasses both financial and informational transaction through electronic media between organizations, among people and third party (Chaffey et.al, 2006). Through e-commerce, these industries are trying to reach global population to enhance their businesses. They are trying to achieve this through different e-commerce tools. ²Even though e-commerce popularity and globalization is enhanced due to the current technological tools there are more challenges in their adaptation and making it a reality. Many researchers or scholars have done various researches about e-commerce in travel and tourism industry. Many of them have pointed positive impact of e-commerce in travel and tourism and some have pointed challenges for adopting e-commerce and barriers³ of

3.3.1 ICTs in Tourism and E-Commerce

The emergence of new technologies has led to radical transformation on the way tourism industries conduct their business and even the overall operation of the whole system (O'CONNOR, 1999) Due to radical growth of ICTs, very great changes have been realized in structure and operations of tourism industries. The changes brought by these new technologies can explicitly be evident on the way tourism organizations communicate with their individual and institutional clients and how they manage their distribution function.

² Business-to-business e-procurement: success factors and challenges to implementation

<http://dx.doi.org/10.1108/13598540710737299>

³ http://www.itu.int/net/pressoffice/press_releases/2010/39.aspx#

As a result of these developments, numerous innovations have been seen in tourism organizations as they work towards penetrating the global markets. Without ecommerce, the adoption of new innovations in the tourism sector is meaningless.

E-tourism has therefore emerged as a way forward for many organizations around the world. Tactically it includes e-commerce and ICT for increasing the internal efficiency and effectiveness of tourism organizations. E-tourism strategically transforms processes involved in the business, the entire value chain as well as the strategic relationships of tourism organizations with all their partners. The internet provides the best platform where tourism organizations are able to interact with all categories of its customers, both potential customers, loyal customers i.e. customers who just love your products and services even if they don't look very good in the real sense, local groups and public authorities. By taking advantage of intranets (internal systems that are accessed by employees) organizations can re-engineer internal processes, while extranets can be used to support the development of corporation with trusted partners. As a result of this trust, they can start doing business by performing online transactions, expand their distribution channels and extension of the value chain. Hence, e-tourism can be used to measure how competitive an organization is (Buhalis, 2003).

3.3.2 Digital Marketing

Another important aspect that should be considered in e-tourism development is digital marketing. Online marketing is no longer an “option”, it is essential in today's fast-paced and competitive world. The future of your business could very well depend on it. While the online world may seem daunting to some, the opportunities are limitless and it is the marketing currency in today's world.

For decades, there were no proper and up to date means of sensitizing the consumers on the real time information, they relied on the few sources of available information to plan their trips. For instance, they listened to stories told by people who made prior visits to these places, televisions, newspaper magazines, tourism journals and brochures. This method was not efficient because producing printed copies continuously was expensive and inadequate since it lacked the latest information.

Due to latest development in technology and advancement of internet, new sources of information have emerged. As a result, physical constraints like paper have tremendously reduced. Information distribution have also been easy, efficient and free. With the reduced barrier many people have become online publishers (Andreas Weigend, *Harvard Business Review* May 2009). Internet has totally transformed tourism, where by people find destinations and interests that fits their needs instead of monopoly where things were done the same way.

There are hundreds of digital marketing platforms which businesses and companies can easily integrate with traditional marketing strategies in order to maximize the business benefits of digital initiatives of any given organization. Digital marketing encompasses all marketing activities made through the internet, such as, websites, social networks, mobile devices any other media that uses internet or are electronically enabled. Digital marketing can be summarized into key marketing platforms (Ryan and Jones, 2009), the digital marketing platforms depicted in the figure below:



Figure 1 key marketing platforms

According to the above figure, digital marketing can be presented, analyzed into key platforms that communicate or interact with each other. As presented by (Accenture report 2014), consumers use digital channels to make more informed decisions and making purchases through multiple channels. The interaction varieties among users enable the marketers in reaching a greater segments of people (Xiang and Gretzel, 2009). The author majorly concentrates on digital platform (Website, Social Media (Facebook, Twitter and YouTube), Affiliate Marketing and Strategic Partnership, Mobile and Application (App) and Online PR) in as much as these technologies are currently being implemented in the Kenya Tourism Board, in a manner in which it will attain its stipulated goals, this is the main focus for this study. In general business practices, websites can be defined as an

online communication tool which involves two-ways communication either one or two parties. For the example, the company and the visitor, the site evolves from both sites - the company is involved with updating and changing it, and visitors are involved with interacting on the site itself. As presented by (Ryan and Jones, 2009), they describe website as the business place where all sorts of campaigns can be carried out and tapping the rich vein of new customers in cyberspace, but everything will be channeled back through a single point, website that potentially convert the traffic of prospect customers into tangible value for business. Concerning Social networking platforms Boyd and Ellison (2007) defined them as those platforms which provide internet users of the series of applications to create a public or semipublic profile within a community system of people who know each other or share same interests. These platforms allow users to create a list of users to whom they share any connection and see other list and connections through the community system. Examples of social networking have included Facebook, Twitter, Google+, YouTube and so on. Below is the review of social networks platforms associated to this research study particularly: Facebook, Twitter and YouTube:

As defined by (Casteleyn, Mottart and Rutten 2009) Facebook is an application where users can join network groups organized by city or municipality, company or workplace, learning institution, or a region organization to connect and interact either within the group or with other people. Facebook allow such capabilities whereby you can add other people to become friends, exchange messages with, and update personal profiles to notify, tag or update friends about the current happenings (p. 439). Once signed up on the application it provides the capability to connect with friends from any part of the world. The main goal of the application and process is sharing communication and sharing information among “fiends”. Reid (2009) confirms that social networks allow users to build and make public their personalities to groups of people they are connected to. Schmidt & Ralph (2011) also mention that Facebook can be used as a tool or platform where people can advertise about special products, remind customers of what they can buy or promote special offers as well.

It can act as a reminder to the customers of the products, services and incentives offered by a company. Basically, this tool supports an exchange of information, sending and receiving input both from existing as well as potential customers. Regarding Twitter, Safko and Brake (2009) termed it as a microblogging and social networking service that allows its users to send and receive brief (140 characters or less) textbased, micropost instant messages that are referred to as Tweets. However, Twitter can also be used as an advertising tool. It can generate discussions around products or services and even create a community of followers that act as ambassadors for the company's events or promotions. By creating a fun, positive and useful content around your brand will increase the probability of people following back (Agresta, Bough & Miletsky 2011). If Facebook and Twitter can publish the information in form of text and photos in social network space, YouTube is known as video-sharing website allowing users to view, upload, comment and share video, also creating their personal space after subscribing their account. According to Wattenhofer and Zhu (2012), YouTube is the largest user-driven video content provider in the world; it has become a major platform for disseminating multimedia information. Comparing to other social networks, YouTube has remarkable similar characteristics as online content driver, but in motion multimedia context unlike others, however, YouTube can be shared through other social networks channels, emphasizing the evidence showing the interconnection of multiple integrated platform digital users usually interact with in digital world. Concerning E-mail Marketing, it is a form of direct marketing that uses electronic means to deliver commercial messages to an audience (Stokes, 2013). By this, e-mail marketing allows the company to communicate with customer in personal level on mass scale, proving as one of the most powerful universally accepted digital medium according to Ryan and Jones (2009). The Chartered Institute of Public Relations in the UK defined online PR as, "Communicating over the web and using new technology to effectively communicate with stakeholders". By driving online visibility, an online public relations reaches to thousands of media web sites and blogs Stokes (2013) defines affiliate marketing as the online platform whereby referrers are given a "finder's fee" for every

referral they give. Online, affiliate marketing is widely used to promote websites, with the referrers being rewarded for every visitor, subscriber or customer provided through their efforts. It is thus a useful tactic for branding and acquisition. Talking about Strategic Partnerships, Ryan and Jones (2009) describes ‘strategic partnerships’ as a deal between two (or more) parties where the desired outcome is a win–win for all concerned. In digital realm, search engine plays vital role for online business and websites. Search Engine Optimization (SEO) is adopted as the practice of optimizing a website in order to rank higher on the search engine results pages. Regarding to Strokes (2013), SEO involves working with the parameters set by search engines to ensure that search engines index it when people enter a search term that is relevant for a product. Lastly, mobile marketing is the promotional marketing activities though mobile device and it is believed to herald the next big thing in latest digital space. Along with this trend, the mobile applications have become an essential part of mobile marketing. Kolodziej (2014) and Wong (2014) describe the mobile application as indeed linking to users who install the application in their mobile devices allowing the company to deliver the contextual content, share experience and develop personal relationship with their customer based on usage insights. Until this point, the study points out the significant role of digital marketing effects to changing consumer behavior, followed by best marketing and business practices required in response to this change and the overview of digital marketing platforms are already listed and defined. Then, it is going to zoom down on the impact of online digital channel toward tourism sector known as a particular field the author focuses on this research study.

In order to create a successful online marketing, understanding your customers should be your top priority. For instance the Kenya’s tourism largest market is Europe with UK taking the lead followed by Germany. For this matter, profiling the target audience is one of the important aspects in this context. For example the origin of your consumers, the age range of your customer base, company whether they travel as individuals or as a family.

Think about their interests and behaviors, the purpose of their trips, the mode of booking for the trip etc

3.4 Interoperability and Ontology

Interoperability and Ontology building is one of the current technological innovations that must be part of the tourism sector with regard to technology. Interoperability is the provision of a well-defined and end-to-end service which is in a consistent and predictable way (Werthner and Klein 1999). Interoperability includes technical features, electronic market environment, and contractual features. (Staab, 2003) stated that interoperability is a major technical issue but it offers a realistic alternative to standardization, due to the reluctance in coming up with universally accepted tourism standards. The rigidity in standardization complicated the process of communication among partners which resulted in high effort of maintenance (Fodor, 2005). Interoperability enables interactions among the providers with its clients electronically conveniently and efficiently by delivering the right information in an acceptable time at a cheaper cost. Using an ontology that represents a set of concepts within a domain and the relationships between those concepts through mediator software systems such as Harmonise which effectively “translates” partners’ data and allows interaction and communication between them. (Jakkilinki, 2007) proposed an ontology-based e-tourism Planner - AuSTO that enables users to create an itinerary in one single application by this intelligent tool that builds on semantic web technologies. Similarly, (Staab, 2003) showed that semantic web technologies can be used for tourism information systems to provide useful information on text form and graphical media, as well as extracting a semantic description and meaning that is interpretable by machines. OntoMat-Service, introduced by (Staab, 2003) has the capability of embedding web service discovery. Through this service, travelers are saved the effort of searching for information among unnecessary millions of websites to get the desired information. For the tourist to easily and efficiently get access to the required information without wasting too much time

on public websites, tourism organizations need to interact dynamically with partners to develop and deliver tourism products. And for this to be achieved interoperability will be a very critical aspect in ensuring that valuable target information can be collected from these websites and packaged for access by the domain of focus.

For different concepts about a particular domain to be collected together in a KB for easier access, an ontology must be developed. Ontology is a very important concept in Knowledge engineering. It has been applied in different sectors including the medical field, tourism etc. According to (Tom Gruber 2005), an ontology is, "the specification of conceptualizations, used to help programs and humans share knowledge." From his view, an ontology is can be seen as a set of concepts such as entities, events, and relationships specified in some way (such as specific natural language) in order to create an agreed-upon vocabulary for exchanging information.

The importance of ontology in the context of tourism is reflected by the number of researchers that have given this topic a closer look. In this research, a few literature concerning tourism and ontology were sampled.

According to (Barta, 2009) user preferences is fundamental in the personalization of tourist information objects i.e. user preferences can be aggregated to set of tourist types. For instance, concepts like opening hours of point of interest, opening days of point of interest, time pattern to model recurring events are included. User preferences are, therefore, a very vital concept when developing ontology. Since our clients are the most important in the tourism sector, the development of such applications should be geared towards their needs.

Ontological trends in the support of growing domain of e-tourism are also important in this context as discussed by (Siricharoen, 2007) Explored concepts include date and time of travel, contact information, tickets, and locations. His focus is on the description of

accommodation, infrastructure i.e. many prefer to stay close to an accommodation that is close as possible to an infrastructure while others may decide otherwise. This helps in planning during construction or when upgrading or expanding tourism facilities due to increase in demand.

(Zhang, 2012) explored how the use of ontologies can assist tourist plan their trip in Web-based environment. It consists of two Ontologies one for user profile and the other concerning tourism information and data in order to assist visitors in an area to plan their visit, Bayesian network is used to estimate the travelers preferred activities

(Damjanovic, 2008) illustrated how the semantic web technologies combined with traditional e-tourism application concepts such as user interest, activities, age group are used and concepts like vacation packages, types of vacation, traveler's types, accommodation, food service, transportation service and room type in hotel are the valid parameters.

(Ou, Shiyang, et al. 2008) explored on spatial-temporal entities which have both temporal and spatial context. It comprised activities, which might be performed at a certain destination and events which refer to an occurrences with specific content at a specific location with a certain time period Reservations, booking or any kind of tickets are temporal entities as they are valid for certain period of time.

(Dell'era, 2004) They focused on integrated semantic web technology, in their study, electronic markets in different locations can be merged together by building an ontology that mediates these e-markets.

Another group of researchers (Hepp, 2006) built a prototype of the ontology from scratch and used it to store their data. They created knowledge based on the ontology with the limited amount of concepts and relations.

(Cardoso, 2006.) on the other hand presented a system that creates dynamic packages for vocations using previously annotated data in respect to the ontology.

(Hepp, 2006) did a random sampling of a given number of websites using common search engines, for each of the website, and membership in the tourism portal, it was found that there are not enough data in the domain of tourism available on the web. This is due to a given number of percentage of the website could not be found on the web His experiment revealed that existing data on the web are incomplete.

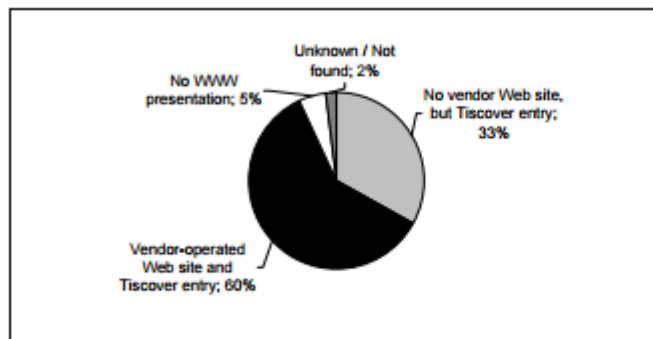


Figure 2. Availability of Web resources for accommodations in the sample (n=100)

Figure 2 Availability of web resources

The above shows just few of the many studies that have been conducted in the context of eTourism. The major challenge is how to develop a universal standard that can

accommodate all the above discussed view into a single system. Due to heterogeneity of tourism sector, the process of developing tourism ontology on various parameters would be also tedious. In e-tourism different ontologies have been developed for different areas and they might not meet the needs to regional destination for any specific area. The focus of this research is to come up with proper tools and recommendations on how to build an e-tourism ontology based on Kenya.

3.5 Dynamic Packaging

The successful development of ontology, knowledge base and reasoner that can be used in the inference of implicit knowledge, can be enticed and integrated to a proper user profile. The interface should be capable of integrating all this important components of e tourism system which will in turn influence management. For proper results to be achieved, information concerning tourism should be packaged in such a way that the user can be able to access almost all the information he or she needs at a click of the mouse. This technique is known as dynamic packaging. According to (Elen Tomai, 2005) packaging is whereby tour services such as flight, accommodation are sold together in such a way that they can be viewed as one. It may also include car rental systems. In their research, (Schmeing, 2006) discussed Knowledge based packaging model focused on Dynamic packaging under which different packaging models were discussed. According to (Schmeing, 2006) dynamic packaging which combines individual travel components online to create customized package is quickly replacing both online and offline tourism packages have that have been in operational for many years now. There is a high level of customizability and flexibility in this packaging model due to its real time nature. Its major advantage being able to deal with individual consumer requests and to the ability to combine multiple travel components into a single fully packaged component requiring only a single payment. The available consumer products can either be stored to local directories or external resources. This is

vital for the case of e tourism in Kenya which currently experiencing stagnation in growth rate due to lack of proper technology in the existing tourism systems.

Dynamic tourism technology can only be achieved by proper integration of crucial mass of suppliers of various travel industries through prioritization in providing customized travel products. This can be achieved by ensuring that proper and functional linkages exists among the suppliers of this business e.g. B2B links, Computerized Reservation Systems (CRS), Global Distribution Systems (GDS), Hotel Distribution Systems (HDS), Destination Management Systems (DMS) etc.

The visibility of this form of integration can be visualized through the development of packaging architecture which consist of different layers e.g. data integration layer, packaging layer and presentation layer. Data is collected from different sources either from external or internal sources and then semantically integrated before being transmitted to the packaging layer. In this layer, Dynamic packaging through KB packaging model collects data from user profile and social networks before wrapping these data in the presentation layer.

3.51 Motivations of Dynamic packaging

The recent advancement of technology has influenced the tremendous growth of growth of dynamic packaging majorly in the transport sector. There are a number of motivations that drives dynamic packaging (2):

- Travel packages plays an important role in tourism in such a way that. Many customers prefer paying for their package once since it's easier and conservative in terms of time. For instance most tourists are retirees who are already on their pension, a majority of them are not conversant with current technologies, and they

prefer getting information at the click of the mouse. This experience if adopted can act as a marketing strategy.

- The current technology have and emergent of different applications and websites have been attributed by faster and wide penetration of internet around the world including developing countries. This has influenced flexibility and interoperability of tourism systems. Costumers prefer to create their own package rather than purchase prepackaged tour which is rigid and may lack flexibility in the long run.
- Another motivation that may not seem important but in the real sense it is that, it is not economical to dynamically compose single product for travel package. For instance, there is no sense of developing dynamic package if you plan to deal with only a single product.
- Different tourism services are only available on different online platforms, the application of dynamic package on these different services integrated together and provide services to customer as if they are in the same online platform.

3.52 Components of Dynamic Packaging

Dynamic packaging is composed of different components, the first section is individual consumer search request where a consumer sends a request depending on his or her preferences, the search tool on the UI then searches the information depending on the consumer's request. The search request may contain different travel components for example flight information, car rentals, hotel accommodations etc. through dynamic sourcing, and these services are integrated together. Another important aspect in dynamic packaging is dynamic pricing where by a single, dynamic price is displayed hiding individual prices of different components involved. Finally the complete travel package is booked in real time.

With dynamic packaging technology, travelers can build customized trips that combine customer preferences with flights, car rentals, hotel, and leisure activities in a single price.

As presented by (Cardoso, 2006), Dynamic packaging as “An industry buzzword for enabling the consumer (or booking agent) to build a customized itinerary by assembling multiples components of their choices and complete the transaction in real time.”

Another important aspect of Dynamic packaging is dynamic package wrapping, the integration of comprehensive information about the different tourism destination and services offered by the tourism sector can motivate the customers of the viewers of these sites from lookers to bookers. In additions it enables tourists to be informed of the best places they need to visit even before the material day. after selection, customer should be in a position to have information in different formats for example interactive maps, textual descriptions, videos, 3D photographs views etc. there should also be access to the prices of packages and the payment mode. As recorded by (O'CONNOR, 1999) DMS is a vital tool in marketing and management of destinations. In as much as there is a success story in the integration of tourism packages, there are challenges of automatically retrieving HTML complicated. Consumer confidence can also be strengthened through the use of social media that allow the customers to share their experiences concerning the destinations they visited. This will motivate customers to be curious about information concerning his or her destination. Social platforms in essence can also act as a link between the tourist agents and the customers.

3.6 Challenges of Dynamic packaging

The Disadvantages of Dynamic Packaging: You are likely to have less consumer protection should things go wrong. If you book a package holiday through an ATOL and ABTA protected tour operator, you're more than likely to be protected against company failure,

cancellation or any other similar misfortune. This is because your contract is with the one ATOL protected tour operator, this means the company is obliged to inform and arrange replacement travel (at no extra cost) should you suffer a cancellation. You should also receive financial redress should the company fail. It is possible to build and book a 'dynamic package' through an ATOL protected company and benefit from the ATOL protection scheme. If you build a complete holiday package and contract with an ATOL holder, you should be protected. Check for the holiday company's ATOL and make sure you get an ATOL Confirmation Invoice covering all the package elements and items you've booked and paid for. However, many dynamic packages booked online are usually sourced using separate or non ATOL licensed suppliers, these suppliers may often be cheaper, and may well provide extended choice and flexibility. Booking your dynamic package through separate travel companies/suppliers may result in no or limited protection should failure or cancellations occur.

3.61 Semantic Integration

Despite syntactic and structural integration achieved by some companies, it's a difficult thing since it has a lot of companies have lost millions of dollars due to its failure. One important aspect that should be given a closer look when developing dynamic packaging is semantic heterogeneity. It not only considers the content of an information item but also its meaning. The problems is semantic heterogeneity can be solved by using technics that are used in semantic integration. As a result failure attributed to integration of tourism information systems will be tremendously reduced.

4 Current State of E-Tourism in Kenya

⁴**Kenya Tourism Industry** boasts of unparalleled services and travel facilities as per the International standards. Kenya tourism industry is the prime revenue earner and plays an important role in the economic development of Kenya. As Kenya boasts of picturesque beaches and varied wildlife, an individual traveling to Kenya can experience the best of both worlds-land and sea. Kenya tourism industry is always working on the travel policies and strategies to better the tourism standards. Infrastructure coupled with love for wildlife has prompted Kenyan tourism to move ahead. Kenya tourism industry offers tourism services in harmony with other tourism related industries to suit the needs of every individual.

4.1 Tourism status in global market and Contribution

Tourism is one of the major foreign exchange earners in Kenya and is second to the agricultural sector. According to Kenya Tourist Board (KTB), last year the industry earned approximately US\$ 800 million and this was accrued from 1.8 million visitors (Daily Nation, 2007). 10% of Kenya's Gross Domestic product (GDP) is accounted for by the industry. The industry is growing at an average rate of 9% per year and the government is doing all it can to maintain this growth rate and even expand it to higher horizons (Denman, 2006). An estimated 509000 job openings are expected to be open up for many in the year 2007.

⁴ www.worldeconomywatch.com 29th June 2010

Nevertheless, large proportion of the total earnings leaks out of the economy in the following ways; importation of items – such as drinks - to be consumed by tourists, payment of salaries to expatriates, expatriation of profits by foreign owned companies, payment of franchise fees by franchised companies in Kenya, repayment of foreign acquired loans. This phenomenon is compounded by the fact that only a small percentage of the retained tourism earnings trickles to the local communities whose resources are used to fuel and sustain the industry.

Kenya's tourism industry is very seasonal as it is highly inclined to international tourists' load whose flow is affected by weather and other factors in the source countries. There are three seasons in a year, namely; Peak season, shoulder and low season. Peak season spans November to March, low seasons starts in April and ends in June while shoulder season is between July and October.

The industry has five key stakeholders, namely; Government, tourists, tourist service providers, development agencies and host communities. In the past, the later have not been full involved in the development of the sector, but now there are efforts to involve them in tourism policy formulation and encouraging them to claim a share of the tourism cake by investing in Community based tourism.⁵

4.12 Travel and Tourism's contribution to GDP

The direct contribution of Travel & Tourism to GDP is expected to grow by 5.2% pa to KES314.1bn (4.7% of GDP)

⁵ Kenya Times, Oct 30 2006, reported on [www. publicdiplomacywatch.com](http://www.publicdiplomacywatch.com)

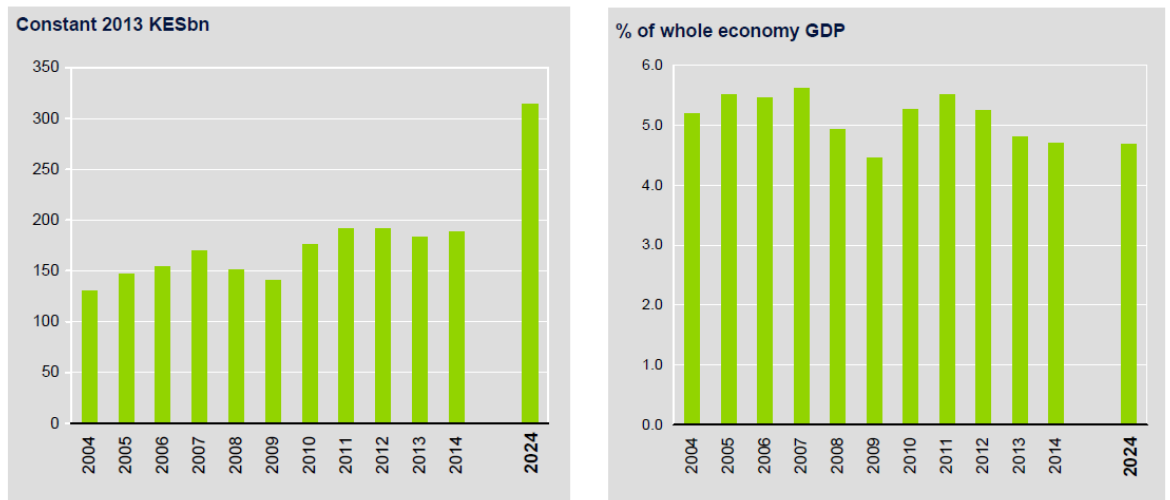


Figure 3 Tourism to GDP

The total contribution of Travel & Tourism to was 589,500 jobs in 2013 (10.6% of total employment). This is forecast to fall by 0.2% in 2014 to 588,500 jobs (10.3% of total employment). By 2024, Travel & Tourism is forecast to support 737,000 jobs (10.3% of total employment), an increase of 2.3% pa over the period.⁶

⁶ WTTC Travel & Tourism Economic Impact 2014

4.13 Contribution of tourism to Employment

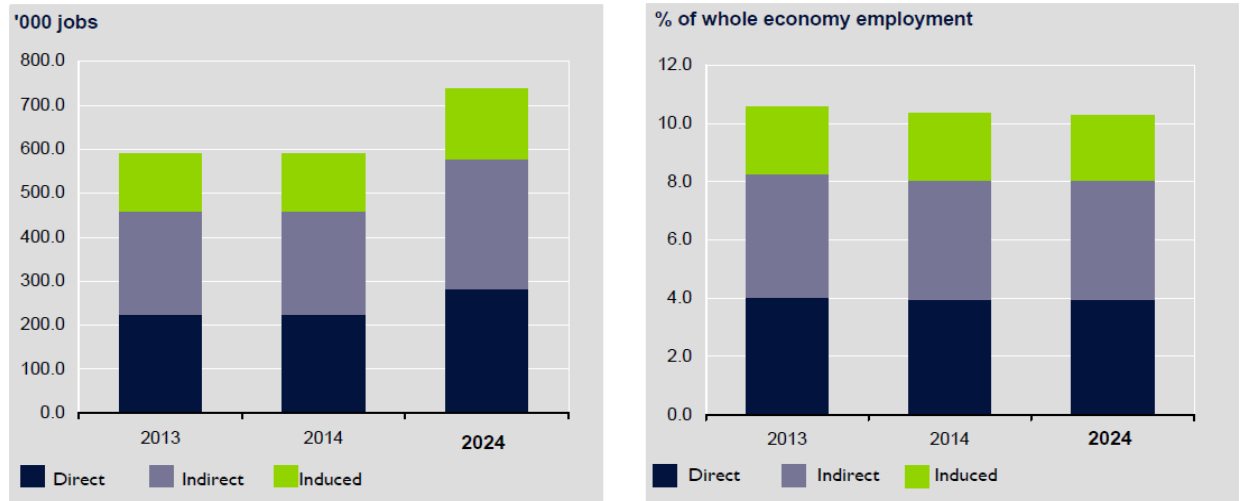


Figure 4 Employment and Tourism

4.14 Business vs Leisure

According to the data from World Travel and Tourism Council 2013, tourist who visits Kenya for leisure is more than the business related tourists.

The pie chart below shows the comparison between leisure tourist and business related tourists.



Figure 5 Business vs Leisure spending

4.15 Foreign visitor spending vs domestic spending

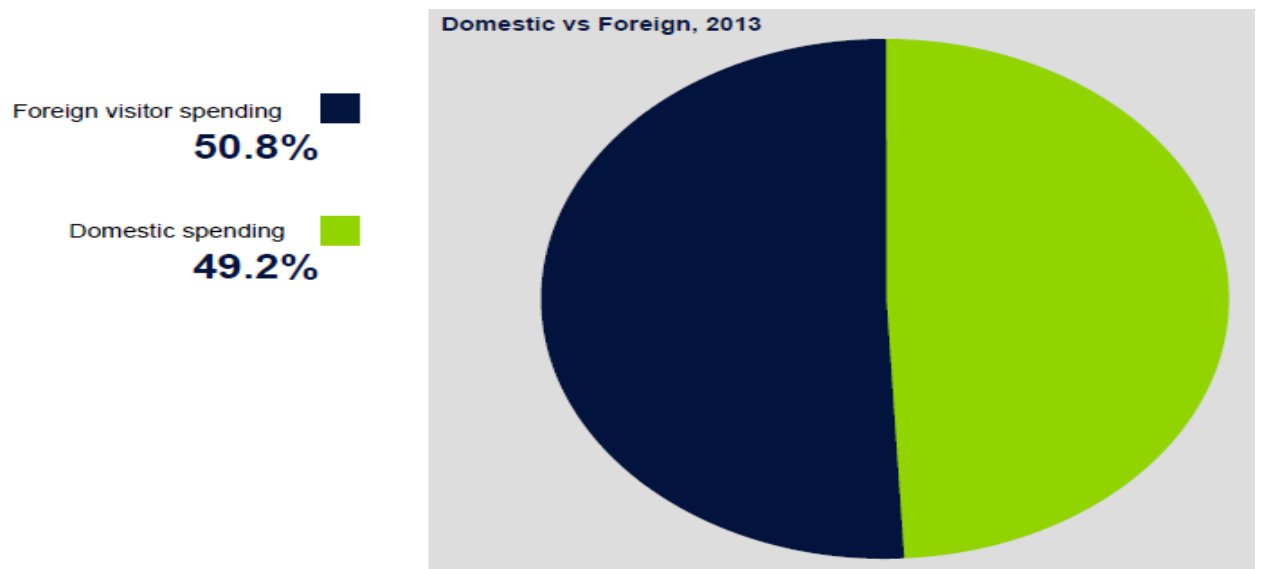


Figure 6 Domestic vs Foreign visitor spending

Domestic travel spending generated 49.2% of direct Travel & Tourism GDP in 2013 compared with 50.8% for visitor exports (ie foreign visitor spending or international tourism receipts).

Domestic travel spending is expected to grow by 4.6% in 2014 to KES163.5bn, and rise by 5.3% pa to KES274.1bn in 2024.

Visitor exports are expected to grow by 1.3% in 2014 to KES163.5bn, and rise by 5.2% pa to KES272.1bn in 2024.

4.16 The Breakdown Total Contribution of Tourism to GDP

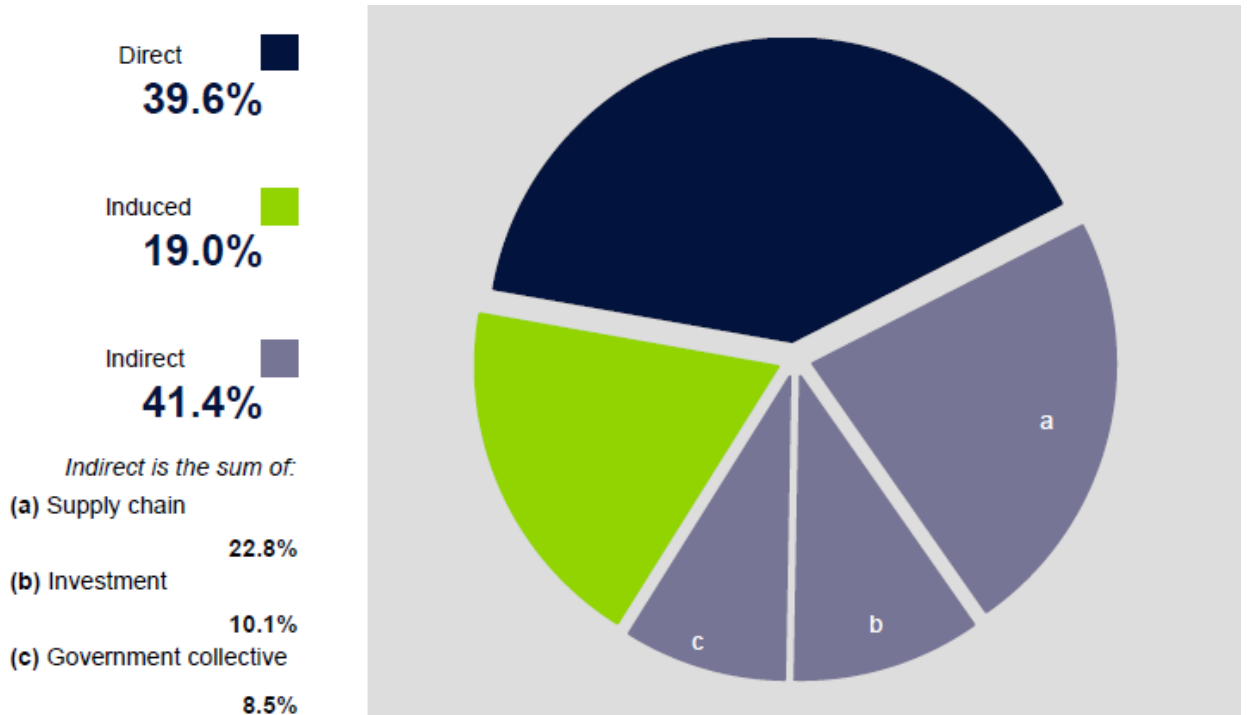


Figure 7 General analysis

4.17 Tourism Satellite Accounting (Kenyan tourism)

The tourism satellite accounting tool helps in analyzing the effect of travel and tourism in Kenya on the national economy. Several factors help to estimate the profit earned from the Kenya tourism industry. The demand in the Kenya tourism industry activity is ascertained to bring in approximately USD 7,060.3 billion in 2007. This amount is expected to grow to USD 13,231.6 billion in the year 2017. Growth in the Kenya tourism industry is estimated to take place at 4.3% annually in 2008 through 2017.

4.18 Global position of Kenya tourism industry:

Kenyan tourism industry occupies the 88th position in the global tourism industry. Contribution of Kenya tourism industry in the global economy is graded at the 74th position. With regard to a ten year growth Kenyan travel industry can be stratified at the 140th position.

Contrary to the initiatives put by the government and private organizations, ICT is not the top priority. The development of tourism industry cannot be realized without ICT. Tourism as an international industry and the greatest job provider in the planet enjoys a high number of stakeholders contacting to it either directly or indirectly than many present industries. This interconnection and interaction between different stakeholders is due to the development and advancement in ICT. The accelerating and synergetic interaction between technology and tourism has brought fundamental changes in the industry and our perception of its nature. In order to visualize the crossing of new information threshold of universal, important considerations like ubiquitous communication among all players will enhance interactivity propelling management by wire (Dimitrous Buhalis 2008). Furthermore ICT plays a very critical role for competitiveness among organizations and

destinations as well as the entire industry (UNWTO, 2001). These benefits can only be reaped if infrastructure development is given a top priority.

4.2 Tourism trends in Kenya

According to facts and figures from Kenya National Bureau of Statistics (KNB, 2012), tourism growth has been on upward growth from 2005 to 2007 when it tremendously dropped due to political instability brought about due to post-election war. From 2009, this sector has been picking up but with challenges of insecurity, the growth rate is not as it is expected.

In this research, secondary data will be analyzed in determining according to trend from facts and figures from the attraction sites per region, bed occupancy and the origin per continent and country of origin. This will help in discovering weak points and making adjustments where possible.

Kenya recorded the highest number of tourists' arrivals ever at 1,095,945 tourists as at 31ST December, 2010. This was a 15% growth compared to the 952,481 experienced in 2009 (KNBS 2010).

The 2010 Tourism performance has surpassed the 2007 record by 4.5 percent the latter being the best recorded year in terms of tourist arrivals and earnings.

The sector has earned Kshs. 73.68 billion in terms of revenue earnings within the same period. This is the highest tourist revenue ever recorded and it represents an impressive growth of revenue by 18 percent compared to the 2009 revenues.

United Kingdom was leading in terms of arrivals with 174,051 followed by United States 107,842 while Italy and Germany took third and fourth positions at 87,694 and 63,011. France took the fifth position with 50,039 visitors.

Kenya also being at the equator has almost one of the best weather conditions in the world. With average weather almost all the year round. During winter, there are always an increase in the arrivals since most people who cannot cope with harsh winter weather conditions and can afford a favorable weather somewhere else where they can enjoy sun the whole day always opt for such countries like Kenya which has been a beneficiary. But the Kenya government through the tourism sector have not made maximum use of this opportunity making available enough facilities for such services which can also be a source of marketing strategy.

According to facts and figures from Kenya National Bureau of Statistics (KNB, 2012), tourism growth have been on upward growth from 2005 to 2007 when it tremendously dropped due to political instability brought about due to post-election war. From 2009, this sector have been picking up but with challenges of insecurity, the growth rate is not as it is expected.

In this research, secondary data will be analyzed in determining according to trend from facts and figures from the attraction sites per region, bed occupancy and the origin per continent and country of origin. This will help in discovering weak points and making adjustments where possible.

Data from shows very positive results in terms of improvement in this sector as opposed to previous years. Statistics show that as of June 30, visitors from Europe had improved by a clear 12 per cent over the same period in 2012 with France alone increasing by a 12

percentage point, United Kingdom by 14 per cent, Germany by an impressive 29 per cent. Asia is also showing signs of growth as is Africa and the Americas.

The below figure depicts arrivals depending on the countries which contributes to the highest markets in Kenya.

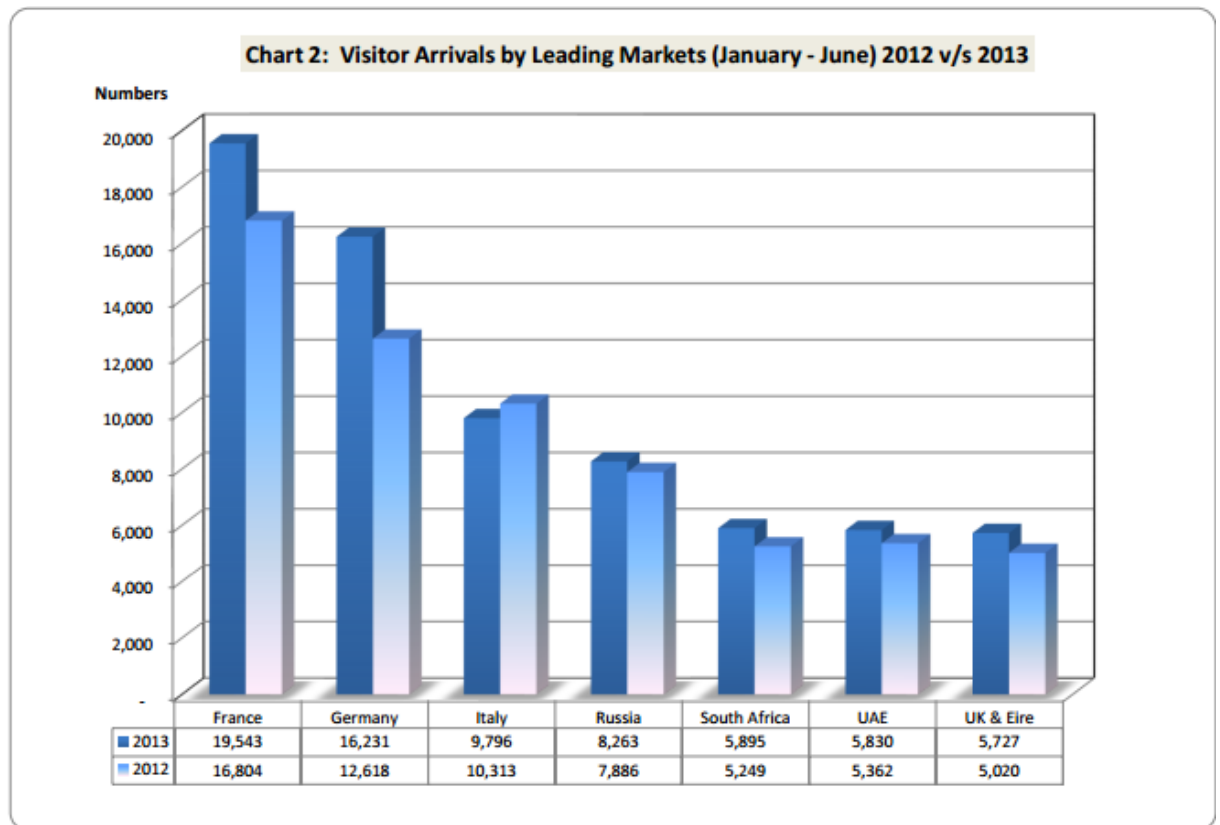


Figure 8 tourism arrivals

This reveals that, tourism markets are very dynamic, since the overview of data in terms of arrival and bed occupancy were totally different in regard to market leaders.

The data below shows the latest tourism trend in Kenya

According to (Fact & Figures, 2014), the growth of tourism in terms of arrivals, bed occupancy per country of origin is not at a constant rate. It keeps on fluctuating, for instance, Kenya recorded the highest number of tourists' arrivals ever at 1,095,945 tourists as at 31ST December, 2010. This was a 15% growth compared to the 952,481 experienced in 2009 (KNBS 2010).

The 2010 Tourism performance has surpassed the 2007 record by 4.5 percent the latter being the best recorded year in terms of tourist arrivals and earnings. The figure below shows the latest research carried out by the same group that summarizes tourism indicators

Kenya Facts and Figures 2014

Table 44: Tourism Indicators, 2010 - 2013

	Unit	2010	2011	2012	2013*
Visitor Arrivals	('000)	1,609.1	1,822.9	1710.8	1519.6
Visitors to Parks	('000)	2,764.9	2,664.1	2,492.2	2,337.7
Visitors to Museum & historic sites	('000)	942.0	843.4	824.6	770.8
Tourism earnings	KSh Billion	73.7	97.9	96.0	94.0
Hotel Accommodation					
Hotel bed nights available	('000)	17,161.8	17,419.6	18,849.6	18,292.2
Hotel bed nights occupied	('000)	6,662.3	7,015.2	6,860.8	6,596.7
Rooms available	('000)	10,190.0	10,552.2	11,529.6	11,430.1
Rooms Occupied	('000)	3,702.2	4,787.7	4,882.0	4,792.5
Bed Occupancy rate	%	38.8	40.3	36.4	36.1
Room Occupancy rate	%	36.3	45.4	42.3	41.9

Table 1 tourism indicators

Figure 14: Tourism Arrivals, 2010 – 2013

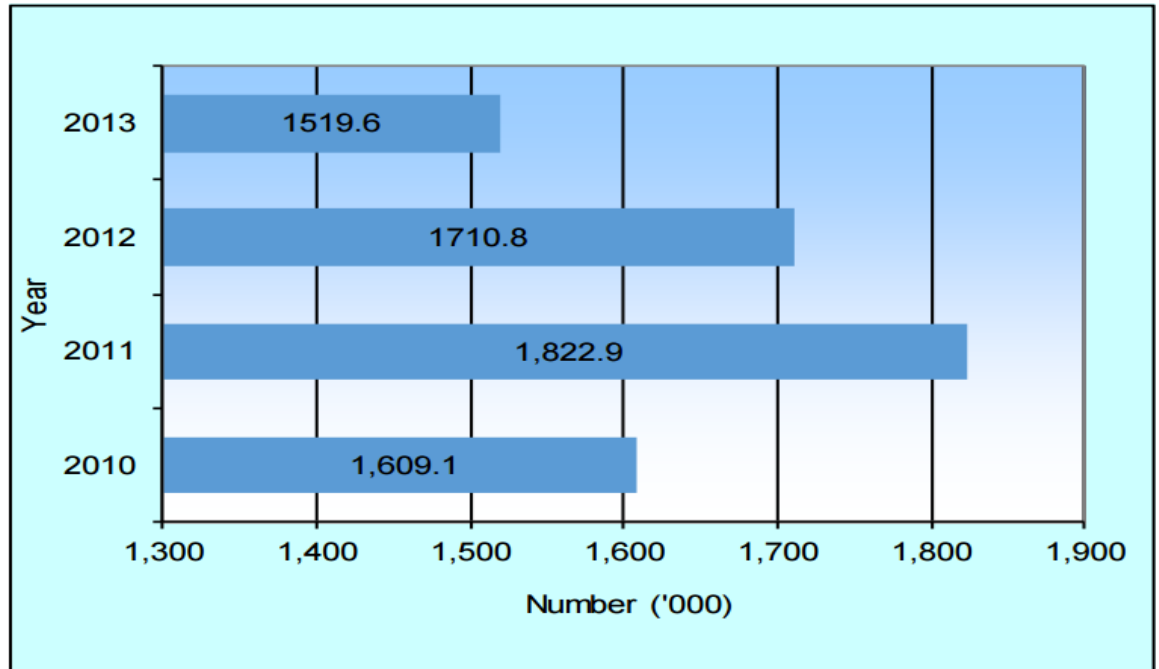


Table 2 Arrivals statistics

4.22 Hotel Occupancy according to Regions

Kenya is divided according to regions formerly called provinces, these regions were headed by provincial commissioners who were considered as the president of the province according to administrative structure of the country at that time. Being a tourism country, almost all the regions have their attraction sites. The growth of tourism can also be determined regionally due to this structure. Hotel or bed occupancy per regions can be used to capture the tourism data per region due to the fact that most visitors tends to spend their night in the places they visit. It can also be used to show the preferences of many tourist depending on their origin. This information once tracked can be used by the tourist providers in their marketing strategies. The figure below show hotel occupancy per region.

This is far much below the statistics of online sales from the developed countries majorly from Europe and United States. It is therefore evident that e-tourism is maturing fast as a mainstream distribution mechanism. Competition in ‘cyberspace’ tourism marketing is increasing dramatically on both domestic and international levels. Establishing internet presence and ecommerce strategies, for micro and macro levels, will increasingly become of critical importance for destinations to remain competitive.

The literature on the diffusion of ICTs and e-commerce in the tourism industry is growing (Werthner and Klein, 1999; Sheldon, 1997; O’Connor, 1999). A number of research studies regarding online developments relating to the tourism industry have been conducted worldwide (Countryman, 1999). Most of them predominantly focus on technologically advanced European countries and the USA and mainly reflect the situation in large tourism organizations. However, e-commerce and internet diffusion varies tremendously between countries and according to the size of organizations (Werthner and Klein, 1999). Most of tourism literature has however failed to research these issues in countries with different levels of development like most of developing countries for instance Kenya. There is no explicit information to indicate whether Kenya tourist enterprises are connected to other sectors of the world or whether they provide their product and services online.

ICT innovators face many challenges in Kenya, including inadequate infrastructure and high costs, poor business planning, lack of skills in the development of current technology, insufficient financing, coping with global competition, and IT security problems. Kenya, with the help of development partners such as multinational corporations – as well as AfDB, via financing or technical assistance – must address these challenges to sustain and build on its position as one of Africa’s top ICT hubs.

4.3 The state of ICT and E-commerce in Kenya

A competitive ICT industry is essential for Kenya – the largest economy in East Africa – which has had broad-based growth from 2003 onwards. By maintaining macroeconomic stability and improving the efficiency of public services, the government is seeking to support diversification of Kenya’s exports and promote them globally. To reach its Vision 2030 targets, Kenya needs to move to higher value-added exports. Kenya liberalized ICT sector in 2000, leading to a technological revolution which has stimulated home-grown innovation, transforming Kenyans’ lives. The country has transited from 2G technology to 3G, and is now finalizing the modalities of adopting the Long Term Evolution (LTE) technology (4G).(Silicon Kenya, 2012)

ICT growth averaged 23% during 2000- 2009, while ICT investment alone contributed almost a percentage point of GDP growth. Kenya is one of the leading countries in Africa for ICT innovation and services, with coverage greatly expanded, bandwidth increased, quality improved, tariffs falling, and investments and innovation up (Silicon Kenya, 2012). But Kenya is still far from universal access.

Sectors where ICT innovations have been developed and are being commercialized include education, health, agriculture, tourism, and commerce (marketing and advertising). Development of e-government is also a priority.

Transfer of money via mobile phone – using Safaricom’s M-PESA, Airtel Money, Essar yuCash, or Orange Kenya’s Iko Pesa – has risen phenomenally. Mobile-money deposits during FY2011/12 were up 38% (to US\$8 billion), while subscribers rose to 19.5 million in June 2012 (up 12% over 2011), and agents to 49,079 (up 16%). The dynamic growth of mobile money-transfer has been supported by regulations that allow banks to employ retail

outlets to promote their services and handle transactions, which paved the way for them to begin using M-PESA and its associated network.

M-PESA is now the most developed and successful mobile money-transfer system in Africa allowing purchase of goods, paying bills, and person-to-person transfers. Some organizations are adopting paying their contract employees through this service. The use of such innovations enhances familiarity of people with current technology that further promotes e-commerce. Due to the high correlation between e-tourism and e-commerce, advancement of one technology will affect the other in a positive way and vice versa (Buhalis, Dimitrios, 2008).

Even though a tremendous growth have been achieved in terms of ICT development, more effort is still needed more so in this sector. ICT and e-commerce are two major sectors that drive tourism development.

4.31 Challenges facing e-commerce in Developing Countries

There exist a fundamental correlation between digital progress and economic progress. For instance, a country or an organization which does not promote digital development will automatically experience a degradation in its economy. The main mandate of the Department of E-Commerce is to focus on the promotion of key roles that technology plays as a powerful driver, in helping to achieve many of the economic, social, and environmental objectives of any given country. spreading the benefits of technology and remaining current in the areas of technology related policies and legislation, will help to move Africa's society forward and is our best defense in continuing to remain competitive and in providing benefits and opportunities for Africans for instance Kenyans.

E-commerce is generally presented in very positive terms but along with the potential benefits come potential problems for developing countries. The adoption of e-commerce in

developing Countries differs greatly from one country to the other. But many face a number of similar obstacles to in regard to innovations like e-commerce. These mainly include a lack of financial, legal and physical infrastructure for the development of e-commerce.

The development of various types of e-commerce depends primarily on the existing structure of an industrial sector and how it fits into a given sectorial value chain (Wirtz et al, 2010). Additionally, the difference between cultures and business philosophies across developing countries has also been seen to limit the applicability and transferability of the e-commerce models designed by some developed countries.

Although SMEs have numerous reasons for engaging in e-commerce, the security concerns of the customers remain an important impediment to expanding e-commerce services and business.

Probably, the biggest drawback is the reluctance of customers to provide online information about their credit cards.

Ensuring both trust and familiarity through a well-functioning website has proven to be one of the major e-commerce success factors. In the same vein, the growth of broadband has created a greater need for users to protect their security and privacy in an “online” environment. Both individual users and businesses report that computer viruses are the “malware” they encounter the most. Security continues to be a problem for online businesses as customers have to feel confident about the integrity of the payment process before they commit to the purchase.

The potential of e-commerce can only be achieved given adequate infrastructure. In most developing countries, this constraint presents a major obstacle. Smaller, low-income

internet markets in developing countries, particularly in Africa, have been unable to attract sufficient investment in infrastructure. Combined with the lack of competition, this results in bandwidth cost that can be up to 100 times higher than in developed countries.

In most cases, these countries remain outside the reach of fiber optic cables and must turn to satellites for international – and sometimes even domestic – connectivity. This happens even in spite of significant improvements brought about by technology.

Another area of concern is the lack of technical skills which keeps SMEs from realizing their full e-commerce potential. Many developing countries do not have a workforce that has sufficient training in ICT and mobile technology. This greatly disadvantages many SMEs that may be seeking to diversify or to branch out into e-commerce.

Making sure enterprises possess the required set of skills and capabilities to use relevant technologies productively is key to securing the economic benefits of e-commerce. Many entrepreneurs in developing countries, and especially in least-developed countries, lack the necessary capacity or awareness to take full advantage of ICT.

Even if entrepreneurs in developing countries have access to mobile phones or the internet, they may not know how best to leverage them for their business operations. In some circumstances, they may even fail to see the value of investing in the technology required so as to be able to take advantage of the opportunities of e-commerce.

4.4 SWOT Analysis of Kenya's E-Tourism

One of the techniques that will be applied for the analysis of the state of the e-Tourism in Kenya in SWOT⁷ analysis. SWOT is an analysis and strategic planning tool often used in particularly planning approach (Zwanepoel, 2009). Based on the current situation and trends which will give the output of understanding. This technique indicates future schema and strategy for further planning. In this study Internal strength of the entire Kenya tourism sector will be realized, its weaknesses, Opportunities and Threats.

4.41 Strength

It is internal property of firm which introduces how, technology, motivation, innovation, financial and other available tools can help to make advantage from opportunities and fight off threats.

One of the major strengths of e tourism in Kenya and even the region are: huge number of attraction sites, favorable climatic conditions, adventure type of tourism from mountain climbing to beach, different cultural and events organized traditional communities like Maasais, emerging international Banks that allows for easy credit transfers.

⁷ SWOT stands for: Strength, Weakness, Opportunity, Threat

² <http://www.mfa.go.ke/downloads/9-Kenya-facts-and-figures-2012.pdf>

Another important aspect in this sector of tourism is the availability of markets. The major markets for Kenya's tourism is western countries like Europe and America with the highest percentage being Europe. Most tourists who visits Kenya are safari bound tourists who goes to visit most tourist attractions in Kenya. African safari is what Kenya is become to be known as the heart of safari. The tourism sector recorded the highest number of arrivals ever at ⁸1,265,136 tourists as at December 31, 2011. This was a 15.4 percent growth compared to tourist arrivals in 2010. The major weaknesses that were discovered in Kenyan e-tourism poor infrastructure that hinders the efficient movement of tourist from one

4.42 Weakness

Weakness in this context is described by (Zwaenepoel, 1996) as an internal condition which endangers the competitive position of a given firm or hampers the exploitation opportunities. Some of the weaknesses that may be hindering the implementation of e-tourism in Kenya are: safety and security due to rampant hackers on online credit transfers, inappropriate development of webpages that makes it difficult to understand, lack of standard in currency offers for instance some offers are in euros while others are in dollars others still are in local currency that makes it difficult for tourists to understand, some users still prefer travel agencies to online transfers since they still don't trust systems in developing countries and therefore they don't want to enter their personal data like credit card numbers, lack of local languages for reservation since some foreigners come from non-English speaking countries

⁸ <http://www.kenyatraveltips.com/tourism-in-kenya.html>

4.43 Opportunity

This is an external characteristic that a firm or a company need to implement to acquire a competitive advantage against others. In the case of Kenya's tourism sector ICT development with a goal of implementing the current and latest technology, take advantage of the development of 3G and 4G in building a sophisticated tourism system.

4.44 Threats

Unfavorable trend or any external circumstance which may have negative influence on the firm or company. The major threats that are exhibited in the Kenya's tourism sector are: terrorist attack that may pose security threat to both the government and the tourists who are planning to visit since their security should be their top priority. This was evidenced in the previous three years or so when the Al-Shabaab invaded the country and are abducting the tourism there after demanding ransom for their release. Political instability is due inter-tribal clashes and inter- religion clashes that have been witness in the previous years. Due to poor structure of the sector every government comes with its set of rules that takes time before implementing, there is also threats in online package booking since the systems are not properly synchronized.

Table 3 Summary of SWOT analysis

Strength	Weakness
<ul style="list-style-type: none">▪ Huge number of attraction sites▪ Favorable climatic conditions▪ High penetration of internet▪ Availability of market from Western Countries	<ul style="list-style-type: none">▪ Unintegrated tourism systems▪ Inadequate knowledge in development of current tourism systems▪ Poor infrastructure

<ul style="list-style-type: none"> ▪ Varied culture ▪ Knowledge of English by the local people 	<ul style="list-style-type: none"> ▪ Lack of government initiative in prioritization of tourism ▪ Medical facilities
Opportunity	Threats
<ul style="list-style-type: none"> ▪ Current technological development ▪ Globalization ▪ International contracts ▪ International student exchange program ▪ Increased hotel facility 	<ul style="list-style-type: none"> ▪ Terrorist attacks ▪ Poaching ▪ Competition from emerging neighboring countries ▪ Lack of enough knowledge for dynamic packaging ▪ Security threats by hackers

Table 4 SWOT Analysis

4.5 Government Initiatives

Being one of the major generators of GDP, the government of Kenya should, the government should ensure that tourism sector is allocated enough budget every financial year to enhance its running. In an attempt to develop tourism systematically to attain its full potential, the government has put several measures from time to time. These includes formulation of tourism policy and various initiatives to promote tourism infrastructure development, marketing and promotion strategies.

One of the major initiatives by the Kenyan government is the formation of Kenya Tourism Board. This board is mandated to Develop, implement and co-ordinate a National Tourism marketing strategy. In marketing, they are in charge of local marketing that promotes domestic tourism for instance tourism to the locals to get to know the beautiful tourist attractions they may have yet they are not aware of. KTB are also mandated with national tourism marketing whereby they create awareness to the whole country to visit different regions as tourist. Finally regional and international level where they sell the tourism in the region for instance African continent and the world as a whole.

Another important function of KTB is to carry market research accordingly both regionally and internationally, by identifying tourism market needs, tourism trends and using their analysis and findings in giving direction to the stakeholders through proper advices.

The second initiative that is also part of the government is Kenya Tourism Federation which is an umbrella body for Kenya Association of Travel agents (KATA) is a membership based organization that represents the interests of Travel Industry in Kenya and other interested parties. KATA works to enhance and improve the Travel Industry business climate in Kenya by promoting the services of Travel Agents to the general public, protecting the rights of Travel Agents businesses, and assisting businesses to optimize their businesses and improve profitability. The association is a member of UFTAA, the Universal Federation of Travel Agents' Association and cooperates closely with the Ministry of Tourism, Ministry of Transport, Kenya Tourist Board (KTB), Kenya Utalii College (KUC) and the Civil Aviation Board (CAB). It also plays an important role in the private sector bodies such as the Kenya Tourism Federation (KTF), Board of Airline Representatives (BAR), Kenya Association of Tour Operators (KATO), Kenya Hotelkeepers and Caterer's Association (KAHC) and The Kenya Private Sector Alliance

(KEPSA).With a Secretariat in Nairobi, KATA has members in Eldoret, Kisumu, Lokichogio, Malindi, Mombasa and Nairobi⁹.

These tourism bodies and other organizations have been in existence for many years now some as old as from few years when Kenya attained independence. The questions is, what changes in do these organizations or bodies bring to the tourism sector? The studies from different secondary data reveals that tourism has been in stagnating growth rate yet these organization keeps on adding up and growing. KTB operates under the umbrella of the Ministry of Tourism, although it is private sector driven and it makes its own decisions. The main purpose of the board is to promote Kenya as a country, in the International market as an international destination. It also tries to promote domestic tourism. When asked the role of KTB for the Country, The chairman responded by saying that the board is charged with the responsibility of ensuring that Kenya remains a major competitor in the world of tourism. “We have just carried out a study together with the European Union that gives very interesting statistics. Tourism represents 9.2% of the Gross National Product per annum and 18% of all foreign exchange earnings. It serves to stabilize the balance of payment, that is why the Tourism sector is to important to the Kenyan economy. It is a big employer in itself, both direct and indirect. In 1996 it provided about 11% of the Government levies”. The chair also responded on the question of marketing in major countries like USA and Canada and further explaining the laid down strategies with the stakeholders. Another important question was about competition from that was getting very stiff from Southern African countries due to the release of Mandela. But the chair stated

⁹ <http://www.katakenya.org>

that Kenya has uniqueness in Kenyan tourism and trade cooperation like COMESA that were opened up and the plan of expanding KTD to other African countries within the cooperation. There was also concern about duplication of duties among these organizations, but the chairman defended this by stating that, Kenya Tourist Foundation is a body that is supposed to bring together all the private sector bodies, e.g. KATTO (Kenya Association of Traveling Tour Operators), the Hotel Keepers Association, The Mombasa and Coast Tourist Association, etc. he stated that KATTO is a voice for the board because their grievances can easily be heard by the government, since KTB is also ruled by the government, they are restrained in certain areas. It is healthy for the Kenya Tourist Foundation to exist because they deal with problems the Kenya Tourist Board cannot deal with as a government body. Kenya Tourist Board is responsible for marketing and promoting Kenya as a destination. We are donor funded for marketing, we are also accountable to the Government and to the stakeholders. We do not promote individual hotels, we promote Kenya, the wildlife and beaches as a general concept.

These were very promising statements from the chair of the board in the year 2000, and he did promise the cooperation between KTB and KATTO, will bring a positive improvement in the tourism sector in few years to come¹⁰. Contrary to this, fifteen years after the resolutions very little progress have been realized.

The purpose of this study is to come up with recommendations which should be applied in the tourism sector both by government and private sector.

¹⁰ © World INvestment NEws, 1999.

This is the electronic edition of the special country report on Kenya published in [Forbes Global](#) Magazine. November 29th 1999 Issue.

Developed by [AgenciaE.Tv](#)

4.51 Complete involvement of the government

In many developing countries, majority of government agencies took a back seat in terms of tourism development, they seemingly left this sector to be run by private sector while they concentrate in collecting taxes from successful operations but providing very little assistance to the struggling initiatives. This makes the results to be seen as accidental rather than projecting the result and working towards achieving them (Ashley, 1998; Poultney & Spenceley, 2001). Governments are the policy builders and any recommendation in the world market by the authority of the government can easily be accepted.

4.6 The role of non-governmental organizations

NGOs plays a very vital role in the delivery of benefits to communities through initiatives they inject in tourism; these roles may range from investment, promoting cultural activities, advocacy campaigning (Kalish, 2001). If NGOs can be included as one of the many stakeholders in this sector, then sustainable and prolonged benefits to the communities can be realized (Jamal & Getz, 1995; Murphy, 1998). For instance in the case of Kenya some communities can reap the benefits from the Tourism trust funds, and NGOs like SNV that have done greater things around the world in terms of poverty reduction. Through their support channeled through KTF, community tourism are on upward growth. For this matter therefore, NGOs and government must collaborate in providing these services to the communities. The figure below shows how the cooperation between NGOs and government can benefit the communities.

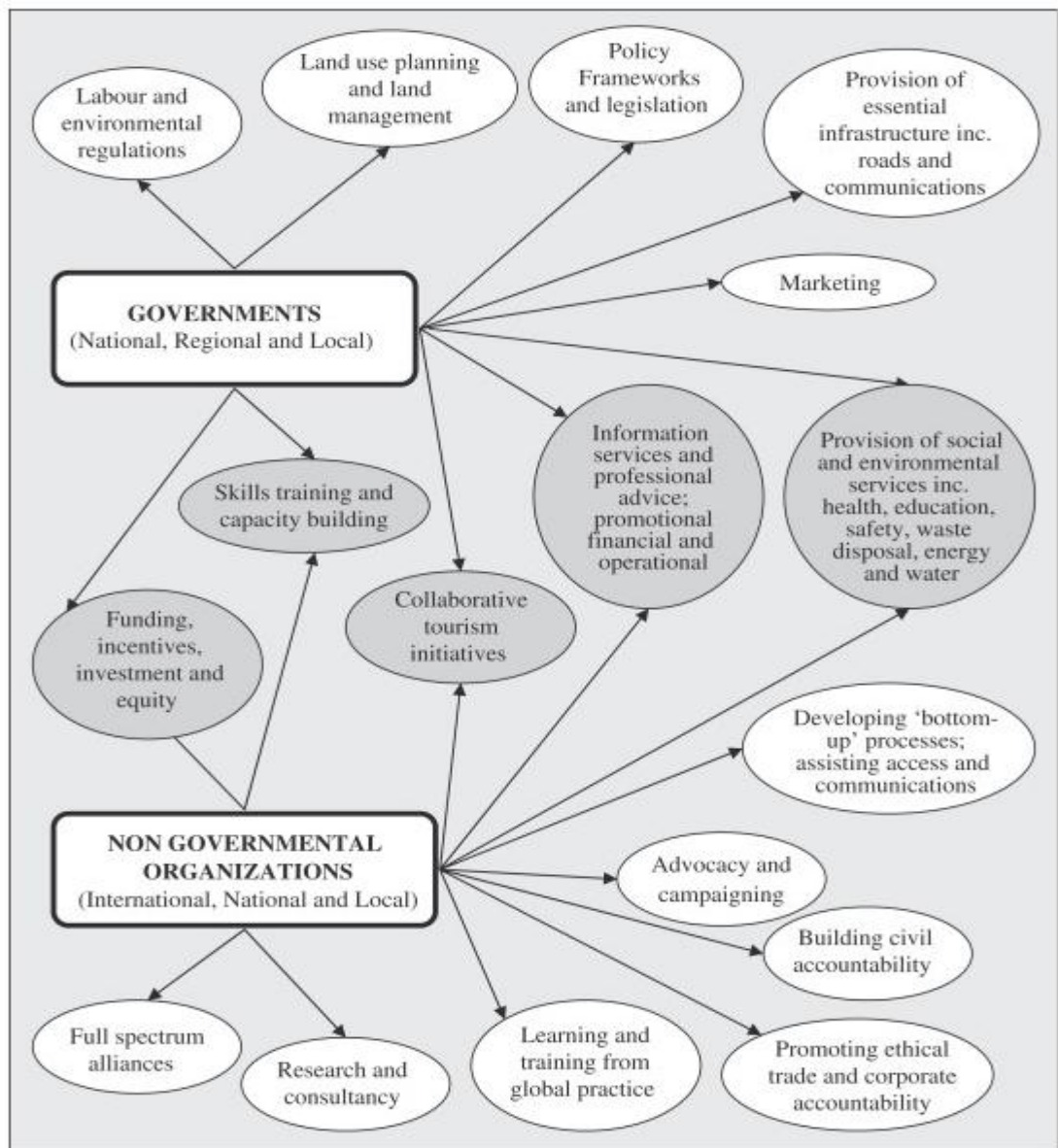


Figure 9 role of NGO and govt in tourism

Source: doi:10.1016/j.tourman.2007.06.005

NGOs powered by the government can help the communities in achieving initiatives such as energy management, waste management, conservation initiatives like water conservation, human-wildlife conflict resolution that sometimes cause a lot of havoc in the communities neighboring game parks and national reserves.

4.61 Conceptual framework

The PESTEL framework is an abbreviation that stands for Political, Economic, Social, Technological, and Environmental and Legislative, which is a technique normally used in analysis the key factors influencing organizations and industries. In marketing, it represents the external analysis of SWOT model. This construct can also be applicable in tourism sector (Bivolaru, 2009). This framework can be used to reveal the strategic effects of macro-environmental forces on the industry.

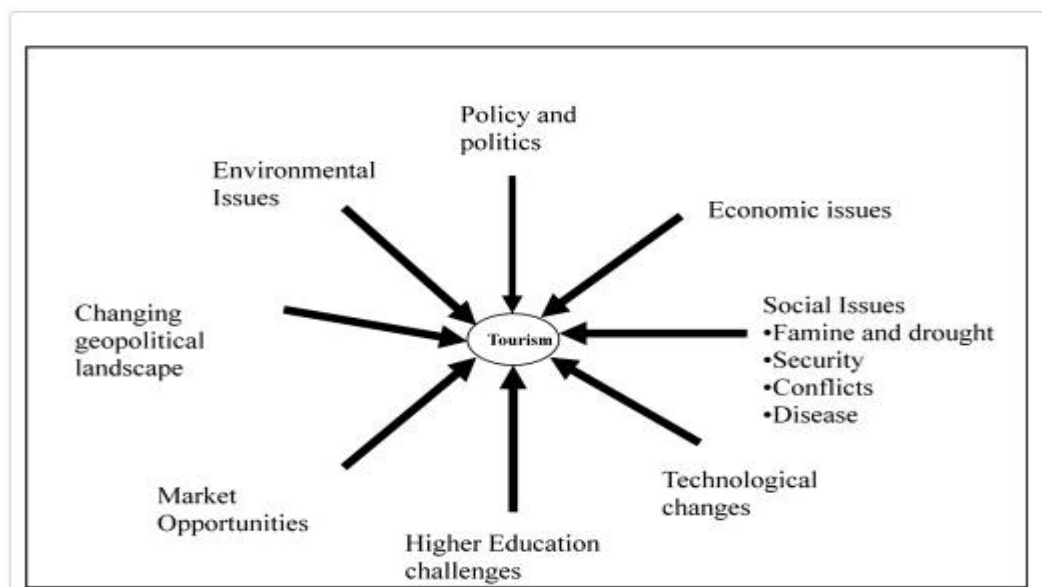


Fig. 1.
Conceptualizing key strategic issues in Kenya's tourism.

Figure 10 key strategies of tourism

The PESTEL framework is composed of key components that the government need to put in place in an attempt to enhance the development of tourism.

The following concepts are covered in this section:

4.7 Technological changes

Technology is one of the greatest concepts in tourism development. The development of internet which and world wide web has tremendously reduced communication gap among the players involved. Due to technological advancement, tourism service providers are able to communicate with their clients in almost every part of the world, view their preferences, and review their services through social network platforms where different customers can give their express their experiences etc. technology is a government initiative due to communication policies, security policies that must pass security standards. In the tourism sector, there are electronic services that are either directly or indirectly connected to the government of the land. For instance, services like visa application should be easily accessible in any tourism website. The government should therefore ensure that any company dealing with tourists and intends to conduct some of their services online must subscribe with them. This will not only promote e-tourism but also eases the work of government in the processing of such documents

Another aspect of technology is online payment, more than 60% of customers who are intending to visit a given country as a tourist prefer online payment as opposed to payment at their destination points. A greater percentage of tourist are pensioners who intends to spend their retirement periods and holiday in places with good weather and interesting scenarios. But sometimes inefficient payment methods can make them change their interest to another country with almost the same services due to efficiency and security in their

system. The government should therefore ensure that such services are provided in every website with proper and approved security standards.

Government are the initiators of internet charges in collaboration with the providers, to motivate different tourism companies to increase their range of access, the government should subsidize the internet charges so that their prices can reduce. Tourism providers should be encouraged to provide internet hotspots in almost their resorts including their gardens where tourist sometimes enjoys flora and fauna so that tourists can always feel at home and not getting bored by communicating with their families anywhere they happen to be.

Web semantics is one of the most popular technologies currently used in tourism industries, using ontology development technique and knowledge base that can be integrated with user interface to come up with a proper dynamic packaging. The government in collaboration with providers should set up a central database on the cloud that any tourism company in Kenya should get access to. Using web annotations unstructured data can be collected from this databases to local database. Web crawlers will also help in collecting information related to Kenya tourism on public websites and directs it to these databases.

4.8 Marketing Opportunities

With global international tourist arrivals reaching one billion each year, and growth only expected to increase, opportunities in the tourism industry are endless. Yet many destinations and tourism businesses fail to achieve success. Why are so many destinations struggling in a climate that is ripe for tourism? Marketing is a major part of the problem, but it is also an integral part of the solution.

Today's traveler can virtually tour destinations at the touch of a finger, communicate with distant islands on their way to the office and plan customized adventures through simple online platforms. By failing to connect with and captivate this virtual audience, many tourism enterprises are fighting an uphill battle. Marketing with a purpose is therefore the best way to go. Without the correct combination of tourism marketing strategies, tools, and technology, your travel business will not be able to find potential clients, and even more importantly, those potential clients will not be able to find you.

4.81 Branding

Tourism can enjoy its success by offering comprehensive, integrated and innovative tourism marketing services and tourism consulting services for tourism businesses and destinations. From strategic planning and branding, to website analytics and customer relationship management, the tourism companies must invest in the designs of marketing strategies that are aligned with strategic positioning, competitive advantages and specific goals of its individual clients.

4.82 Website Development

With today's consumers researching and planning more and more of their travel online, having an engaging, well-designed website is crucial for any travel company's survival. To succeed online, a website must implement the necessary strategies to be found by potential clients. Employing search engine optimization (SEO), using important key words and generating fresh content are all part of creating and maintaining a successful website. New websites should be created and upgrades of existing websites to the ones that are informative and inspiration to the travelers. These websites must provide one on one consultations throughout the process that make the clients have background knowledge on what to do on the website.

Tourism providers should partner with National Geographic of Kenya, in developing Geotourism solutions for destinations in providing interactive online mapguides that will enable the tourist to have an overview on where they plan to visit. Below are the key components that should be expected in any tourism website: Website strategy and planning document, MS, Built in CEOs, Analytics reporting systems, social media integrations, Multilanguage customizations, Geomapping, form creation, mobile optimization, RSS and Blog integration etc.

5 Analytical Part

In this section, we describe the theoretical framework in relation to the analysis discovered in the literature review part. After the analysis of the current state of the e-tourism systems in Kenya. Our attention is diverted on how to improve the current tourism systems and applications. Suggestions and recommendations on how these systems can be implemented will be given a closer look. The analysis in the literature review revealed that very low growth rate of e-tourism of Kenya in comparison to former competitors. In reality, the trend just revealed fluctuation in the growth which even complicates matters since projection is not easy, in this case.

The best avenue through which enterprises can create business opportunities for reaching their potential market is internet. The internet can be used not only as a marketing channel, but also a means of communication between suppliers and customers. The latest key avenue that has become most effective in maintaining and strengthening consumer relationship in gaining global market. As quoted by Philip Kotler from Henry Hartveldt of

Forrester Research (2003, P499) there are three important advantages of e-business to consumers, these include efficiency, varied information and reduced cost.

Therefore, website is considered one of the most important tools for the product and also a convenient channel for marketing to introduce the content, uniqueness, and differentiation of the product. Nowadays, the main reasoning behind an enterprise's use of a website is focused on increasing awareness of the products, selling the products, supporting promotional campaigns of a brand or products, maintaining the communication channel with consumers, and collecting customer feedback and profiles. Though any enterprise pushes the product to the market all over the world on the internet, a comprehensive management technique is required to be successful in e-business.

According to research, e-tourism in Kenya was at the same level with Egypt and Singapore, as the two countries experienced the period of high growth rate, Kenya tourism sector was in a stagnating position. As a result, a SWOT analysis research was conducted based on the secondary data. From the results, it was revealed that a country like Egypt is experiencing almost the same problems as Kenya in terms of insecurity and terrorism yet their tourism sector still enjoys a tremendous growth. A closer analysis revealed that, what Kenya tourism sector lacked is proper and current technological know-how. This is because our services cannot penetrate the world market due to poor marketing inadequacy or lack of proper tourism applications. Lack of integration between e-tourism, e-businesses and e-commerce services.

The study in this section focuses on the current e-tourism technologies, their integration in relation to tourism data and how their implementation can improve the state of tourism to a positive growth.

5.1 Importance of unstructured data in Tourism

The age of information overload is slowly drawing to a close. The enterprise is finally getting comfortable with managing massive amounts of data, content and information. The pace of information creation continues to accelerate, but the ability of infrastructure and information management to keep pace is coming within sight. Big data is now considered a blessing rather than a curse. Even so, managing information is not the same as fully exploiting information. While ‘Big Data’ technologies and techniques are unlocking secrets previously hidden in enterprise data, the largest source of potential insight remains largely untapped. Unstructured content represents as much as eighty percent of an organizations total information assets. While Big Data technologies and techniques are well suited to exploring unstructured information, this ‘Big Content’ remains grossly underutilized and its potential largely unexplored.

(Ewalt, 2002) defines unstructured data as content that does not conform to a specific, pre-defined data model. It tends to be the human-generated and people-oriented content that does not fit neatly into database tables. Within the enterprise unstructured content takes many forms, chief amongst which are business documents (reports, presentations, spreadsheets and the like), email and web content. Each of these content sources has mature disciplines supporting them. Business documents are shepherded through their lifecycle by ECM platforms. Email is managed, monitored and archived along with other text-based communication channels. Ever more sophisticated web content is matched by equally sophisticated Web Content Management tools. Each of these platforms is focused on management and retention rather than analysis and exploration. They are not intended to provide advanced analytical and exploration capabilities for the content they manage; nor are they capable of doing so. They can, however, provide a robust foundation supporting a Big Content infrastructure.

One of the most important element in tourism is the management of tourist data. It is considered as one of the most important resource in the domain of, since both parties both tourists and contractors depends on the information provided to decide on the next stage of planning and organization. Through information, a link can easily be created between these two parties. With so much data circulating on external platforms, it becomes very difficult to reconcile this level of data with their internal data. For instance, data provided through point of sales or traditional channels of distribution, i.e. call center, websites, premises newsletters, customer relations. Thus the challenge here is how to transform unstructured data into structured and meaningful data. Apart from volume, another key component is variety of data that stems from the accessible technology platforms both in terms of cost and ease of use. According to (Feldman et al, 2007), 80% of data is unstructured, organizations can only count around 20% of structured data. These can range from data in property Management Systems (PMS), web blogs and Content Management Systems (CMS), Customer Relation Management (CRM) system. These loads of data can be captured according to customer preferences from various points of contacts turning this into customer intelligence to propel a better experience and develop new improved products and services. As a result, our attention is focus on what type of unstructured data is in the context of e-tourism. Some of the reasons for this are stated below:

- Questions or comments answered on Facebook, Twitter, Linked, or any other social platform where a travel brand has a presence.
- User-generated content (UGC) platforms such as TripAdvisor, Yelp and other sites and forums where consumers discuss your brand and where your e-reputation may be in question.
- Any and all interactions on third-party sites, from tour operators to inbound receptive to online travel agencies (OTA) and anyone in between, including travel agents, offline or online.

- Emails, photos, videos, testimonials exchanged either directly with the brand or on a shared platform.
- Different devices where customers interact with a brand: desktop, laptop, mobile, tablet, iPod, etc., through a mobile site or a mobile application.

The figure below shows the major components of unstructured data.

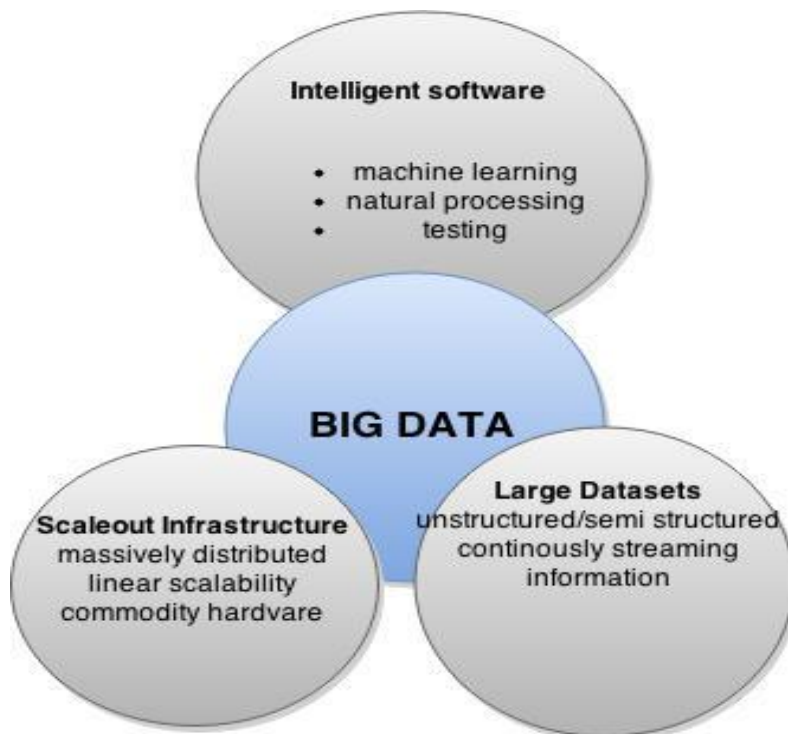


Figure 11 Big data & tourism

Source: Amadeus Report, "At the Big Data Crossroads:

The speed of responsiveness is another important aspect of in the context of unstructured data. For example sending the right offer to the right person at the right moment when he or

she arrives at your destination. The research conducted by the Habit of the Social Fall of 2012 shows that, 42% of customers active in social media expects answer from a brand within one hour. So if a client checks in your hotel and gets disappointed by the services, response or help to the must be done with speed to avoid further damage.

The main focus in this section is on how unstructured data can be semantically utilized such that they can be interpreted by the machine. Before World Wide Web was invented, unstructured data was not as meaningful as the useful data could only be stored in structured form in relational databases. After the invention of World Wide Web, unstructured data became more and more without any proper tool or technique of managing them. Tim Berner's lee and the team introduced hoe Semantic Web, unstructured data could now have a semantic meaning and the methods of handling them were introduced. In semantic web, machines can intelligently give semantic meaning to the data and interpret them. For instance, instead of just concentrating on the keyword in a text document such as name, email address, address, post code etc., semantic web provides the capability of extracting semantic meaning from the whole. This means that data which made little meaning if no meaning could be put into a vital use of the semantic web technology. Data is no longer handled in a relational database alone which was narrowed only structured data, but unstructured data could now be given focus through triple store or 4 stores.

One of the major development that I would suggest being incorporated is E tourism portal (ETP). This is a form of Destination Management System that can help developing countries to manage, control and manage their tourism services internationally. The most important characteristic of ETP is that it can be developed incrementally.

5.2 Web Semantics and E-Tourism

Tourism depends mainly in information from the various sources from both databases and the web. The challenge is how to semantically use the vast unstructured data that are available in the web and make it meaningful and available for its consumers. The three major electronic services provided by e-tourism include: communication services (e.g. email, social media discussions), Transaction services (e.g. making reservations, booking and payment), and information services (e.g. destinations and accommodations). The services are majorly offered over the internet and can be accessed through various means and location. For example, from home computers, from mobile phones or tablets, from the offices. The World Wide Web contains a huge collection of information which grow daily. However the daily growth of these information do not change the functionality in any better way. As a result of this, information extraction has become more and more difficult, and the existing technologies do not provide better ways their management and reusability. For humans it's almost impossible to go through all websites and obtain the correct results. This is due to the vastness of unstructured data on the web. Our goal in this section is to apply the knowledge of web semantic to make useful the information on the web. Through this technology semantically annotated websites cannot only be understood by human users but also by machines. Enriching tourism websites with machine readable semantics will ensure efficiency in the data processing without much effort from humans (Siorpaes, K 2004). The challenge in this case is that we can make it realistic. Due to non-standard nature of e-tourism products and services, for instance lack of common criteria of transportation planning, leisure activities, weather conditions during the package planning process, different tourist industries have their own methods on their web applications on how to get access to their information. This limits the accessibility and availability of tourism data to the customers. Non-standardization of tourism data can also lead to unsynchronized tourism services like methods of payment and currency exchange, for instance, the prices of tourism services are found in different currencies. For example hotel

accommodation maybe in Euros, while an attraction spot maybe in KES, van or car rental in US Dollars. This complicates the process for a tourist who plans a visit. The main goal for this research is how to come up with better methods of standardizing the different unstandardized Kenyan tourism systems. For the objectives to be achieved, application of current technologies such as semantics and ontologies which are essential for the development of information system is paramount (Chang, Chi-Cheng, et al. 2013). Tourism being a data rich domain that is stored in hundreds of data sources, which need to be used in concert during the development of tourism information systems. To view manage and organize tourism related information and concepts, e-tourism ontology comes into play. Through ontology, integration and interoperability can be achieved by the concept of shared vocabulary. E-tourism ontology was proposed by W3C to enable machines to semantically understand and share data through publishing using ontologies on the web (Cardoso, 2006). This would enable sharing of common understanding among people or software agents, and also enhance reusability of knowledge domain, to make explicit assumptions, separate domain knowledge from the operational knowledge and analysis of domain of knowledge.

5.2.1 Semantic Retrieval

In this section, semantic application which contains aspects of semantic web is developed from information retrieval and uses common technologies such as OWL-DL, inferencing, rules, RDF repositories and semantic indexing. The overall framework is shown in the figure 8 below. It describes important aspects of the system.

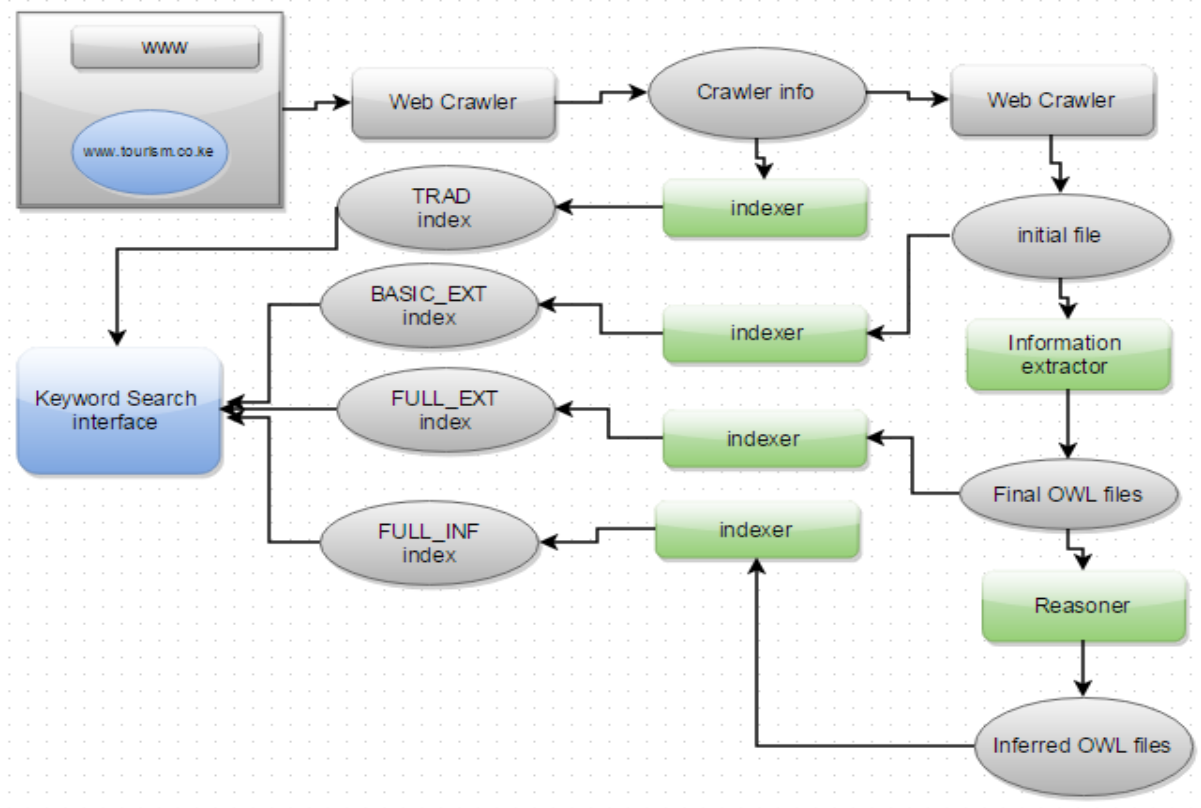


Figure 12 Ontology system diagram

Adopted from: S. Kara et al. / Information Systems 37 (2012) 294–305

The steps below shows the flow of the system that was adapted for the tourism domain. It describes the steps taken until the system becomes ready for semantic querying.

1. The usable information from web sites such as tourism.com are crawled and temporarily stored. The crawled data contains some basic information such as teams, players, goals, substitutions and the stadium of each soccer game as well as the minute-by-minute narrations of that game in free-text format.
2. Using only these free-text narrations we create an index, TRAD, for the traditional keyword search.
3. Using the basic information and narrations we populate the initial OWL files

4. From the initial OWL files, we create our second index, BASIC_EXT, which contains both the basic information and the narrations. This index is created for evaluation purposes only (i.e, to compare it with the index, FULL_EXT, created after the information extraction.)
5. The OWL files created in the previous step are read by the information extractor module. This module populates the OWL files with the extracted events from the narrations such as sporting, festivals, etc. to obtain the final OWL files
6. These OWL files are read and indexed to build FULL_EXT
7. We run the reasoner over these files and obtain new OWL files containing the inferred information
8. Finally, we build the index, FULL_INF, using these inferred OWLs, which is the final index used in semantic querying.

5.22 E-Tourism Ontology

Ontology is an explicit conceptualization of knowledge in a given domain (Tom Gruber 2009). The concept of ontology is defined by domain users in a self-contained way to communicate information. When these concepts are combined, it forms knowledge base. The structure of ontology is composed of concept definitions, binary relationship between concepts and attributes. There are many forms of relationships that exist between concepts and attributes, for instance they maybe symmetric (friendOfRelation), transitive (subRegionOfproperty) and inverse relationships. These relationships can also be arranged into two distinct hierarchies for instance abstract or concrete which are used to describe the schema. Furthermore, relationships between classes can also be used in three different types: generalization, association and aggregation (Waralak V Siricharoen 2008).

In this research, e-tourism was created using protégé and OWL language. The figure 7 below shows e-tourism ontology developed using protégé

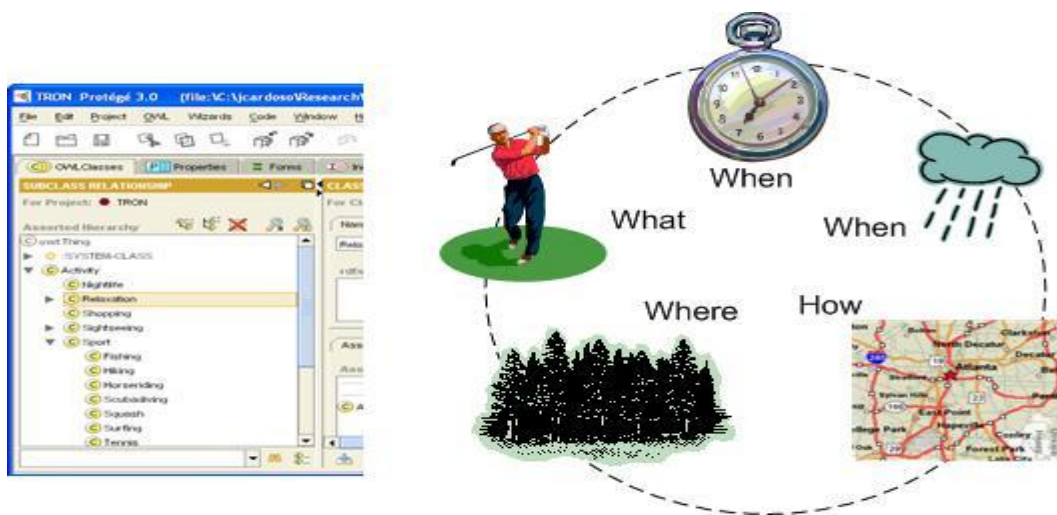


Figure 13 ontology questions

As mentioned by (Cardoso, 2007) ontologies provides responses to different questions from the agents that interact with them. Most ontologies are configured to answer four fundamental types of questions e.g. **What, Where, When, How**. The above figure 7 shows typical questions and what they entail. What question elaborates the kind of activities tourists maybe be willing to participate in during their visit. Where question elaborates the most interesting venues or spots tourist would be willing to visit and their locations. When question is related to time, it explains the appropriate time to visit depending on the interest. Some interesting activities and seasonal for example Wilder beast migration which only takes place between August and September. How can tourist get to the preferred destinations where these activities are taking place safely and timely? In order for tourist to get proper and accurate responses to their questions, there is need for an appropriate system. Developing a tourism ontology can be the best way to integrate most of the concepts contained in a tourism domain and supplying timely and correct responses.

The next section focuses on the development of tourism ontology that can be integrated with the available tourism websites with an aim of developing dynamic architecture.

5.3 Ontology and Knowledge Base Development

Ontologies represent the real world in a systematically structured way. By consistently defining deep terms for the same real-world entities, ontologies provide a ‘reference model’ for their domains, a strong set of terms which can be used to simplify communications between domain experts and therefore increase comprehension and knowledge sharing.

Ontology has the potential to improve the process of searching appropriate destinations according to the customer preference.

The user profile ontology is elicited by user responses by means of a form (interface) where user can present information concerning the area of interest and tourism ontology developed by the service provider in this paper, different regions in Kenya have been presented as reference points. Concepts such as time needed to visit interested destinations from the point of reference, average time to see the place and comeback, accessibility of the spot, entrance fees if any and opening hours of the spot if applicable, are other crucial parameters (Elen Tomai, 2005)

Concepts (or classes) of tourism subdomains in RDF schema (RDFS) light-weight ontologies, adapted from the Harmonise ontology will be presented in this section. We will use these ontologies in the construction of FOAF-like profiles in the construction of Kenya’s e-tourism system.

RDFS provides fundamental modeling concepts for organizing (Web) objects into hierarchies. RDFS is viewed as a basic language for writing light-weight ontologies that are

subClassOf the main class. In development of ontology using RDFS, objects that are sharing the same characteristics can be typeOf classes. For example eTourism classes includes: events, attractions, accommodations, bookings etc. these classes have instances too, for instance, Individuals belonging to a class are often referred to as instances of that class. For example, the “Bull fighting festival 2012” can be an instance of the events class.

Class hierarchies can be applied in this context subClassOf: For example, class A is a subclass of class B if and only if every instance of A is also an instance of B. In our case every instance of a cultural festival is an event instance since cultural festival is a subclass of the event class. In this project we have adopted Harmonize ontology due to its interoperability property, secondly it's one of the most popular ontology used by many tourism organizations and finally it is expressed in RDFS.

5.5 Ontology Profile Description

In the design of ontology, profile is a very important aspect since it is where the user preferences are captured. In this section we are going to give a closer look to each subdomain in the Kenya's e-Tourism prototype and the corresponding RDFS ontologies. The subclasses attraction spots, accommodation and events are represented using subClassOf properties which are adopted from Harmonise definitions. In the case of Kenya e-Tourism which is in a country Kenya, we will implement it by dividing it into different regions.

These ontologies are designed using protégé, due to its availability and popularity in developing light-weight ontology.

5.51 Regions Profile

Formerly, Kenya was divided into eight different regions known as provinces. These provinces were abolished in the year 2013 after the promulgation of the new constitution and replaced by 47 counties. For simplicity, we are going to apply the eight administrative regions of the country in this case. In Kenya and even neighboring countries, provinces are the official top-level governmental administrative division. We have designed FOAF-like profiles for provinces profiles, which include information such as Universal resource Locator (URL) which are used to uniquely identify resources, city, and geographical details such as mountainous area. Also provided is tourist information such as number of events, number of attractions and number of accommodations in a particular province. Some vocabularies used in this ontology are borrowed from Harmonase while others are user-defined vocabularies for Kenya's e-Tourism KB. The prefixes used in Harmonise is 'hs', while 'et' prefixes are used for user defined vocabulary. The property "hs.relatedTo" slot, used to provide next adjoining province to visit. This is FOAF relationship, touristic routes can be formed across the country. The provinces of Kenya can easily be connected to their neighboring relations. The figure below shows eight cities in the eight provinces of Kenya which can be connected.

5.52 Events Profile

The Events subdomain is a model of a real-world events that are happening on the ground, with locations, timescale, theme, and other properties. Events are of two main types, periodic events and single occurrence events. An example of periodic event is 'Wilder beast migration, which occurs once a year periodically, or an annual festival that occurs once a year on a particular date, whereas a single occurrence event occurs only once, like the "World Cup 2010 in South Africa". However, for the purpose of this thesis, we have considered both kinds of events under one category. The subclassOf hierarchy of the events

subdomain is implemented by a light-weight ontology and the domain and range restrictions of other properties are represented in the FOAF-like fact instances of events in POSL format. The events class has nine subclasses, each of which is further subclassified into smaller classes as shown in Figure 4.2. This diagram was produced by Protege. An excerpt from the RDFS taxonomy describing a portion of the subClassOf hierarchy for the events class is shown below:

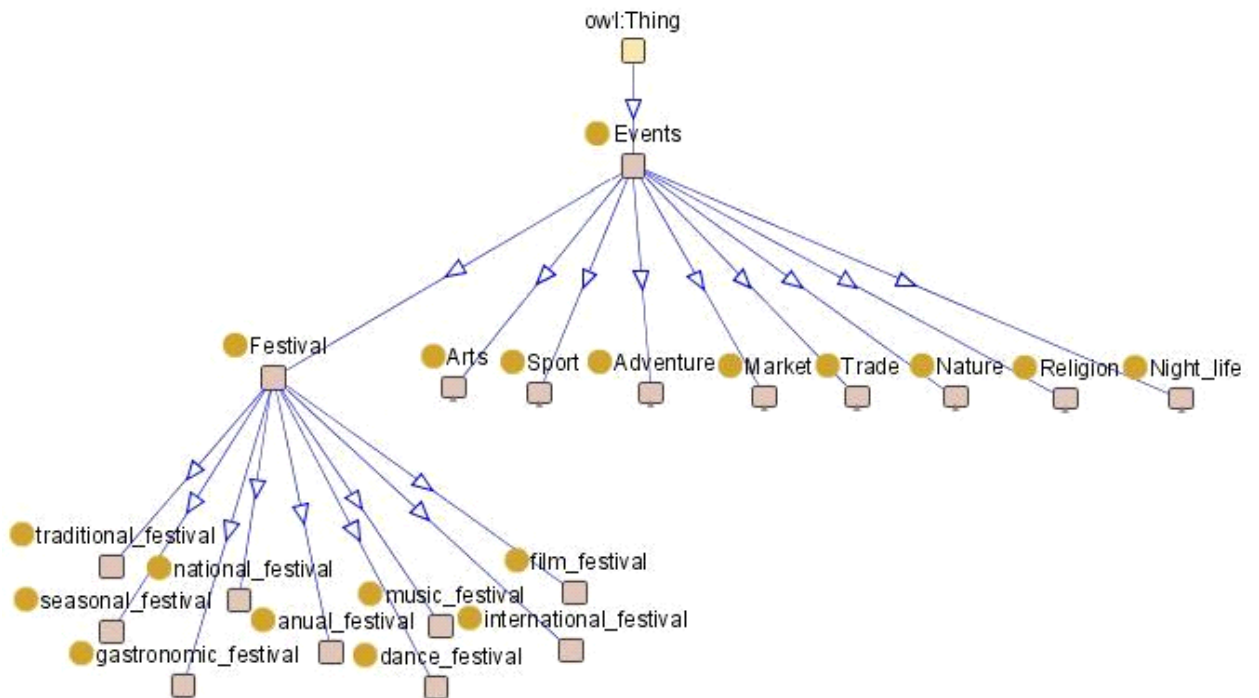


Figure 14 events profile ontology

The other subclasses of Events are Adventure, Arts, Market, Nature, Nightlife, Religion, Sport and Trade. The figure below shows events and their properties.

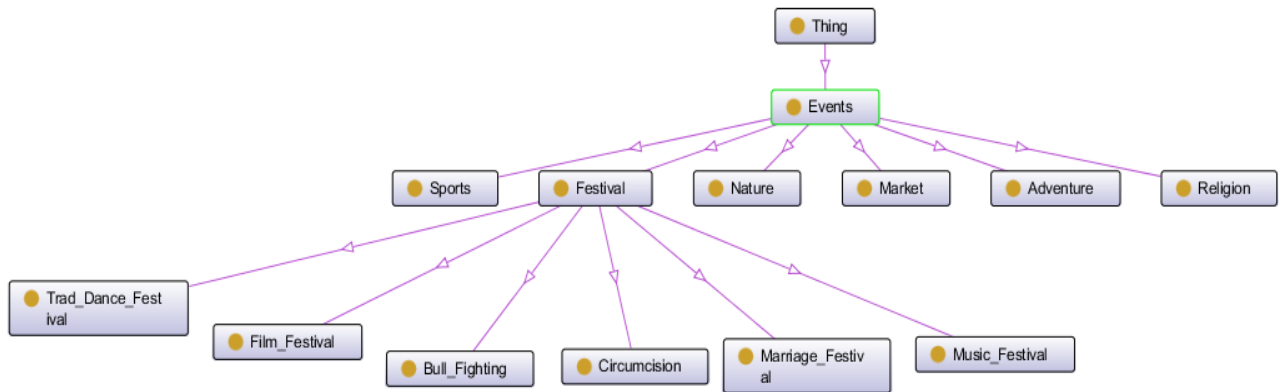


Figure 15 Events Class

5.6 Accommodation Class

The accommodation class is subclassified into five main categories as shown in Figure 4.4. Our classification is a subclass of the Harmonise accommodation type definition. We have considered five related types in this thesis. A FOAF-like profile of an accommodation is shown below:

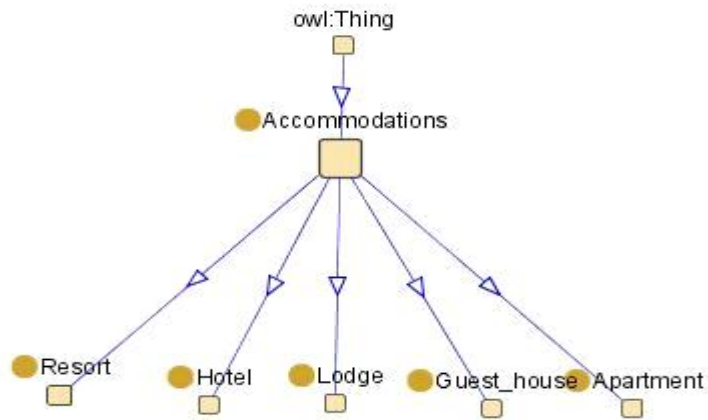


Figure 16 Accommodation Class

Sample of SPARQL query

Active Ontology	Entities	Classes	Object Properties
-----------------	----------	---------	-------------------

```

SPARQL query:
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT ?subject ?object
WHERE { ?subject rdfs:subClassOf ?object }
  
```

Figure 17 protege SPARQL query

subject	object
Cultural_centers	Interest_spots
Facility	Accommodation
Lakes	Nature
Beauty_centre	Wellness
Hospital	Wellness
Visiting_days	Visiting_period
Nanyuki	City
Wildlife_sanctuaries	Nature
Car	Traspotation
Mountains_and_hills	Nature
Rivers	Nature
Pharmacy	Wellness

Figure 18 SPARQL output from query

On observations, challenges remain for users in reusing available ontological information. Lack of standards is very vital issue, and parameters vary from one ontology to another and also mostly on location based services. Due to heterogeneity of tourism sector, the process of developing tourism ontology on various parameters would be also tedious. In e-tourism different ontologies have been developed for different purposes and they might not meet the needs to regional destination for any specific area. In this section will present the design of tourism ontology that represent Kenya tourism sector.

The above entails the basic principles and concepts involved in the construction of ontology. In the next section, we want to determine how these properties and concepts can be applied in the design and implementation of ontologies.

5.7 Knowledge Base Design: Rules

The researches has also implimented eTourplan rule in the KB. It has three main operations as shown in the figure below. Depending on the fact base ontology described on the

previous section, the researcher examines main functionalities implemented the asserted rules. The classification of these operations includes

Search Engines: The KB in this case consists of facts concerning main subdomains of tourism, for instance events, attractions, accommodations, transportation etc. This KB can be used for a semantic information search on these subdomains. In this project, tourists or users of the system can query about specific provinces. The searches posed by the user are based on parametric searches user can either search by name, theme, key etc. in this case, the user can get any information concerning tourism they may want to know, hence, flexibility.

Recommender System: using the technique of FOAF, that was discussed in the previous section, each province is linked to its neighboring province, and the system has a capability of recommending a route or an activity in the next province. FAOF in this case provides location-centric.

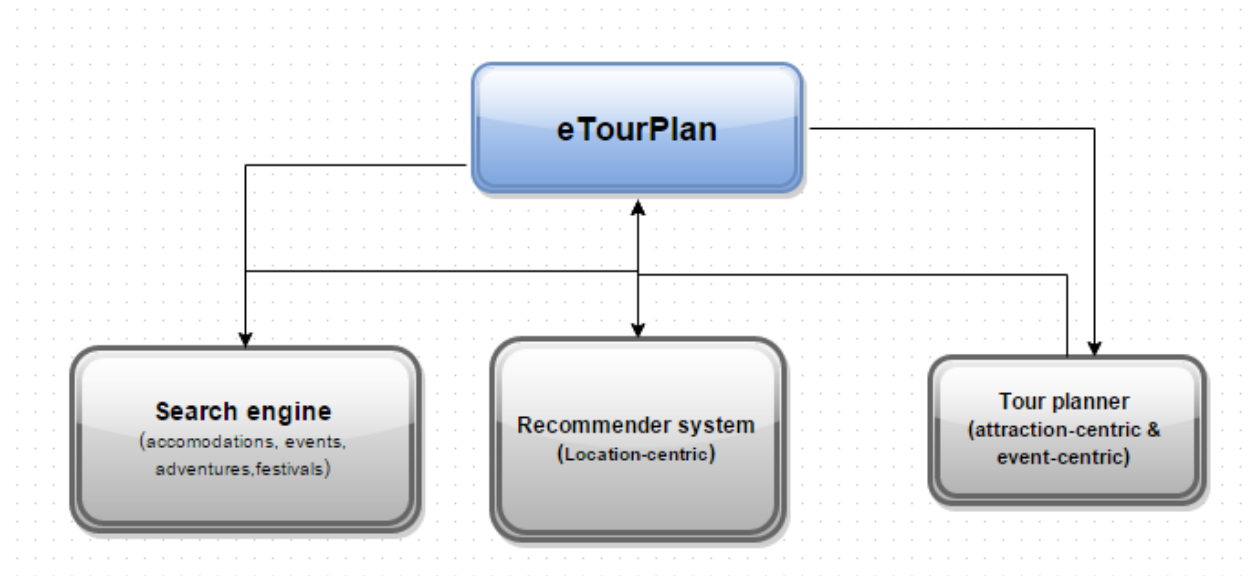


Figure 19 eTourPlan Architecture

Travel Planner: the major goal of the Tour Planner is integration. It has a capability to integrate the functionalities in the recommender system and their searches. Tourism planner includes important constraints such as time, distance, location, etc. it employs various predicates to perform its operations such as route finding, date validation, event search in the KB. Event-centric is based on geographical search tool such as GPS. FOAF between the attractions can help for purposes of planning.

When implemented the eTourplan offers the following:

- Parametric search of tourist information
- System route planning based on province profiles
- Route planning for user-preferred provinces
- Location-centric recommendation by the system
- Location-centric recommendation for user-preferred provinces
- Attraction-only travel planning
- Event-centric travel planning with attraction recommendations

5.8 Design and Implimentation

The success of implementation of an e-tourism system can only be achieved if the major challenges like effective retrieval of tourism information are made available through semantic web content or ontology based information retrieval.

In order to achieve the effective retrieval of information from the existing websites, they should be made in such a way that data can be retrieved semantically. The architecture applied in the case of the Kenya tourism in the provision of services like accommodation, game parks and game reserves, mountain climbing etc. The figure below shows the semantic interface architecture of the Kenya's e tourism. The architecture comprises of different sections.

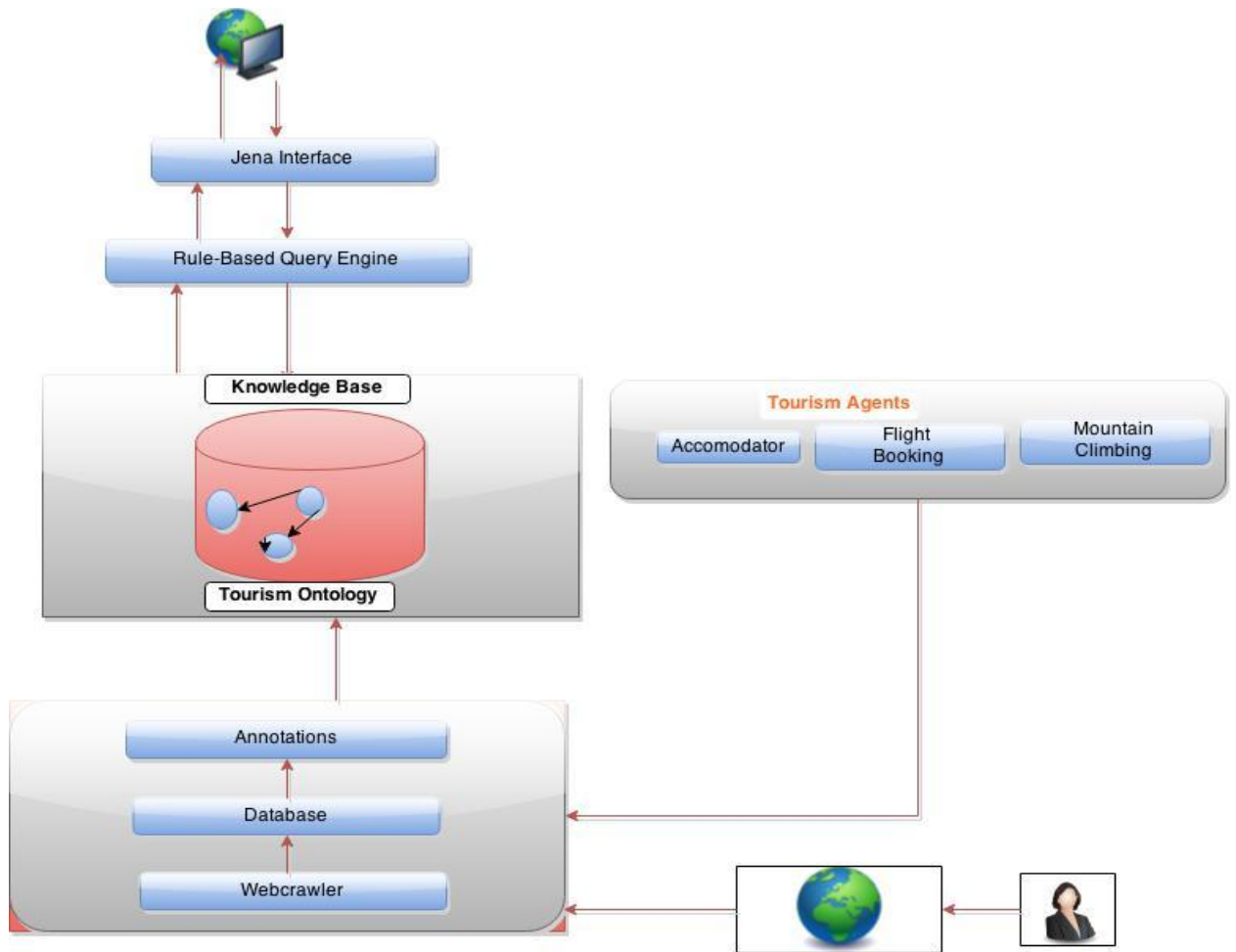


Figure 20 Semantic interface architecture

5.81 Getting User Preferences

The user preferences section contains a detailed information concerning the user top interests. The main goal of creating the user profile is to extract important information from the user depending on their needs and interests in the context of personalization. In the form, the user has an opportunity to state their needs for instance accommodation

preferences, the places they would like to visit, activities, etc. the figure below shows a sample of user profile.

The screenshot shows a user profile form with the following fields and values:

- City: Coimbatore
- Interesting spot: history/heritage/archaeology, fort
- Nature: hill station
- spiritual: temple
- leisure: cinema_theatre, shopping, jewellery shopping
- Tour Expense: [empty]
- Accommodation Expense: [empty]
- Travel Expense: [empty]
- transportation: TRAIN
- VISITING PERIOD: SEASON
- WELLNESS: BEAUTY_SPA

A calendar for the year 2012 is displayed at the bottom, showing the months from Jan to Dec and a grid of dates from 1 to 31. The date 1 is highlighted in red, and the date 11 is highlighted in green. A "close" button is located below the calendar.

Figure 21 User Interface

5.82 WebCrawler

The World Wide Web is an inter-linked collection of billions of documents connected together and the user can search for specific information by navigation from document to another. Unfortunately, vastness of this collection has become its main undoing in the information retrieval. Part of the above architecture are WebCrawlers are very important tools in search engine. They continuously search the web in order to find any additional or deleted web pages. An intelligent Crawler is the one that has a target in searching pages

regarding a particular topic, it then gathers only relevant webpages which contains keywords of the information being searched. In this project, the crawler should be configured in such a way that, it search the internet, it should only collect potentially interesting details concerning tourism information relation to Kenya. By the help of IN and OUT search web crawler, the results from these keywords are stored in the relational database and their URLs redirected to annotation manager. This reveals how the number of websearchers who are interested in the Kenya tourism. As a result it will help to gather statistics of major interests, this can direct e-tourism developers in putting specific focus in such areas.

5.83 Annotation

The main purpose of ontology is to standardize and interpret the web contents. In order to enable the contents to be machine understandable, resources of the web must contain semantic markup, or semantic annotation descriptions which use the terminologies defined by ontologies (Heflin, Hendler, 2001). Ontologically annotated web resources are important in content reasoning and advanced query-answering services. They can also help in mapping different ontologies by supporting ontology creation and maintenance. Semantic annotation may help intelligent agents in easy discovery of web resources or indicate semantically similar contents which originate from different sources. In the context of e-tourism, annotation manager performs annotation process based on the predefined tourism ontology which will refer to the new concepts or instance and could be further used in the development of knowledge base. The most popular annotizer that has been used in many projects is OntoMat. It is an interactive web page annotation tool which supports the user with the task of creating and maintaining ontology based markups by creating instances, attributes and relationships. It includes two browsers, an ontology browser for the exploration of the ontology and instances and a HTML browser that to display the annotated parts of the text. OntoMat is a java based tool and provides plug-in interface for

extension. The user can use OntoMat to enrich their knowledge base in that, instead of manually annotating the page with a text editor, it enables the annotator to highlight relevant parts of the webpage and create new instances via drag and drop interactions.

5.8 Tourism Ontology

The Kenya e-tourism ontology is built to conceptualize tourism spots, communication and activities during travel. In this section, the main classes that are included in the development of ontology will be discussed. Each class has subclasses.

The figure 5 below shows the core concepts of tourism ontology, Table 1 shows the description of main classes in tourism ontology and Table 2 shows the properties used in tourism ontology.

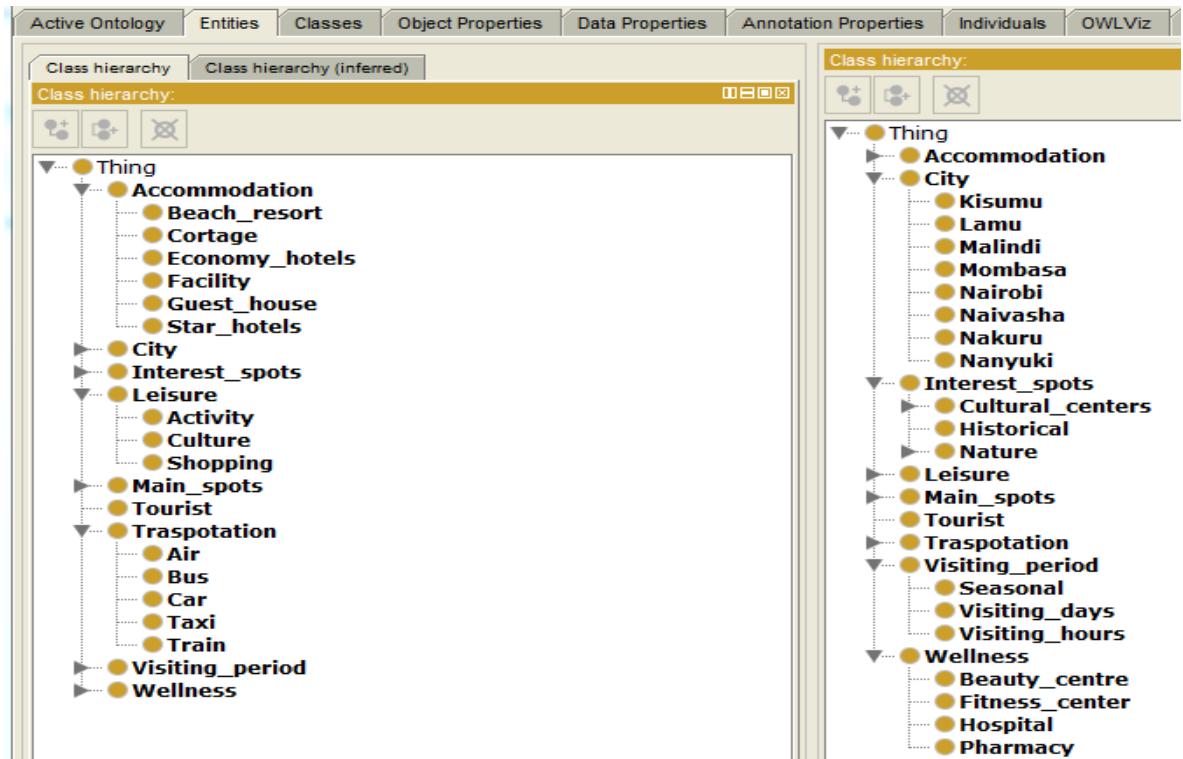


Figure 22 major concepts of tourism ontology

The table below contains short descriptions of concepts that are covered in the tourism ontology. It contains the descriptions of major classes in this that will be described in the Kenya tourism ontology.

ID	Class	Description
1	Tourist	The main user of ontology. Constraints described in ontology are based on tourist preferences. All classes and subclasses are related in one way or another to tourist
2	Main venues	These are considered as the most interesting places tourists would love to visit, consist of three subclasses – History_ Heritage_ Archaeological, Nature and Spiritual.

		<p>Nature consists of five subclasses - Beaches, HillStations, WildlifeSanctuary, WildlifeZoologicalPark and Waterfalls.</p> <p>Spiritual consists of four subclasses - Temples, Church, Mosque and Ashrams.</p>
3	Accommodation	<p>Places used as short or long-term residential places for the tourists</p> <p>Accommodation service contains a number of sub-classes: 5-star hotels, budget hotels, resorts, guest house Hotel, cottage and</p>
4	Leisure	<p>This informs about Leisure activities or services, having five subclasses - Activity, Nightlife, Cinema Theatre, Culture and Shopping.</p>
5	Transportation	<p>It provides means of transport to the tourist. It has five subclasses and they are Air, Bus, Rail, Car and Taxi.</p>
6	City	<p>It has the subclasses of major cities that has more interesting places to be visited in Kenya</p>
7	Attraction_spots	<p>Subclasses indicating attraction attraction-spots in the most interesting places</p>

Table 5 main ontology classs

Ontology also contains properties, which acts as a link between an object and its subject.

The table below shows the most important properties in this context and their usefulness.

ID	Property Name	Description
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1	hasattractionspot	This property links Attraction spot and Interest spot. It helps the ontology to identify attraction spot in and near the tourist interest spot.
2	hasaccommodation	This property links Accommodation and Interest spot. It helps the ontology to identify accommodation in and near the tourist interest spot.
3	Hastransportation	This property helps to identify the transportation available during the tour.
4	hasactivity	This property links the Accommodation, Interest spot with the Activity. It helps the ontology to identify activities that can be utilized by the tourist in the accommodation and in the interest spot.
5	isnearerto_or_at	This property links the city nearest to tourist spot
6	Hasfacility	It identifies the facility available in the Accommodation place for the Tourist
7	visit_season	It identifies the ideal time of visit to the tourist place. E.g. Ideal season of visit to the tourist place
8	Shoppingat_or_near	It links the shopping places nearer to the interest spots.
9	hospital_at_near	It links the hospitals in and around the tourist spot
10	isopenon	It indicates the days opened of that particular tourist spot.
11	Cinema_theatreat_near	It links the Cinema theatres in and around the nearest city of the interest spot
12	Visit_hour	It helps to know the time of visiting hours of the tourist spot.
13	Camera_fee	It is a data type property which helps to know the fee for camera to take inside a particular spot

14	transportin	It helps to connect the places through transportation
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Table 6 main ontology properties

In application, classes relate to one another by their properties since they cannot exist alone. For example an interest spot may have attraction spots (i.e hasattractionspot some interestspot). A tourist who happens to visit a place must book for an accommodation (i.e hasaccomodation).

The figure below show the ontograf of different classes and their subclasses.

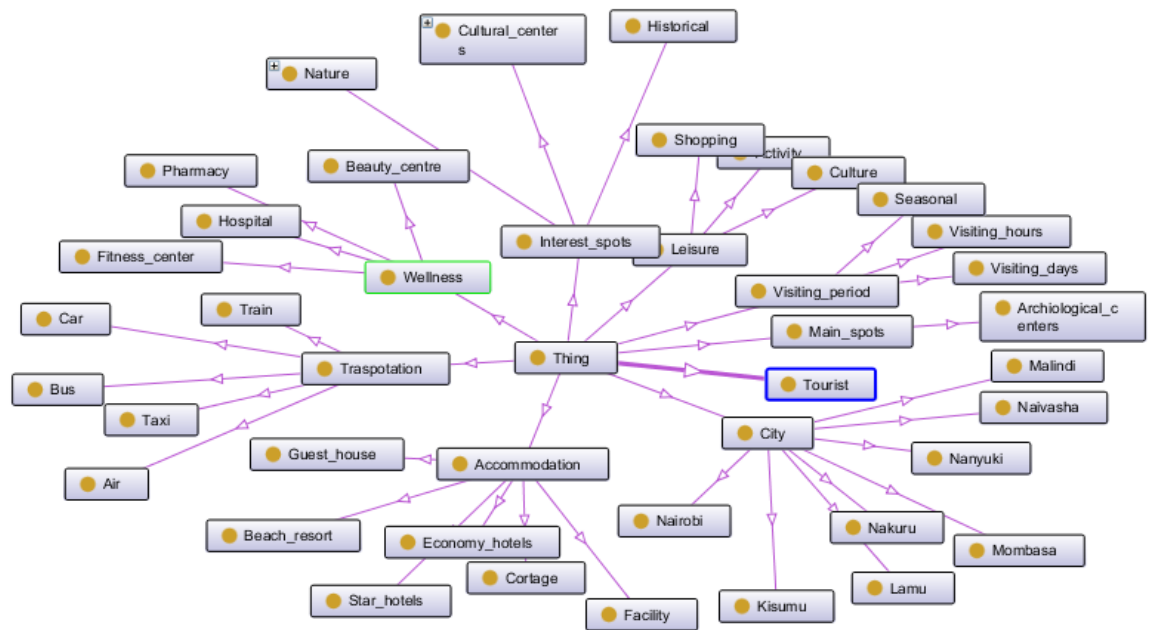


Figure 23main tourism classes

Ontograf shows different relationships, for instance, tourist spot Vasco da Gama pillar in Malindi can be viewed as an historical site at the same time it can be an instance of culture of the cost people. For example some oceans and lakes are viewed as nature at the same

time they act as sports sites like beach sports. For example Indian Ocean. Multiple tourism resources can be used to interpret different diversities that exists in any tourism ontology. This can be helpful when two or more people with different choices realize that they have chosen the same destination. Multidiversity of tourism is applied in delicate retrieval of tourism information.

In this project, the tourism agent interact to perform the following tasks:

1. Crawling the internet for websites related to tourism in Kenya at regular intervals searching for any new information concerning accommodation, parks, cultural activities or any other activity uploaded.
2. In the second stage, if there is any new information found by the system administrator, the URL of these resources are redirected to annotation manager at the same time stored in the existing database for future reference.
3. After receiving these resources, the annotation manager analyzes the resource and then adds the content information to the predefined ontology, thus continuous updates keeps the ontology to have the most current information all the time.
4. The same information is accessed remotely by the user through GUI which acts as a conventional search engine to the user.
5. After the user request is sent, it's passed to the web agents, the web agents then formulates the query plan.
6. SPARQL queries are formulated and processed by the agents in conjunction with Jena and results displayed to the end user via GUI.
7. The activation reasoned then performs inference on the ontology schema information and instance data by activation of a reasoned which is a component of the middleware.

The most unique aspect of our system design is its generic reasoning and SPARQL querying capabilities. The system was specified to allow any OWL DL(Description Logic) ontology to be loaded into a Jena supported backend, classified with a reasoner and SPARQL queries run over the inferred version of ontology. This design represents a significant advancement in presently available technology because it allows information to suit different user needs and at the same time providing access to a SPARQL query engine that processes inferred knowledge.

5.9 Reasoning over Annotations.

A reasoner which is also known as inference engine, is an application that is able to deduce implicit knowledge from an ontology so that the correct query result can be obtained. It is capable to derive additional knowledge about the domain. For example, if someone wants to search for cultural dance performance within Nairobi Cinema hall Uchumi building in Nairobi City, by applying a reasoner on tourism ontology, it will not only infer to the cultural dance performance, but also cut also the facilities available in the Uchumi building since the venue in question is within the premises of the building. Figure 24 below depicts this idea.

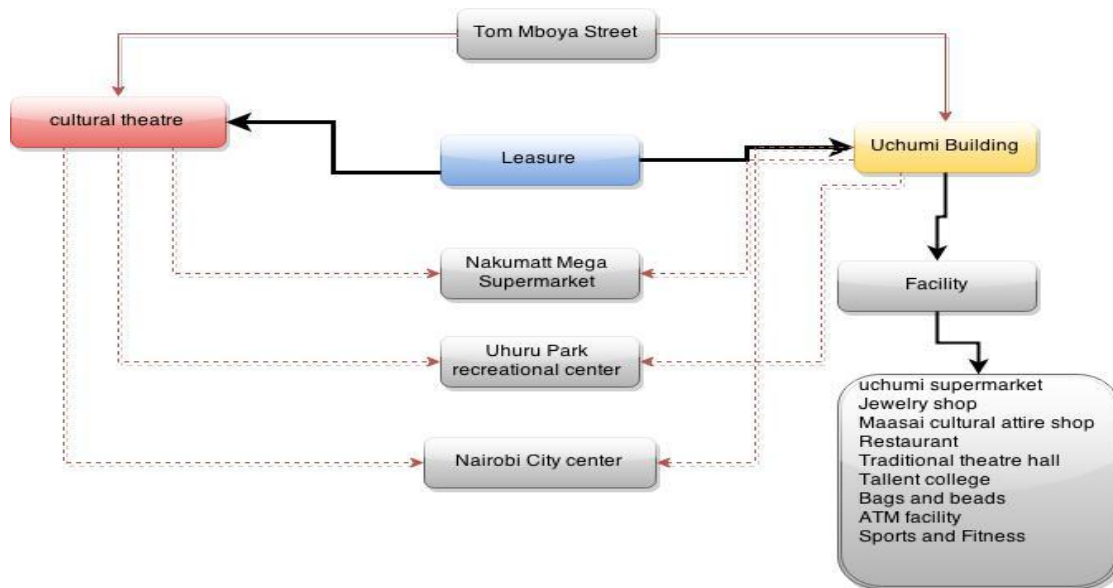


Figure 24 Ontology inference model

5.91 Ontology as an important aspect of E-Tourism

Just as the web is making tremendous change in the lives of people daily, it has also influenced the way information is gathered and exchanged in the area of tourism. Research shows that 66% of Americans believe and use e-tourism websites than travel agents. This trend has been on an upward growth where by other research found out that almost a third of American travelers book their travel on Internet (Prantner, 2007). Information technology plays a vital role in the domain of tourism through web semantic and Web2.0 (Werthner, 2010).

An ontology is a formal theory used to explicit knowledge. The primary objective of ontologies is to model knowledge. Indeed, they provide definitions of concepts and terms used to describe a domain, logical and semantic relations between concepts and terms and the constraints of their use. Practical applications of ontologies are important in very many aspects:

Ontology allows for factorization of Knowledge, for instance knowledge used cannot be repeated in each instance of the concept. Through ontology, terminological conceptual ambiguities can easily be eliminated. Ontology can significantly increase the performance of search engines since the information are semantically accessed (Limpens, 2008). It enables reuse and sharing of knowledge, once created, the knowledge can be reused in creating another ontology. Through ontology deductive reasoning and interactivity between different systems can be applied.

Tourism being an information intensive industry where information and knowledge plays an important role in decision making, the application of knowledge management tools in this perspective will bring significant benefits (Inkpen, 1998).

One important benefit of developing a Kenyan Tourism Ontology is integration in order to enhance services. Through knowledge management important tourism concepts can easily be extracted from these tourism sites and applied in the provision of better tourism services.

In this research, the development of Kenya Tourism Ontology is suggested by giving a closer look by sampling other existing tourism ontologies in other countries through analysis and adapting the sections that may be applicable in the domain under focus.

6 Research Findings and Discussions

The study was mainly focused on analysis of Kenya tourism system, design, implement and evaluate an e-Tourism prototype of Kenya. A lightweight ontology was designed using protégé as a tool based on Harmonise e-tourism ontology. The concepts stored in a knowledge base could be queried using SPARQ. The results from this study provide support to the majority of hypotheses identified in the beginning of this research. This study found out that, the best way to make tourism data universal and flexible is through developing a powerful ontology. However, RDFS reasoners are limited to some inferences which can only be done by higher ontologies. Building a fact-based based on Kenya tourism information for describing tourism entities using FOAF profiles to explore relationships and facts between entities. The researcher also plans to build an ontology fact in the existing KB enriched with sub-systems which are important in the travel plan generation. Implement partonomy rules in the main administrative regions of Kenya, through inferences, provide planning and recommendation model of services. Implement an e-Tourplan operations (accommodations, flights, search...) by evaluating dynamic user preferences in appropriate reasoning engine (OO jDREW). Future research is also focused on deriving facts from KB or extracting them from Web Semantics homepages instead of handcrafting them, through this technique, inter-related homepages of tourism entities can be integrated together using the existing predicates.

Finally, designing a user-friendly Graphical User Interface to enhance utility and interoperability, and implement a central tourism ontology that can be easily accessed by any tourism organization in Kenya.

7 Conclusions

Tourism and technology are totally coexisting. If current technologies such as Semantic can be implemented in tourism sector then universality, interoperability and efficiency can be achieved in the management of tourism data. This thesis work was undertaken to analyze the current status of e-tourism in Kenya, through literature review and data analysis, the research reveals that stagnation in tourism development is due to poor technology the researcher came up with recommendations on the right technologies which should be implemented on this sector and explain the role of the government in making it materialize.

Qualitative method was applied by making relevant analysis on the state of e-tourism in other countries through literature review and performing the general evaluation of the factors hindering growth using SWOT analysis technique. Through benchmarking strengths, weaknesses, opportunities and threats were identified.

The study further revealed that the static nature of the tourism is one of the short comings that must be addressed. The presented architecture can be very useful to create solutions that integrate different data sources to fulfil a specific ontology. In the tourism domain, the information must be aggregated in order to allow the creation of dynamic packages. Using our architecture, we can think first in defining the information concepts that we want to aggregate. Then, search for data sources that can provide the information to integrate with them. The outcome confirmed that development of tourism ontology would enhance interoperability and accessibility hence, competence. The study further reveals that proper e-tourism management can only be achieved if the government of the land makes it its initiative and supports it to the fullest.

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