A SUSTAINABLE TOURISM INDICATOR MODEL FOR LODGE FACILITIES WITHIN MAASAI MARA NATIONAL RESERVE

BY

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ABSTRACT

Maasai Mara National Reserve has been identified as a flagship project of Kenya's Vision 2030's premium park initiative whose mandate is to provide premium park experience by the year 2030. Nevertheless, there has been escalating pressure from tourism development which has resulted in the decline of the quality of tourism product, experience and the environment thus putting in doubt the mandate of the vision 2030 flagship project. In order to address the problem, the current study applied the Dublin Institute of Technology – Administration, Community, Heritage, Infrastructure, Enterprise, and Visitor (DIT-ACHIEV) model of sustainable tourism management. The model was developed by the Dublin Institute of Technology and has been tested for applicability in the developed world but not in a developing world context. The DIT-ACHIEV model conceptualizes sustainable tourism as comprising six fields, namely: heritage, infrastructure, enterprise, community, visitor and administration. Thus the main objective of this study was to test the applicability of the DIT-ACHIEV model in Kenya with a view of reducing the existing tourism sustainability challenges in lodge facilities in the Maasai Mara National Reserve.

The study adopted a cross-sectional research design where quantitative data was collected and analysed once. The population of the study was made up of all guests visiting Ecotourism Society's eco-rated lodge facilities within Maasai Mara for a period of 4 months. A total of 136 guests were sampled using census sampling technique where all guests who visited the lodge facilities within the data collection period were given a chance to participate in the study. Data were collected using self administered questionnaires. The data were then analysed using descriptive and inferential statistics. Descriptive statistics included the use of means and normal distribution (percentages and frequencies). Inferential statistics included use of principal axis factoring and linear regression to confirm key factors. The results of this study confirm the applicability of the DIT-ACHIEV model of sustainable tourism in Maasai Mara National Reserve, though with few amendments. To fully practice sustainable tourism and realize its full benefits thereof, the study recommends the adoption of the amended model generated from this study. Further studies should however be conducted to establish indicators from the perspective of other tourism stakeholders and comparisons made.

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CHAPTER ONE: INTRODUCTION

1.1 Background information

The rate of industrial growth has elicited debate at the local and international level on the resulting implications on the planet (Webster, 2000). The current rate of economic development across the globe if upheld, subjects the Earth's delicate ecosystem and its natural resources to a high risk of devaluation and even extinction (Webster, 2000:5). Webster further notes that, the industrialized world has come to expect a certain standard of living which involves, among other things, the use of the motor car, electricity at a flick of the switch, clean water on tap, and an extensive range of brightly colored, extensively packaged consumer goods which rapidly go out of fashion and need to be 'upgraded'. The pressure resulting from unrestrained population growth also puts demands upon the natural world that can overwhelm any efforts to achieve a sustainable future. No more than one or a few decades remain before the chance to avert these threats will be lost and the prospect for better humanity immeasurably damaged (The Union of Concerned Scientists, September 1994, pp.20-1)

Industrial growth has been primarily concerned with profit rather than with sustainability (Webster, 2000). The growth of the average global temperature is predominantly due to the increase in global greenhouse gas concentrations generated by human activities and fossil fuels (IPCC, 2007). Kasim (2007) asserts that despite being considered a "smokeless" industry, the Tourism and Hospitality industry actually creates a considerable impact on the natural environment. Further, the Tourism and Hospitality industry is a major consumer of energy in spite of being the largest polluter and consumer of other natural resources (Kasim, 2007). Theobald (1998) asserts that there is a need to limit and control tourism, which may threaten sustained use of limited resources. According to the EPA (2000) it is required that both the

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existing and new developments for tourism use, incorporate adequate protection measures to enhance the quality of the existing environment and to mitigate against negative tourism impacts on destinations. Tourism must also be able to meet the needs of the present while protecting and enhancing opportunity for the future in order to be considered sustainable (WTO, 1997). In addition, any tourism development must exercise a balance between its environmental, economical and socio-cultural aspects of development (WTO, 2003). Yilmaz & Andersen (2004) and Abdul-Wahab (2008), say that possessing correct environmental knowledge can assist an individual to behave appropriately and resolve environmental problems. The eminent rise in environmental consciousness has necessitated the construction of environmental indicators to act as a framework against which sustainability can be assessed (Briassoulis, 2001). According to Ceron and Dubois (2003), indicators are useful in summarizing and simplifying information about a subject. DIT –ACHIEV model of sustainable tourism indicators is an example of such a framework that can be used in facilitating the attainment of sustainability in a destination. It is upon this ground that investors and scholars in the hospitality and tourism sector have based their argument on the benefits of sustainable tourism. Against this background, this study aimed at testing the applicability of DIT-ACHIEV model of sustainable tourism indicators as a suitable framework of management for lodge facilities within Maasai Mara National Reserve.

1.2 Statement of the problem

Achieving sustainable tourism and realizing its full benefits is a long-term undertaking that requires changes in tourism sector strategic plans and their implementation (Linda, Melanie, John, Harold & Bixler, 2009). Further it requires the establishment and implementation of sustainability evaluation system (Medina, 2005). In addition, Linda et al (2009) are keen to note that, to attain sustainability, a grading system must be put in place so as to provide a means of

tracking the progress towards this goal, as well as to provide the stakeholders with the incentive to change their behavior.

Maasai Mara National Reserve is one of the leading tourist destinations in Kenya among the reserves. The rate of visitation in the reserve is very high between the months of July and October every year, when close to 2 million animals cross the Mara River. This spectacular phenomenon saw the Reserve acquire the status of one of the "seven new wonders of the World" as declared by the ABC (Australian Broadcasting Corporation) Television, a leading American broadcaster in November 2006. This pronouncement however, came with its challenges including escalating pressure from tourism development and growing tourism numbers which have compounded into a bigger problem of declining tourism product quality as well as declining environmental quality. Another major challenge facing the Reserve is the rapidly changing land-use strategies in the wider ecosystem such as uncontrolled tourism development and agriculture. In addition the Reserve has lacked a comprehensive management plan for a very long time (Conservation Development Center, 2009). As a result of the uncontrolled tourism development, the number of facilities providing accommodation in and around the Reserve has increased over the years. This influx has, however, not been matched with a proper sustainability based management style of the lodge establishments. There has also not been any established uniform management style or model to manage these facilities as each lodge relies on their own way of interpretation and understanding of sustainability. Furthermore, limited studies have been conducted in this area to establish sustainable tourism indicators that can be useful in establishing sustainable tourism benchmarks for these facilities. Okello & Wishitemi, 2006; Okello & Kiringe, 2004; Sindiyo, 1992 and Voorspuy, 1999 have written on issues related to sustainable management of the reserve but only addressing part of the sustainability problem. To

standardize the management of these facilities and to achieve tourism sustainability thereof, the researcher aimed at testing the applicability of the Dublin Institute of Technology – Administration, Community, Heritage, Infrastructure, Enterprise and Visitor (DIT-ACHIEV) model in the management of lodge facilities in Maasai Mara National Reserve, Kenya.

1.3 General objective of the study

The broad objective of this study was to test the applicability of the DIT-ACHIEV model of sustainable tourism indicators on eco-rated lodge facilities within Maasai Mara National Reserve, Kenya.

1.3.1. Specific objectives

This study was guided by the following specific objectives;

1) To describe sustainable tourism indicators for Lodge facilities within Maasai Mara National Reserve.
2) To identify key sustainable tourism indicators to the respective management of Lodge facilities within Maasai Mara National Reserve.
3) To test the applicability of the DIT-ACHIEV model of sustainable tourism as an effective sustainable tourism indicators model for eco-rated lodge facilities within Maasai Mara National Reserve.

1.4 Research questions

Three research questions the study sought to answer were derived from the specific objectives as follows:

1) What sustainable tourism indicators are already being used in management of lodge facilities within Maasai Mara National reserve?
2) What are the key sustainable tourism indicators suitable for the management of Lodge facilities within Maasai Mara National Reserve?
3) Which key sustainable tourism indicators of the DIT-ACHIEV model of sustainable tourism indicator model are relevant and applicable in the context of lodge facilities within Maasai Mara National Reserve?

1.5 Justification of the study

The contribution of the tourism industry in the growth of Kenya's economy cannot be ignored. While the benefits from this industry are desired, it is important to note that the industry will only be sustained if the ethical principles that respect the culture, the population, intra-generational equity and the environment of the specific destination is upheld (Hunter & Green, 1995). Maasai Mara National Reserve was chosen for this study because it is one of Kenya's premier wildlife parks drawing both domestic and international tourists. It has been set aside as the flagship project of Kenya's vision 2030's premium park initiative whose aim is to develop a high-end tourist experience by the year 2030. In addition visitor density in the Mara National Reserve is high. It is estimated to be 10 times that of Tsavo East National park and 17 times that of Serengeti National Park in Tanzania (Kenya Tourism Federation, 2010). In the Mara, there are an estimated 140 lodge facilities providing accommodation to the tourists. This contributes a total bed capacity of 4000 beds which is significant compared to the total country's bed capacity of 60,000 beds (Government of Kenya, Ministry of Tourism, 2010). An estimated 2.2 Billion Kenya Shillings are collected annually as revenue from Maasai Mara alone. This is a significant contribution given that in the year 2011, the entire Travel and Tourism industry had a direct

contribution of an estimated 167.6 billion Kenya shillings to the country's Gross Domestic Product (World Travel and Tourism Council, 2012). Information resulting from this study will be helpful in the attainment of the premium park status as envisioned in Kenya's vision 2030 as well as assisting the management of the lodge facilities in achieving their business objectives while safeguarding environmental integrity.

1.6 Limitations of the study

1) The actual population of the study could not be established before conducting the study due to the unpredictability of the exact number of visitors to the lodge facilities during the data collection period. However Bartlett's test of sphericity showed that the sample was adequate for generalization.
2) The study did not have a pre-established population since guest visitation was random rather than systematic. This would have created a chance of bias, but because all the guests were given equal chances of participation, the biasness was eliminated.

1.7 Assumptions of the study

The following assumptions were made:

1) It was assumed that the facilities in the 15 lodge facilities used in this study were homogeneous in terms of their facilities and the services they provided.
2) It was also assumed that the selected respondents of this study were normally distributed in terms of the parameters for interpretations of their perceptions of the facilities and services provided in the respective lodge facilities.

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1.8 Conceptual framework

This study tested the applicability of the DIT - ACHIEV model of Sustainable Tourism Indicators that was generated by the Dublin Institute of Technology. The model is an outcome of research project, entitled 'Sustainable Tourism Development: toward the mitigation of tourism destination impacts' conducted between the year 2000 and 2006. The identification of indicators began with a list of 211 candidate indicators. This extensive list of 211 indicators was developed into a more manageable set of indicators, designed to capture the pressures on the sustainability of the tourism sector in the study area. A number of procedures including establishment of quantifiable dimensions and qualitative perspectives were followed in prioritizing and narrowing the candidate list down to a manageable and robust group of indicators. This iterative process eventually reduced the 211 candidate indicators to the 33 indicators, set around 26 dimensions. The model was designed around six key fields namely: heritage, infrastructure, community, visitor, administration and enterprise. Each of these key fields has been divided into small sub-fields, labeled in the model as a, b, c, d, and e. These add up to 26 dimensions. The researcher postulates that this model is a holistic overview of what sustainable tourism should be and hence tests its applicability in Maasai Mara National Reserve, Kenya. According to Butler (1998), a holistic approach to sustainable tourism management should be adopted in order to stay close to the vision of sustainable tourism. One way of defining a set of indicators for sustainable tourism that perceives tourism in a more holistic approach is to relate the indicators to the principles of sustainable tourism (Butler, 1998). This approach was therefore adopted for this study. Several authors have written on sustainable tourism principles for example Bramwell & Henry (1996), Eber (1992), Gerken (1988), McIntyre (1993), WTO & UNEP (1998) and WTTC, WTO, Earth Council (1996). Specifically, the researcher found considerable conformance of this model to the

principles of sustainable tourism as set out by Eber (1992). According to Eber (1992) sustainable tourism principles consists; using resources sustainably, reducing over-consumption and waste, maintaining bio-diversity, integrating tourism into planning, supporting local communities, involving local communities, training staff, consulting stakeholders and the public, marketing tourism responsibly and undertaking research. Each of these principles can be traced in one or more fields as outlined by the DIT-ACHIEV model of sustainable tourism indicators (Figure 1). Each of the six fields has several dimensions. Heritage dimensions include: flora and fauna, air, water, landscape, archaeology and history and culture. The dimensions of the infrastructure field are: water, land, transport and amenities. Enterprise is sub-divided into sustainable practices, communication and labor while administration has goals, policy and jurisdiction dimensions. The visitor component of sustainable tourism is sub-divided into: volume, behavior, service, hospitality and tourist spend. Finally, community dimensions are; access, involvement, quality of life, beneficiaries and population. The dimensions in each field were also operationalised to address all the issues as outlined by Eber (1992) in the principles of sustainable tourism. The researcher tested this model because it satisfies the criteria of a holistic approach to sustainable management of tourism as seen in its proposed indicators. The significance of each sub-field on the field was established as well as its significance on sustainable tourism. The researcher also sought to find out how each of the six fields is significant to the realisation of sustainable tourism relative to the other fields. This was helpful in identifying the key indicators of sustainable tourism.

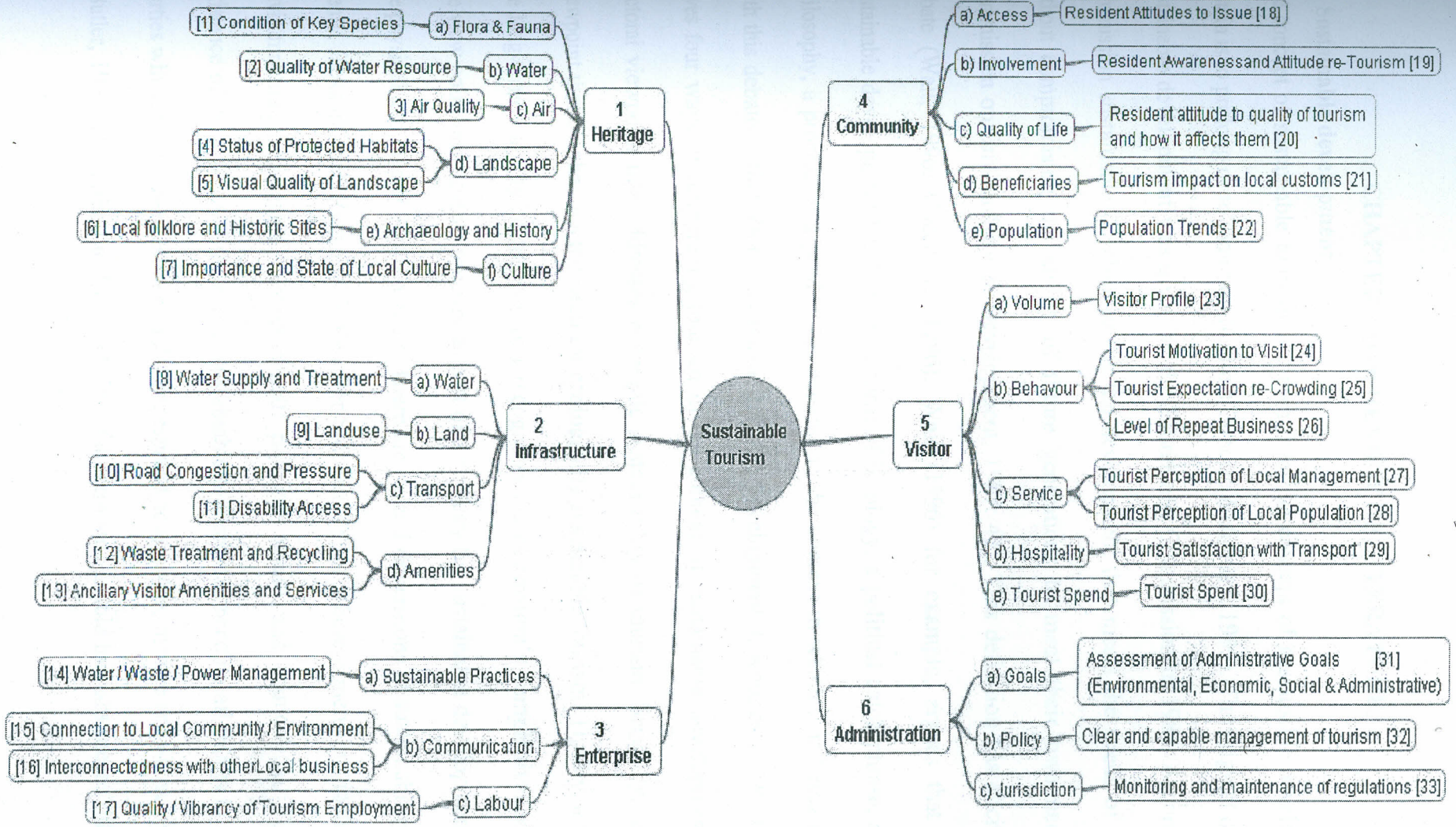

Fig.1. DIT-ACHIEV Model of Sustainable Tourism Management. Source; Dublin Institute of Technology, EDEN Workshop, February 2009

CHAPTER TWO: REVIEW OF LITERATURE

2.1 Sustainable development

The concept of sustainable tourism is drawn from the concept of sustainable development. To sustain is to prolong or to maintain (Collins Concise dictionary, 1995). The original definition of sustainable development was given by the Brundtland Commission in 1987. According to this commission sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment & Development, 1987: 43). This definition has elicited a lot of debate (Wall, 1996; Coccossis, 1996). Wall (1996) for example, argues that the phrase sustainable development has become a form of ideology, a political catch-phrase, a concept, a philosophy, a process or a product, depending on the context in which it is being used. Along with this debate is that about sustainable tourism development. Coccossis (1996) for example, gives four ways of interpreting tourism in the context of sustainable development. First, the sectoral viewpoint that addresses economic sustainability of tourism. Secondly, an ecological viewpoint that emphasizes the need for ecologically sustainable tourism. Thirdly, a viewpoint of the long-term viability of tourism that recognizes the destination's competitiveness and lastly, the view point that accepts tourism as part of a strategy for sustainable development throughout the physical and human environments. There are several dimensions of sustainability (Bramwell, Henry, Jackson, Prat, Richards & Van Der Straaten, 1996). These dimensions include: cultural, environmental, managerial, governmental, political, social and economical. Following the existence of these many dimensions, sustainable tourism has become all things to all interested parties which has further resulted in the widespread acceptance, misuse and abuse of this concept (Butler, 1999). According to Butler (1999), the term sustainable tourism means different things

depending from whom the definition is coming. For example, the phrase means different things to the tourist industry, to the conservationist, to the environmentalist as well as to the politician. Sustainable tourism is defined as tourism which is in a form which can maintain its viability in an area for an indefinite period of time (Butler, 1993). In an effort to clarify the concept of sustainable tourism, Butler (1999), suggests that practitioners must realize that sustainable tourism is not automatically the same as tourism developed in line with the principles of sustainable development and that any type of tourism should be defined beyond the catch- all phrase of "sustainable" in order to avoid confusion and ambiguity. Croall (1995) includes sustainable tourism as one of the other "better alternatives" to mass tourism. However, according to Butler (1999), not all mass tourism is unsustainable and that even other forms of tourism such as ecotourism have a lot of "negative" impacts on a cumulative scale. This is due to the sensitive nature of the environments in which they take place, for example ecotourism. There has been research done on how to make mass tourism more sustainable (Wheeller, 1993; Bramwell et al, 1996; Wall, 1996).

For tourism to survive in the long-term (Linda, Melanie, John, Harold & Bixler, 2009), the sector needs to embrace sustainability initiatives, and a strategic effort that will include identification of benchmarks indicating progress in order to bring about a permanent change in management of the sector. Benchmarking is the continuous measurement and examination of practices in an organization against those in organizations regarded as practice leaders (Donald & Graham, 2006). Benchmarking should not only entail comparison with the best, but also provide an opportunity to evaluate how organizations are managing their businesses or destinations (Donald et al, 2006). According to Donald et al (2006), benchmarking does not only enable good ideas to be emulated but it leads to more effective systems being put in place. World Tourism

Organization (2003) gives three dimensions of sustainable tourism: Environmental, Economical, and Socio-cultural aspects of development. Being sustainable therefore, according to WTO, a balance must exist among these three dimensions. Sustainable development is neither always possible nor even always appropriate in the context of tourism, but as a concept, it still appears to have broad support, often based apparently on little but optimism (Butler, 1993; Wheeller, 1993; Wall, 1996). The researcher is of the view that for any tourism activity to be sustainable all its aspects must portray a balance between them and that the benefits of such undertaking must be realized now and in the future in equal if not better measure.

2.2 Definitional frameworks

Sustainable development has been defined differently by different people (Stabler & Goodall, 1996). This is also the case with the definitions of sustainable tourism. Some of the definitions of sustainable tourism include that given by WTO in 1993. According to WTO (1993:7), sustainable tourism is the tourism which meets the needs of the present tourist and host regions while protecting and enhancing opportunity for the future. According to Eber (1992:3), sustainable tourism is tourism and associated infrastructures that both now and in the future operate within natural capacities for the regeneration and future productivity of natural resources; recognize the contribution that people and communities, customs and lifestyles, make to the tourism experience; accept that these people must have an equitable share in the economic benefits of local people and communities in the host areas. The countryside commission (1995:2) defines sustainable tourism as tourism which can sustain local economies without damaging the environment on which it depends. Further according to Payne (1993:154-55), sustainable tourism must be capable of adding to the array of economic opportunities, open to people without adversely affecting the structures of economic activity. Sustainable tourism ought to further not

interfere with existing norms of social organization and must respect the limits imposed by ecological communities (Payne, 1993:154-55). Sustainable tourism in parks (and other areas) must primarily be defined in terms of sustainable ecosystems (Woodley 1993:94). Sustainable tourism as according to Butler (1993:29) is the tourism which is in a form which can maintain its viability in an area for an indefinite period of time. The existence of the many definitions is an indication of the great interest that this concept has drawn to the scholarly field. Some of the many researchers who have done studies in this area include Eagles, 1994; McCool, 1994 and Cater & Lowman 1994. This study found the definition by WTO comprehensive and inclusive of most of the aspects addressed by the other referenced authors and it was therefore adopted.

2.3 Sustainable tourism indicators and models

The desire to create sustainable tourism indicators has increased over the years (Ceron & Dubois, 2003). This has been as a result of the increasing realization of the need to improve assessment processes with the goal to measure progress towards sustainability (Ceron & Dubois, 2003). Briassoulis (2001) notes that, the rise of environmental consciousness has also contributed to the construction of environmental indicators. As a result, sets of indicators have been built following the research by several individuals and institutions (Spagenberg & Bonniot, 1998; Scientific Committee on Problems of the Environment, 1995; United Nations, 1996; Department of environment, 1996). Ceron & Dubois (2003) describe an indicator as a variable which can take a certain number of values or states according to circumstances. Indicators, according to Gallopin (1997), are similar to indexes apart from differences in complexities. They however should carry meaning which exceeds their pure qualitative value (Gallopin, 1997). Ceron and Dubois (2003) say that indicators are useful in summarizing and simplifying information. However, indicators must be built on serious scientific basis and reliable data such that any

expert assessing the same issue under similar conditions will achieve the same results (Ceron & Dubois, 2003). Rump (1996) gives the criteria for which environmental data should comply. This is as follows: first, the indicators must be drawn from data that is of high quality and analyzed accurately. This means that the data must be available, accessible, precise, robust, reproducible and of scientific value. Secondly, indicators must be relevant with respect to the studied subject. This means that they should cover a given geographical region, be a representative illustration and be sensitive to changes. Thirdly, indicators must be communicated and be able to be communicated to all the relevant stakeholders. This means that they must be simple, relevant, result in a benchmark value and be able to be compared regionally and internationally. Gallopin (1997) gives the process of selecting indicators as starting from: defining the expected objectives, defining the audience and later determining the type of desired product. Ceron and Dubois (2003) on the other hand note that the process of building is a highly subjective affair which implies an implicit or explicit reference to a 'model'. The subjectivity is as a result of the divergence of the interpretations of the concept of sustainable development (Turner, 1993). Tourism sustainability should not only be assessed regarding its own objectives and priorities but should also be evaluated on its support for development objectives and global environmental management normally seen as exterior to the tourism system (Ceron & Dubois, 2003). It is only when this approach is followed that tourism effects such as travel intensity, energy consumption, global warming, impact on communities and cultures and impacts on the economic activities of a region are put into consideration (Ceron & Dubois, 2003). WTO (1997) gives examples of tourism indicators including: site protection, pressure, intensity of use, social impact, development control, waste management, planning process, fragile ecosystem, consumer satisfaction, support for the local economy, carrying capacity among others. However, Ceron &

Dubois (2003) argues that some of these indicators are not easy to implement and are impossible to quantify as a result of their high levels of subjectivity. EPA (2001) also gives a list of indicators which include: number of participants, number of trips, expenditures, water use (gallons per year), waste water, energy use, and transportation energy use and air emissions. However, Ceron & Dubois (2003) are keen to note that the methodology used in coining these indicators lacks real ratios that are specific to tourist activities and equipment thus undermining the outcome of this work. Following this, Ceron & Dubois (2003) recommends that any effort to come up with a set of indicators should: assess the quality of data on which the indicators are built, collect new data informing important aspects of sustainability, draw lessons from work already carried out, make indicators more easily understandable and user friendly and to define more precisely, the expected objectives of the indicators, expected audience and the scale for which they are to be considered relevant.

Theodore (2008) recons that measuring sustainability by the use of sustainability indicators is a highly contested issue which is generally widely accepted but also challenged on almost equal measures. The use of indicators to measure sustainability has been challenged by several authors. Innes (2000), for example says that a lot of dollars and time of talented people have been lost in reporting indicators and the reports coming from such studies have not been applied at all. Wheeller (1996) says that indicator use is appealing but has little practical application. Indicators have therefore been found to have the following limitations: first the role of the indicator is to indicate not to dictate, therefore actual goals of the indicator are not the goals rather, they are only the means to broaden the plan. Secondly, for an indicator to provide meaningful information, it must be seen through an evaluation process like benchmarking. Third, indicators are created in a given moment in time and the evolution of a community with time might be

faster than the theory supporting indicators. Fourth, some indicators demand a lot in terms of data requirements. Further indicators fit for use in one destination might not be applicable in another destination. Lastly, for indicators to remain meaningful, continuous review (benchmarking) is required which is expensive (Theodore, 2008).

2.4 Tourism accreditation

Linda et al (2009) say that for tourism to survive in the long term, the sector needs to embrace sustainability initiatives and a strategic effort that will include identification of benchmarks indicating progress in order to bring about a permanent change in the management of the sector. Further, Linda, et al (2009) define accreditation as the process used to certify certifiers. The general goal of accreditation is to enhance credibility with the clients and the public and therefore everyone involved needs to understand the scope of the accreditation program (Honey, 2002). Despite the need for accreditation systems in the tourism industry, there has not been established an accreditation system that cuts across the whole world (Linda, et al, 2009). However, Medina (2005) is quick to point out the need to include all stakeholders and other parties interested in the process of establishing a sustainability evaluation system irrespective of the scale of application of the system. Involving all stakeholders mean that sustainability in tourism can neither be achieved in the short term nor can conflict be avoided and thus care must be taken to resolve the differences that will arise (Linda et al, 2009).

2.5 Tourism eco-labeling

An eco-label is a voluntary label which seeks to inform consumers about the environmental impacts of the production, consumption and waste phases of the product or services (Gallastegui, 2002). Eco-labeling or environmental labeling is the voluntary granting of labels by a private or public body in order to inform consumers and thereby promote consumer products which are

determined to be environmentally friendlier than other functionally or competitively similar products (Salzman, 1991). Eco-labels and certification can be used to communicate to tourists about environmental issues (Sallows & Font, 2004). According to Font (2002) eco-labeling ensures high standard of environmental performance beyond legislation. There are a number of available eco-labeling schemes. These include: Green Globe (Spenceley, 2005), Ecotourism Australia Eco-certification program which accreditates three products namely: tours, accommodation and attractions (Ecotourism Australia, 2005). The Blue Flag Campaign which began in the mid-1980's and specifically addressed coastal tourism (UNEP, WTO, & FEE, 1996). Fair Trade in Tourism South Africa, a non-profit company registered in South Africa that promotes sustainable and equitable tourism development through awareness promotion and the facilitation of a voluntary certification program (FTTSA, 2005). Ecotourism Society of Kenya (2002) voluntary scheme, encouraging facilities to work towards three different levels of certification to earn permission to use the schemes logo in promoting their businesses. The international organization for standardization (ISO) developed three different types of voluntary environmental performance labels (Gallastegui, 2002; IISD, 2001 and ISO, 2002). The three types are; Type 1 (or eco-label) whose major emphasis is environmental quality of a product compared to the rest of the products (ISO 140424). Type 2 labels referring to specific attributes of products (ISO 14021) and Type 3 labels which use preset indices to give quantified information about a product (ISO/TR 14025). Boer (2003) says that an eco-label is a benchmark for excellence. Further according to Gallastegui (2002) eco-labels can be useful in switching towards a more environmentally friendly consumption habit. Maclaren (2002) points out that certification involve a third party giving a written assurance that a product, service, process or management system conforms to specified requirements. Accreditation requires that an

authoritative body verifies the competence of those doing the certifying or auditing (Maclaren, 2002). Certification is just one of the set of tools required to make tourism sustainable (Synergy, 2000; ESOK, 2000). Education and comprehensive land-use planning need to complement certification (Synergy, 2000). According to Font (2002) certification can gather local stakeholders around the common purpose of defining standards that improve the contribution of tourism to sustainable development. WTO emphasizes the importance of certification by addressing environmental performance of companies and destinations, product key quality and corporate social responsibility of operations (WTO, 2003). Maclaren (2002) identifies two methodologies of classifying certification programs; one, using internally created environmental management systems for particular business and two, performance-based using externally set environmental, socio-cultural and economic criteria (or benchmarks) against which the business is judged. However, Honey and Stewart (2002) and Sanabria (2003) criticize process based certification and warn against potential disadvantages.

2.5.1 Potential benefits of eco-labels

There are some benefits associated with eco-labels. These include: first, promote informed consumer choice thus empowering people to discriminate against products that are harmful to the environment. Second, show consumers whether a product is the least environmentally harmful in its category and not just whether it can satisfy the criteria to make a particular advertising claim. Third, improve economic efficiency as they allow manufacturers to make environmentally beneficial decisions and promote technological innovation. Fourth, provide economic benefits to participants and therefore promote beyond compliance environmental protection. Fifth, enhance market development, as consumers therefore have a direct impact on supply and demand in the

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market place, which in turn guides the market towards greater environmental protection. Sixth, Provide industry with a marketing tool. Seventh, promote continual environmental improvement as long as the market for eco-labeled products remains dynamic. Eighth, enable easy monitoring of claims made by manufacturers. Ninth, promote certification programs, which have an educational role for customers and encourage competition among manufacturers. (IISD, 2001; Riviera, 2002; Salzhaeur, 1991).

2.5.2 Potential limitations with eco-labels

According to WTO (2002), there exists more than 60 eco-labels with different meanings and as a result there has been more confusion as to their relevance thereby causing some to be ignored. Further, the creation of eco-labels in the assumption that the public will demand green labels is misinformed (Hamele, 2004). According to Font (2002) repeated business visitors could be as a result of the improvements made when seeking certification but not because the facilities are certified. Also the focus of eco-labeling is on the environmental management rather than environmental performance (Font, 2002). Finally, Sasidharan (2002) says that not all third World countries can match the standards as set by the eco-labeling schemes in developed countries.

2.5.3 Summary of existing certification organizations

The summary of existing lodge facilities is provided in Table 2.5.3.1 and Table 2.5.3.2.

Table 2.5.3.1: International certification organizations

Organization	Description	Rating system
Green Globe	Travel and Tourism benchmarking and certification	Green Globe Benchmarked (Bronze) and certified (Silver, Gold and Platinum)
International ecotourism club	Provides eco-lodge ratings and listings of lodges and tour operators	1 – 5 star rating
Rain forest Alliances Eco-index sustainable tourism	Provides a database of accommodation facilities using other certification programs, such as CST and ISO 14000	Rain forest Alliance Eco-index
Sustainable tourism international	Global sustainable tourism eco-certification program, as well as luxury eco-certification standard (LECS) for luxury hotels	Sustainable tourism Eco-certification program (STEP) logo.
Voluntary initiative for sustainability in tourism (VISIT)	A network of European eco-labels, including the green key and the green tourism business scheme.	Lists members logos

(Source: EBSCO online database)

Table 2.5.3.2: Regional certification programs

Organization	Region	Description	Logo
Certification for sustainable tourism (CST)	Costa Rica	Tourism, Sustainable tourism and eco-tourism certification for accommodations, tour operators, and eventually restaurants and transportation	Plaque with one to five leaves
Ecotourism Kenya's Eco-rating scheme	Kenya	Verification system for hotels, lodges, camps and other accommodations	Three eco-rated logos: Gold, Silver and Bronze
Green deal	Guatemala	Travel and tourism certification	"Green Deal" logo
Green Keys	Thirteen countries, mostly in Europe, including Denmark and France	Certification eco-label for hotels, hostels, campsites and other facilities	"The Green Key" logo
Nature and Ecotourism accreditation program (NEAP)	Australia	Certification for tours, attractions, cruises and accommodations	Three levels of Eco-certification: Nature tourism, Ecotourism and Advanced Ecotourism
PAN Parks	Europe	Founded by the World wildlife Foundation, a listing of national parks that meet third-party certification standards	"PAN Parks" logo

(Source: EBSCO online database)

2.5.4 Ecotourism Kenya's Eco-rating scheme

Ecotourism Kenya was founded in 1996 (ESOK, 2002). Its major objectives are: fostering tourism practices which conserve the country's natural environment and improve the life of associated communities, developing a framework of environmental management standards for

tourist attractions and facilities and devising and publishing eco-tourism regulations and codes of conduct (Okungu, 2001). Ecotourism Kenya's eco-rating scheme was established in 2002 (ESOK, 2002). According to ESOK (2002) eco-rating is a form of eco-labeling. In ESOK, there are three levels of certification of ESOK. Bronze eco-rating when the organization has scored between 70 and 105 points, Silver eco-rating when the organization has scored between 106 and 141 points and finally the Gold eco-rating when the organization has scored between 145 and 177 points (ESOK, 2002:9). The points are based on specific criteria developed by the eco-rating committee, a subcommittee of the ESOK executive committee with a broad representation of the tourism industry and beyond (ESOK, 2002).

2.6 The emergence of the green market

Consumer behavior has changed since 1970 towards environmentally related products (Alwitt & Pitts, 1996). Consumers who worry about the environment will indicate their concerns through different behaviors like checking the products which they are going to purchase to ensure they are buying ethically (Surchard & Polonski, 1991). Rex & Baumann (2007) refer to eco-labels as being a tool for consumers to facilitate making decisions to select environmentally- friendly products, and also to enable them know how the product is made. However, some studies (Leire & Thidell, 2005) have shown that the recognition of eco-labels does not automatically lead to green purchasing. On the other hand there are studies that have shown that awareness of eco-labels has a positive effect between knowledge of green product and the consumers' intensions to purchase (Nik, 2009). According to Cooper (1998), a hotel's green image can influence behavioral intentions of a customer and this has given rise to the concept of green management. Green management is the process and the practice introduced by an organization for reducing, eliminating and ideally preventing negative environmental effects arising from its undertakings

(Cooper, 1998). The emergence of the green market has resulted in the concept of the green hotel (Green Hotel Association, 2008). According to Green Hotel Association (2008) green hotels are those which are environmentally friendly, whose managers are eager to institute programs that save water, save energy and reduce solid waste while saving money to help protect the earth. Several studies have shown that showing care and concern for the environment by a hotel yields positive results in terms of preference by guests, employee morale increase, customer satisfaction, increase in demand and increase in general competitiveness levels (Enz & Siguan, 1999; Manaktoa & Jauhari, 2007; Mensan, 2004; and Penny, 2007).

2.7 Gaps in knowledge

Several gaps have been identified by the researcher from the literature review. Despite the high level of awareness on the benefits of sustainable tourism, both in the short term and in the long term in Kenya, limited study had been conducted on this area. There had been no study that has attempted to test the applicability of the DIT – ACHIEV model of sustainable tourism indicators on Lodge facilities in Kenya generally and Maasai Mara National Reserve in Particular. Although Ecotourism Kenya has made attempts to come up with sustainable tourism criteria, the indicators are limited and do not provide a wider scope. Thus a comprehensive documentation does not exist on the criteria used in earmarking a tourism activity or facility in Kenya as being sustainably managed. To award any accreditation, a sustainable tourism venture must have taken into consideration the effects of the enterprise on the administration, heritage, community, visitor, enterprise and the infrastructure. This study was therefore necessitated by the identified gaps in knowledge.

CHAPTER THREE: METHODOLOGY

This section outlines the methodological approaches and perspectives of this research. It gives details of the measuring instruments, sampling and data analysis techniques used.

3.1 Research design

The researcher used a cross-sectional survey design where data was collected once and analyzed. This design was chosen because it is exploratory in nature and it is useful in identifying associations. The design also allows studies to be conducted fast and within short periods of time. The limited time and resources available for this research were the other factors that the researcher considered while choosing this study design.

3.2 Area of study

Maasai Mara National Reserve was established as a Wildlife Sanctuary in 1948 to protect wildlife from hunters (Koikai, 1992). The Reserve is situated in Southwestern Kenya on the border of Tanzania (See figure 2). It is situated in the Rift Valley with Tanzania's Serengeti Plain running along its southern end (Sinclair & Norton-Griffiths, 1977). Mara river runs through the reserve (from north to the south) hosting plenty of hippos and making the annual migration of over a million wildebeest and hundreds of thousands of zebra's an extremely dangerous but breath taking phenomenon. Maasai Mara is also a host to many wild animals such as giraffes, elephants, buffalos, hippos, cheetahs, among other animals. The period between July and October when the wildebeest and zebras are crossing the Mara River is very important for the reserve. It is this event that has earned the reserve, local and international fame (Broten & Said, 1995).

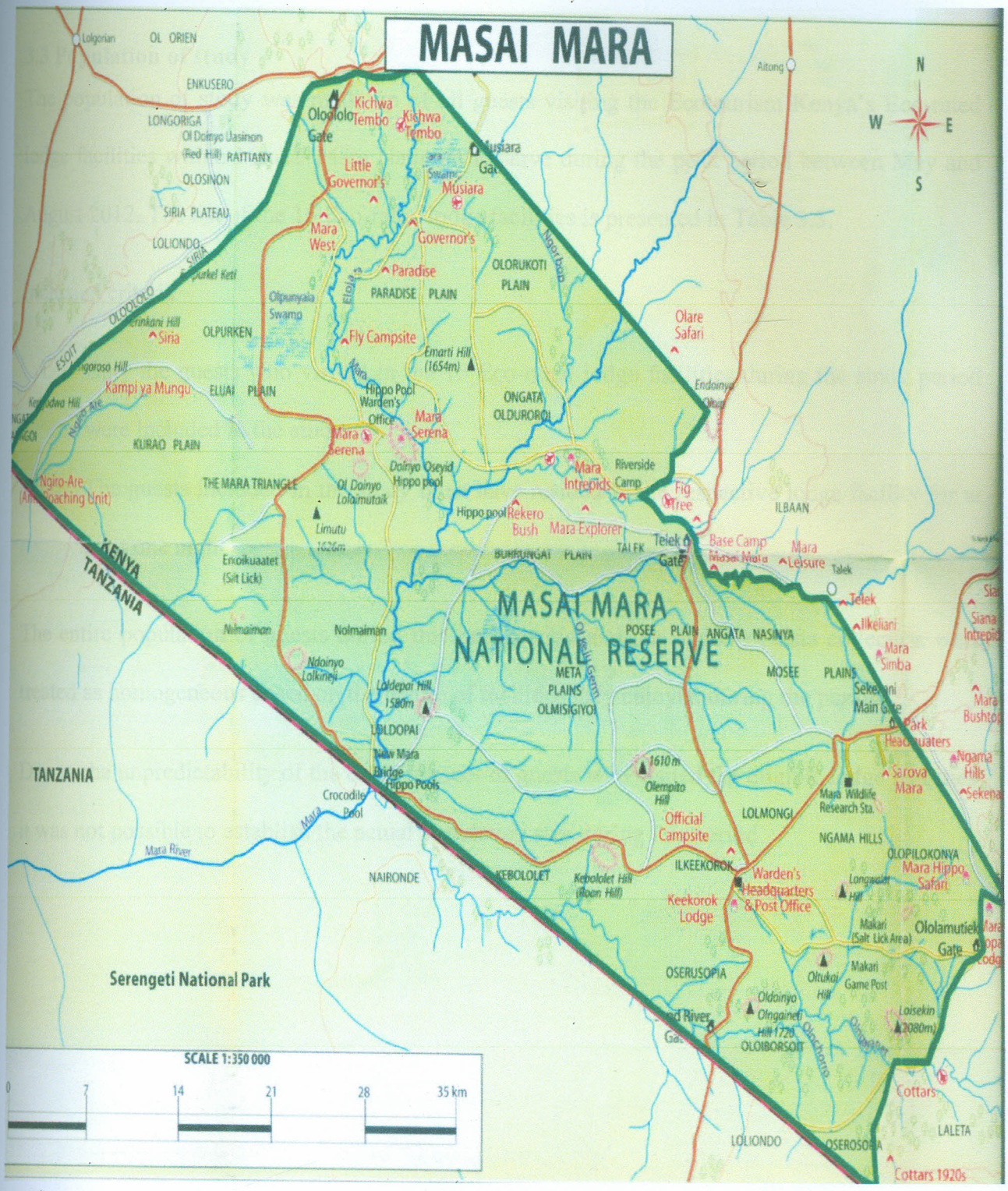

Figure 2: Map of Maasai Mara National Reserve. Source, Jubilant images 2013

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3.3 Population of study

The population of study was made up of all guests visiting the Ecotourism Kenya's Eco-rated lodge facilities within Maasai Mara National Reserve during the peak period between May and August 2012. The list of the 15 Eco-rated lodge facilities is presented in Table 3.3.

Inclusion criteria

i. Only the guests who visited in the 15 Eco-rated lodge facilities during the study period were included in the study.
ii. The guests included in the study must have resided in the respective lodge facility for at least one night.

The entire population of guests during this peak period and the period of data collection were treated as homogeneous based on the nature of facilities they enjoyed during the period.

Due to the unpredictability of the exact number of guests who visited the eligible lodge facilities, it was not possible to establish the actual population size during this period.

Table 3.3: A list of Eco-rated lodge facilities within Maasai Mara National Reserve.

Lodge Facility	Bed capacity
1. Base Camp Masai Mara	15
2. Sanctuary Olonana	14
3. Governors Camp	37
4. Kicheche Mara Camp	11
5. Mara Explorer	10
6. Mara Intrepids	30
7. Ol Seki Mara Camp	8
8. Porini Lion Camp	10
9. Porini Mara Camp	6
10. Saruni Safari Camp	6
11. Bateleur Camp	9
12. Keekorok Lodge	101
13. KichwaTembo Tented Camp	40
14. Mara Serena Safari Lodge	74
15. Mara Siria Luxury Tented Camp	8
Total Capacity	**379**

3.4 Sample size and Sampling procedure

Due to the non-established population size, and considering that guest visitation was random rather than systematic, all guests who visited the lodge facilities had equal chances of participating in the study without any bias. The study used census sampling technique whereby each guest who visited a lodge facility during the data collection period was given a chance to fill a questionnaire upon consent. Following this procedure 136 guests were able to complete the questionnaires from the 15 eligible lodge facilities in Maasai Mara within the period of 4 months between May and August, 2012. Even though this method appeared biased on representativeness

of the guest population, measures were put in place during analysis to assess each question item for sampling adequacy by the use of Kaiser Meyer Olkin (KMO) and Bartlett's test of sphericity before proceeding with analysis for further inferences. KMO measures for sampling adequacy for all the variables were above the recommended 0.5. (Field, 2005) – see Table 4.3.0. Similarly Bartlett's test of sphericity values were also significant, all being less than 0.05 as deemed necessary (Field, 2005).

Further owing to practical difficulties of getting responses from large survey groups, a meaningful survey sample had to be determined. An appropriate sample size was thus calculated. A representative sample with known confidence and risk levels was selected based on the work of Yamane (1967). This was used to determine the appropriate minimum response rate for the current study. The formula used by Yamane (1967) is as follows;

$$n_o = \frac{Z^2 p(1-p)N}{Z^2 p(1-p) + Ne^2}$$

Where

n_0 = Sample size

Z = confidence interval corresponding to a level of confidence

P = population proportion

N= population size

e = precision or error limit

The Yamane formula assumes a normal distribution. The guests to the targeted lodge facilities were assumed to be normally distributed in terms of the parameters for interpretation of their

perceptions of the facilities and services provided in the respective lodge facilities. Yamane formula was therefore considered suitable for determining the appropriate sample size.

It was estimated that within the period of data collection each room in each of the 15 targeted lodge facilities (see Table 3.3) would have been occupied by at least one guest. However at the end of the period, only 136 questionnaires were completed. Since each room had one questionnaire to be completed, the expectation was to have 379 questionnaires completed to reach a saturated population of the occupancy.

A 95% confidence level is normally deemed acceptable and thus statistically Z=2. The proportion of population that would be relevant to the survey is p. If p is 0.5 (50%), the new formula would be as follows;

$$n = \frac{N}{1 + Ne^2}$$

Where

n = minimum required responses

e^2 = error limit (which is 10% for this study)

N = Sample size

P = 0.5 (50%) offers the biggest possible response rate and confidence and with it, risk levels can be maintained.

Therefore

$$n = \frac{379}{1 + 379\ (0.10)^2}$$

= 99 responses

A minimum of 99 responses were therefore the lowest acceptable number of responses for this study to maintain 95% confidence level and a 10% error limit. The sample size was thus deemed adequate since Yamane's formula gave a sample size of 99 responses.

3.5 Data collection tools and measurement of variables

Data for the study was collected using a structured questionnaire. The questionnaire was organized into two sections. The first section sought data on the demographic characteristics of the respondents while the other section sought data on the six study constructs of: administration, community, heritage, infrastructure, enterprise, and visitor. Measurement of variables was as follows;

Demographic variables included gender, nationality, age, the mode of transport preferred by the guest to access the facility, number of days the guest intended to stay in the facility, major reason why the guest visited the facility and whether the guest had visited the same facility previously. Heritage: this was a measure based on key heritage quality items within the context of water, air, archeology & history, and culture. Infrastructure too was a measure based on key infrastructure quality items within the context of water, transport and amenities. Enterprise variable was also a measure based on key enterprise quality items within the context of sustainable practices, communication and labor. Similarly, key community quality items within the context of access, population, quality of life and beneficiaries were used to measure the community variable. Further, key visitor quality items within the context of behavior, hospitality and service were used to measure the visitor variable. Finally, administration variable was measured based on key administration quality items within the context of goals, policy and jurisdiction. For each of the

six study constructs, score ratings were done for each question item based on a 5-point likert scale ranging from strongly disagree (1) and strongly agree (5).

3.6 Data collection process

The questionnaires were delivered by the researcher to the respective lodge facilities upon consent by the respective lodge facilities' management authorities. The questionnaires were left at the lodge facilities' reception desks for distribution to the guest rooms by the receptionists of the respective lodge facilities. A total of 379 questionnaires were distributed to the 15 eligible lodge facilities according to their respective bed capacities such that each room in each lodge facility had one questionnaire allocated to it. One questionnaire was placed in each of the 379 rooms. A questionnaire was only removed from a room after ascertaining that it was dully filled. The removal of the questionnaires from the rooms was done by the housekeeping personnel of the respective lodge facilities and handed over to the reception desk of the respective lodge facility. This process continued for the entire 4 months data collection period. After the expiry of the data collection period, the researcher visited all the lodge facilities and picked all the questionnaires from the lodge facilities' reception desks for analysis.

3.7 Data analysis process

All the data collected were cleaned and entered into SPSS version 17.0 spreadsheet for analysis. Descriptive statistics, mainly means and normal distribution were used to assess the accuracy of scores and to describe the nature of responses. In addition descriptive statistics specifically means and standard deviations were used to describe sustainable tourism indicators existing in eco-rated lodge facilities within Maasai Mara National Reserve.

Kaiser Meyer Olkin (KMO) and Bartlett's test of sphericity were used to assess sampling adequacy for each question item before subjecting them for further analysis. Any item that had KMO score greater than 0.5 and significant at $p< 0.05$ was considered to have sample size adequacy for both factor and regression analysis.

Analysis through principal axis factoring (PAF) was used to identify the key indicators suitable for the management of lodge facilities within Maasai Mara. This was done within the constraints of effective factor analysis where Eigen values were set at 1 for minimum extraction and 0.4 for acceptable loading.

Multiple Linear regressions were used to generate a series of models within the framework of DIT-ACHIEV model for sustainable tourism indicators in order to assess its applicability as an effective sustainable tourism indicator model for lodge facilities within Maasai Mara National Reserve. Models were based on R square, F-test and t-test at $p< 0.05$.

3.8 Pilot testing

Pretesting of data was done at Base Camp Maasai Mara lodge due to its accessibility. The number of guests used for pretesting was 15 having considered that construct validity and reliability test requires a minimum of 15 cases to make inferences. During this process the questionnaires were administered as if it was a normal survey and the data obtained entered into SPSS version 17.0 for trial analysis.

Reliability was established for items measuring each construct to assess internal consistency based on Cronbach's alpha statistics. All the items measured registered reliability above 0.6. Construct validity using principle component factoring was used to assess for the dimensionality

of items for each construct and the average communality explained also recorded above 0.6 making the questionnaire acceptable.

Pretesting also ensured the questionnaires were well understood and administered within the appropriate time. Word-order and spelling were also checked and appropriate corrections made.

CHAPTER FOUR: RESULTS AND DISCUSSION

This chapter focuses on the results of the current study and their respective discussion. Specifically, the chapter looks at: the questionnaire response, the respondents' demographic profile, sustainable tourism indicators in Maasai Mara National Reserve, and; Key Sustainable Tourism Indicators. The results from each sub-section of this chapter are also discussed herein.

4.1 Questionnaire response

A total of 136 guests were able to fill in the questionnaires from the eligible 15 lodge facilities within the period of 4 months of data collection. The low response rate could be attributed to several factors such as elections. The country was facing a general election and this caused the potential visitors to adopt a precautionary approach considering the outcome of 2007 elections. In addition to the above mentioned factor, Kenya's Tourism industry was facing a challenge of securing international tourists, who compose the great percentage of the tourists due to the series of terrorist attacks experienced in Nairobi and the Coast region which saw many countries issue travel advisories to their citizens against visiting Kenya. Domestic tourism on the other hand, which provides an additional source of tourism market, was also affected at this time due to inflation. Since the country was already in an election condition, no noticeable increase in guest numbers would have been achieved by extending the data collection period. Thus the study did not consider it necessary to increase this period.

4.2 Demographic characteristics of the respondents

The characteristics of the respondents are as shown in the Table 4.1. From the table it can be seen that most of the respondents were female 75, (54%) while male respondents were 61, (43.90%). The slightly higher number of females than that of males could be attributed to the changed role of women in the society. In the modern society, the position of the woman has

changed from that of the "weaker sex" where the woman was not expected to enjoy equal rights with those of men by having a job and going for holiday.

Majority of the respondents were aged between 20 – 35 years (n=63, 45.30%), followed by 36 – 50 years (n=53, 38.10 %). Respondents above 50 years accounted for 14.40% (n=20) of the total respondents. Globally, there has been a steady growth of the middle class with most young and middle aged members of the society constituting a bigger percentage of this class. The slightly higher number of respondents between the age of 20 -35 years could be attributed to their likely possession of higher disposable income than their older counterparts. The majority of the respondents having been between the ages of 20 – 50 years of age, confirms that they possessed the right information on sustainability issues and dimensions which was required in addressing the current study's objectives.

The study results also show that, 78.40%, (n=109) of the respondents were foreigners while 19.40%, (n=27) were Kenyans. Domestic tourism in Kenya has been known to perform relatively bad as compared to international tourism. The performance of the Kenya Shilling against the Dollar at the time of the study could help explain the possible inability of most Kenyans to afford to go on holiday. Thus the lower number of respondents of Kenyan nationality as compared to the foreigners. Majority of the respondents, 64.70%, (n=90) had visited the facility previously while 33.10%, (n=46) were in the facility for the first time. The phenomenon crossing of animals across the Mara River is an annual event. This could help explain the likelihood that the visitors having enjoyed the scenery previously, had considered to experience the same one more time.

In addition the results show that, 67.60%, (n=94) of the respondents preferred air transport as the means of accessing the facility while 30.20 %, (n=42) preferred road transport. This could be attributed to the bad state of the roads connecting the reserve to the main land. Further, the

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relatively smaller number of respondents who preferred road transport could be attributed to the preference by some of the visitors to enjoy the thrill by driving on the rough roads and adventure or their desire to view wildlife as they drive to the lodge facilities.

Majority of the respondents 48.20 %, (n=67) intended to stay in the facility for a period of two days followed by those who intended to stay in the facility for one week 46.00% (n=64). Very few respondents 2.20% (n=3) intended to stay in the facility for a period exceeding one week. Further, only 1.40% (n=2) of the respondents intended to stay in the facility for just one day. The main attraction being wildlife, the visitors would require relatively longer periods to view as many animals as possible, something that they could not probably do within one day. Further, the period to spend in the lodge facilities could not be stretched to more than a week by most of the guests, partly because of the affordability of the services and partly because a period of between 2 and 7 days would be deemed reasonably adequate to view most of the animals having taken note of the large animal populations in the reserve.

Majority of the respondents 92.10%, (n=128) said that their main reason for visiting the facility was to view wildlife, followed by 2.90%, (n=4) who said they were in the facility to just be away from their usual places. A low number of respondents 1.40%, (n=2), gave their reason for visiting the facility as to experience the locality's culture while another 1.40%, (n=2) of the respondents were in the facility for; honeymoon holiday and for research. The phenomenon crossing of the Mara River by close to 2 million animals could help explain why most of the respondents of the lodge facilities had visited the lodge facilities.

Table 4.2. Characteristics of Respondents.

Demographic Characteristic of respondents	Frequency	Valid Per cent (%)
Gender		
Male	61	44.90
Female	75	55.10
Total	136	100.00
Country of origin		
Kenyan	27	19.90
Foreigner	109	80.10
Total	136	100.00
Age		
25 – 35 years	63	46.30
36 – 50 years	53	39.00
Above 50 Years	20	14.70
Total	136	100.00
Previous visit		
Yes	90	66.20
No	46	33.80
Total	136	100.00
Mode of transport		
Road	42	30.90
Air	94	69.10
Total	136	100.00
Period of stay		
1 Day	2	1.50
2 Days	67	49.30
7 Days	64	47.10
More than 7 Days	3	2.20
Total	136	100.00
Motivation of Visit		
To view wildlife	128	94.10
To experience the local culture	2	1.50
Just to be away from their usual place	4	2.90

Other specified reasons	2	1.50
Total	136	100.00

4.3 Sustainable Tourism Indicators

In order to address specific objective number one of the study namely: To establish sustainable tourism indicators for Lodge facilities within Maasai Mara National Reserve, the data were subjected to descriptive statistics. Specifically, means and standard deviations were calculated for each variable from each of the six study constructs. The section that follows provides descriptive analysis results from heritage, infrastructure, enterprise, community, visitor, and administration study constructs.

4.3.1 Heritage Indicators

In Table 4.3.1 is presented ranked means for indicators that lodge facility guests considered to be important in the heritage study construct of sustainable tourism. Any value greater than 3.00 was considered to be significant.

Table 4.3.1: Heritage indicators

Heritage Indicator	Rank	Mean	SD
The quality of drinking water supplied in the facility is good	1	4.86	.35
The quality of the air around the lodge facility is good	2	4.82	.38
Drinking water supplied in the facility does not have heavy metal impurities	3	4.65	.51
There exists in the facility written records of the history of the community and area	4	4.07	.93
The facility provides historic information about the surrounding community	5	3.90	.83
Tourism in the area contributes towards, maintenance, restoration and preservation of the culture of the community living in the surrounding area	6	3.82	.89
The facility conserves important artefacts from the area	7	3.79	.78
The facility has designated frameworks under which historic structures and monuments from the area are recognized	8	3.26	.69
The facility has enacted legislation to preserve the structure of the culture of the local community	9	3.11	.66
The facility's management has set aside a percentage of the income to maintain, restore and preserve the culture of the community living around the area	10	2.87	.61
The members of the community living around the facility have previously demonstrated their displeasure with the air pollution resulting from the facility	11	1.60	.75
There are cases of respiratory illnesses reported by the local residents from the activities of the facility	12	1.55	.57
The culture of the community living around the area is threatened	13	1.34	.68
The culture of the community living around the area is not authentic	14	1.32	.79
Visitor has suffered respiratory illness as a result of their stay in the facility	15	1.21	.42
The guest has personally reported a complain to the management about air pollution by the facility	16	1.10	.43

The findings illustrate that the lodge facility's guests agreed that the quality of the drinking water supplied in the lodge facilities was good followed by the quality of the air in the surrounding. These were followed by: lack of heavy metal impurities in the drinking water; keeping records of the history of the surrounding and area; providing the historic information of the community to the guests; contribution of tourism towards the maintenance restoration and preservation of the culture of the community; conservation of important artifacts from the area; having designated frameworks to recognize historic structures and monuments in the area, having a legislation to preserve culture with means of 4.86, 4.82, 4.65, 4.07, 3.90, 3.82, 3.79, 3.26 and 3.11 respectively.

Further, Table 4.3.1 shows that relatively few lodge facilities' guests agreed that; the respective lodge facilities had set aside a certain percentage of their income for maintaining and restoring the local community's culture; that the community living around the lodge facilities had previously demonstrated their displeasure from air pollution by the respective lodge facilities; that there existed a record of reported cases of respiratory illnesses by the local community; that the local community's culture was threatened; that the local community's culture was not authentic; that guests had personally reported cases of respiratory illnesses that they suffered during their stay at the facility; and; that there were reported cases of air pollution by the guests to the respective lodge facilities' managements in that order.

The geographical location of the various lodge facilities in Maasai Mara National Reserve could probably be the reason why guests to the respective lodge facilities did not experience air pollution from the lodge facilities and hence the low means for the variables; the guests suffered

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respiratory illness from the pollution resulting from the facility; and, the guest had personally reported cases of air pollution to the facility's managements respectively (see Table 4.3.1).

4.3.2: Infrastructure indicators

In Table 4.3.2 is presented ranked means for indicators that lodge facility guests considered to be important in the infrastructure study construct of sustainable tourism. Any value greater than 3.00 was considered to be significant.

Table 4.3.2: Infrastructure indicators

Enterprise Indicator	Rank	Mean	SD
The facility practices water conservation mechanisms	1	4.83	.40
The water supplied by the facility is treated	2	4.59	.49
The facility has rooms accessible to persons with disabilities	3	4.58	.63
The visitor was able to see the night sky clearly during their stay	4	4.38	.80
The facility has restrooms accessible via wheel chair	5	4.31	.67
The facility has hired medical personnel who work within the facility	6	4.01	.97
The facility is accessible by both public and private means of transport	7	3.91	1.28
The facility recycles more than 50% of its grey water	8	3.74	1.04
The guest was able to access the facility within the anticipated time	9	3.64	.89
The visitor met persons with disabilities in the facility during their stay	10	1.72	1.04
The facility experiences days of complete water outage	11	1.39	.49
The facility imports water from the local community	12	1.30	.51
The facility exports water to the local community	13	1.25	.56
The visitor has personally suffered a water-borne illness as a result of their stay in the facility	14	1.11	.55

Most lodge facilities in Maasai Mara National Reserve were reported to have been practicing water conservation measures. Similarly, the results in Table 4.3.2 show that a majority of the lodge facilities practiced water treatment. Further, the results show that most of the lodge facilities had guest rooms accessible to persons with disabilities.

In spite of the lodge facilities having facilities to accommodate guests with disabilities, it is important to note that, the presence of guests with disabilities within the lodge facilities was minimal, hence the low mean score for the variable; the visitor met persons with disability during their stay at the facility (see Table 4.3.2). Probably, the lodge facilities did not pay enough attention to market their hospitality product to guests with disabilities and hence the low mean score.

In Table 4.3.2, it can also be noted that hardly were there any cases of water-born diseases reported by guest to the facilities' managements. This could be attributed to the fact that the quality of drinking water supplied to the guests by the lodge facilities was good as earlier seen in Table 4.3.1 and that lodge facilities were seen to practice water treatment as seen in Table 4.3.2.

Being located in a protected area, most lodge facilities could probably not be in a position to interact with the local community to the extent of importing or exporting water to them. This could probably help explain the low mean score for the variables; the facilities exported water to the local community members, and; the facilities imported water from the local community in that order (see Table 4.3.2).

4.3.3: Enterprise indicators

As it can be observed, Table 4.3.3 presents the means for indicators that lodge facility guests considered to be important in the Enterprise study construct of sustainable tourism. The indicators are presented in order of their mean scores starting from the highest to the lowest as perceived by lodge facility guests. Any indicator that had a mean score value greater than 3 was considered to be significant.

Table 4.3.3: Enterprise indicators

Enterprise Indicator	Rank	Mean	SD
Employees working in the facility are qualified in what they do	1	4.91	.28
The facility maintains very good cleanliness standards	2	4.81	.41
Sewerage water form the facility is treated for re-use	3	4.74	.44
There is no noise pollution resulting from the facility	4	4.73	.45
Organic and inorganic waste from the facility are separated	5	4.70	.46
There are measures in the facility to control energy use	6	4.65	.56
Employees in the facility are both locals and foreigners	7	3.47	.54
50% of the employees in the facility are employed on a full time basis	8	3.40	95
50% of energy used in the facility is drawn from renewable sources	9	3.28	1.46
50% of energy used in the facility is generated by the facility itself	10	2.95	1.35
Supplies used in the facility are drawn from the locality	11	1.97	.83
There has been complains by the local community about noise pollution by the facility	12	1.45	.68
The ratio of locals to foreigners working in the facility is 1:1	13	1.40	.63

In Table 4.3.3 it can be noted that, lodge facilities' guests agreed that the employees to the facilities were qualified in what they did, hence the mean score of 4.91 for the variable; employees working in the facilities were qualified in what they did.

Lodge facilities were also reported to have maintained very good cleanliness standards and that they also treated their sewerage water for re-use in that order (see Table 4.3.3). In an effort to

enhance their hospitality to their guests, lodge facilities probably considered cleanliness as an important aspect that would appeal to the guests, which would on the other hand assure them continued visitation and guaranteed revenue ultimately. The fact that lodge facilities were reported to practice sewerage water treatment could be attributed to the need to save the costs of operation as well as the desire to practice sustainable tourism.

It is also important to note that a majority of the lodge facilities' guests reported that there was no noise pollution resulting form the respective lodge facilities, hence a mean score of 4.73. This could be attributed to the geographical set-up within which the lodge facilities are located and also to their kind of business and target market. As seen earlier in Table 4.2, about 94.10% of the guests to the lodge facilities reported that their motivation to visit the lodge facilities was to view wildlife. As such, the lodge facilities' guests would probably not be very keen to demand the kind of entertainment from the lodge facilities that would result in noise pollution for example loud music. This could therefore probably explain the high mean score for the variable; there was no noise pollution resulting from the facility (see Table 4.3.3).

The results also show that in spite of the lodge facilities drawing more than 50% of their energy from renewable sources, it was not easily agreeable to the guests that more than 50% of the energy was being produced within the facilities themselves. A probable explanation for this would be that, guests would probably not easily ascertain the source of the energy used by the facilities from the comfort of their rooms.

Further it is important to note that few lodge facilities' guest agreed that; supplies used in the respective lodge facilities were drawn from the locality. The low mean score (1.97) for this variable (see Table 4.3.3) could be attributed to the fact that guests would probably not be in a

position to tell the source of the supplies that were used to enhance their stay in the facilities unless the supplies had their source information labeled on them.

Another important thing to note from Table 4.3.3 is that; few guests agreed that there were complains reported by the local community members about noise pollution by the lodge facilities. Being that the lodge facilities are located in a protected area, could probably explain the low mean score for this variable since the settlement areas for the community are located at relatively far distances from the lodge facilities.

Finally, Table 4.3.3 shows that the variable; the ratio of foreigner employees to local employees in the facilities was 1:1, scored the lowest mean score (1.40). This could be attributed to the fact that, from the physical outlook or even skin pigmentation, a person who does not have further information about someone else, cannot certainly tell their nationality.

4.3.4. Community indicators

In Table 4.3.4 is presented the means for indicators that lodge facility guests considered to be important in the Community study construct of sustainable tourism. The indicators are presented in the order of their importance as perceived by the lodge facility guests. Any mean score value greater than 3.00 was considered to be significant.

Table 4.3.4: **Community indicators**

Community Indicator	Rank	Mean	SD
Facility has employed both men and women	1	4.98	.15
Ration of male to female employees in the facility is 1:1	2	4.55	.50
Guest is fully aware of the values of the surrounding community	3	4.24	.60
Facility is designed according to vernacular architecture	4	3.00	.73
Recreation facilities in the facility are accessible to the local community members	5	2.05	.88
Facility charges subsidized fees to the local community members	6	1.87	.84
Facility is congested with other guests	7	1.15	.51

The variables: the lodge facilities employed both men and women, and, the ratio of male to female employees in the lodge facilities was 1:1, had the highest mean scores of 4.98 and 4.55 in the community study construct respectively as shown in Table 4.3.4. Being male or female is a fact that can probably be easily identified from the outward physical outlook by anyone than being in a position to count all the employees of a facility and be accurate to estimate the ratio of either gender unless one is provided with their exact demographic information. This could probably explain why the former has a higher mean score value (4.98) than the later (4.55).

In Table 4.3.4 it can also be noted that relatively few lodge facilities were reported to have their recreational facilities located within them as being accessible to the local community members. Again this could be attributed to the geographical set-up of the lodge facilities and the relatively long distances between the local community' settlement areas and the location of the lodge

facilities. In addition, and in relation to this, the results in Table 4.3.4 suggest that, very few lodge facilities charged special subsidized rates to the local community members. As seen earlier in Table 4.3.3, the results suggested that very few lodge facilities sourced their supplies from their locality. This could probably explain the economic incapacitation of the local community members to afford the hospitality product that the lodge facilities were dealing with and further that, on the other hand, lodge facilities did not consider the local community members as a target market for them.

Finally Table 4.3.4 shows that very few lodge facilities' guests felt that the lodge facilities were congested with other guests and thus the lowest mean score (1.15) for this variable. This could be attributed to the few accommodation spaces within each of the lodge facilities as seen in Table 3.2. The low mean score for this variable could be attributed to the low international visitor turnout in the entire country at the period in which data for this study was being collected, partly due to the acts of terrorism which were rampant at that time a fact that saw many source countries issue travel advisories to their citizens against visiting Kenya, and partly due to the global recession that was being experienced around the same time. It could also be attributed to the fact that the period in which this study was conducted, Kenya was just about to hold its general election and the fact that the previous general election was marked with tribal violence, the country was still suffering from low confidence from international visitors and negative publicity.

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4.3.5 Visitor indicators

In Table 4.3.5 is presented means for sustainable tourism indicators that lodge facilities' guests considered to be important in the visitor study construct of sustainable tourism. The variables are presented in the order of their importance as perceived by the lodge facilities' guests. Any variable that scored a mean score value greater than 3.00 was considered to be significant.

Table 4.3.5: Visitor indicators

Visitor Indicator	Rank	Mean	SD
Guest would revisit the facility	1	4.97	.21
Guest was satisfied with the level of service	2	4.43	.60
Members of the local community are hospitable	3	4.39	.55
Lodge facility's management is very good	4	4.38	.50
Guests were provided with exactly what they went for in the facility	5	4.35	.54
Guest got value for their money	6	4.23	.60
Level of service in the facility was high	7	4.22	.55
Facility has a clear policy on child prostitution	8	2.67	1.25

A majority of lodge facilities' guests agreed that they would re-visit the respective lodge facilities thus the highest mean score (4.97) for the variable; guests would revisit the facility, as seen in Table 4.3.5. This could be attributed to the fact that most guests were satisfied with the level of service as provided in the respective lodge facilities', that the members of the community living around the facility were hospitable, and, that the respective lodge facilities' managements were good which scored 4.43, 4.39 and 4.38 respectively. Further, the return visit

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decision would also be attributed to the commitment by the lodge facilities to meet the expectations of the guests; their commitment to provide guests with value for their money as well as their commitment to provide a high level of service, variables that also scored means of 4.35, 4.23 and 4.22 respectively.

Few lodge facilities were reported to have policies on child prostitution (mean score of 2.67) as seen in Table 4.3.5. This could partly be attributed to the geographical location of the lodge facilities and partly due to the inability of guests to locate such policies within the facilities. The absence of child prostitution policies from the majority of the lodge facilities could be attributed to the fact that few or no cases of child prostitution have been previously reported in lodges within Maasai Mara National Reserve unlike other destinations in the country for example the Kenyan coast.

4.3.6 Administration indicators

In Table 4.3.6 is presented ranked means for sustainable tourism indicators that lodge facilities' guests considered to be important in the Administration study construct of sustainable tourism. Any indicator that scored a mean score value greater than 3.00 was considered to be significant.

Table 4.3.6: Administration indicators

Administration Indicator	Rank	Mean	SD
Facility has a clear policy on environmental and sustainability issues well displayed	1	4.44	.69
Facility has installed environmentally sound technologies for example water and energy use regulations	2	3.26	.84
Employees of the facility are well trained on environmental issues	3	3.09	.65

Lodge facilities' guests considered all the variables in the administration study construct to be important hence the mean scores above 3.00 for each of the variables as seen in Table 4.3.6.

Majority of the lodge facilities were reported to have enacted clear policies on environmental and sustainability issues (see Table 4.3.6). This could be attributed to the fact that all the sampled lodge facilities had passed the criteria of Eco-rating by the Ecotourism Society. Enactment of such policies and the general practice of sustainability can be thought to be the core of such criteria.

It is also important to note that the training of employees on sustainability issues scored a relatively lower mean score (3.09) though above the significant 3 (see Table 4.3.6). The relatively lower mean score could probably be attributed to the few chances of interaction that guests would have between them and the employees to the extent of judging their knowledge and training levels on sustainability issues.

4.4 Key Sustainable tourism indicators

The second specific objective of the study was to identify key sustainable tourism indicators to the respective management of lodge facilities within Maasai Mara National Reserve. In order to address this objective, all the variables in each of the six study constructs that scored mean scores of 3.00 and above were subjected to factor analysis. The following section presents factor analysis results and discussions. The results and discussions are presented in subsections of key sustainable tourism indicators, key infrastructure indicators, key enterprise indicators, key community indicators, key visitor indicators and lastly, key administration indicators.

Before proceeding with factor analysis; the data was examined for suitability to be subjected to factor analysis. Table 4.4.0 presents Keiser Meyer Olkin and Bartlett's test of sphericity scores for all the variables. The values resulting from both tests show that the data was fit to be subjected to factor analysis.

Table 4.4.0. Measures of sample adequacy for factor analysis

Variables	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity (sig.)
Water quality	.813	.000
Air quality	.641	.000
Archaelogy & History	.767	.000
Culture	.711	.000
Water infrastructure	.651	.000
Transport	.810	.000
Amenities	.844	.000
Sustainable practices	.725	.000
Communication	.733	.000
Labour	.832	.000
Access	.811	.000
Population	.735	.000
Visitor bahavior	.891	.000
Hospitality	.693	.000
Service	.601	.000
Administration	.613	.000

Source; survey data, 2012

4.4.1 Key heritage indicators

In order to identify the key heritage indicators of sustainable tourism, all the indicators that scored a mean of 3.00 and above in the descriptive analysis phase were subjected to factor analysis. Principle axis factoring (PAF) was employed as the main factor extraction method. All the factors were rotated using Varimax rotation method for the 5-point likert scale survey questionnaires.

Following this process, three heritage factors were computed namely: area history recognition factor, water resource quality factor and local culture conservation factor.

These factors explained 60.11% of the total variance indicating that they were significant in explaining heritage indicators. Factor 1 accounted for 29.48 % of the total variance while factor 2 and factor 3 accounted for 16.82 % and 13.81% of the total variance respectively.

Four items loaded on factor 1(The facility provides historic information about the local community, the facility preserves important artifacts from the area, Tourism in the area contributes towards the maintenance, preservation and restoration of the culture of the community living around the area, and, There exists in the facility written records about the local community and area) -see Table 4.4.1.

It can also be seen from Table 4.4.1 that two items loaded on factor 2 (The quality of the drinking water supplied in the facility is good and; There are no heavy metal impurities in the drinking water supplied to the guest).

Further, Table 4.4.1 reveals that only one item loaded on factor 3 (The facility has designated frameworks under which historic structures and monuments from the area are recognized.

As it can also be seen from Table 4.4.1, it is evident that certain factors were considered more important than others. Area history recognition factor was considered to be the most significant factor in this case since it explained the greatest percentage of the variance.

These findings agree with Gunn (1994) who asserts that, sustainable tourism needs to prevent the deterioration of the social, cultural, and ecological systems of a host community. The history of an area can form a major attraction for tourists to itself. An areas history includes aspects of the general ancient lifestyle of a host community, the natural physical features and built environments which have a bearing on the history of the region. The unique annual wildebeest migration across the Mara River forms a unique historic phenomenon that has in the past drawn so many visitors to Maasai Mara National Reserve, who have, on the other hand become visitors to the lodge facilities.

Even though area history recognition is an important point to focus on in sustainable tourism practice, the other factors cannot be ignored. Water resource quality factor for example, forms a strong pillar in tourism. The way the water resource in an area is used, differentiates sustainable tourism from mass tourism (Inskeep, 1991). Similarly making proper use of water, as well as providing good quality water to the guest, could be seen as influencing the satisfaction level of the guest as well as facilitating their return-visit decision as seen in the earlier results (see Tables 4.3.1 and 4.3.5). In addition, as seen earlier in the literature, Sustainable tourism must show concern for the natural environment by protecting the physical and man-made resources, while at the same time minimizing negative impacts (Inskeep, 1991; Sharpley & Sharpley, 1997; Butler, 1993).

In spite of the local culture conservation factor accounting for the lowest percentage of the total variance (13.81%), it is important to note that the culture of a community as well can form an

important attraction to visitors in a particular region. The non-hunter culture of the Maasai, who are the majority ethnic community in Maasai Mara, cannot be ignored as having facilitated in the sustenance of the main attraction (wildlife), in the Reserve as seen in the earlier result (see Table 4.2). These findings agree with Gursoy (2002), who asserts that the culture of a host community is a resource for both identity as well as an economic asset. It can be argued that it is upon realization by lodge facilities of the importance of the local community's culture that they have established frameworks to recognize historic structures and monuments which form part of the cultural heritage of the area. On the other hand it is also important to note that with increased growth in the numbers of visitors in an area, the area and its culture are at a threat from negative impacts. Croal (1995) is keen to note that such areas that have been known to bear more negative impacts from tourism on natural, constructed and cultural resources including the loss of authenticity due to the adaptation to the tourist's culture.

Table 4.4.1: Heritage indicators factors

MEASURED VARIABLES	Factors		
	1	2	3
The quality of drinking water supplied in the facility is good		.79	
Drinking water supplied in the facility is free from heavy metal impurities		.51	
The facility provides historic information about the surrounding community	.69		
The facility conserves important artifacts from the area	.80		
The facility has designated frameworks under which historic structures and monuments from the area are recognized			.82
Tourism in the area contributes towards the maintenance, preservation and restoration of the culture of the community living around the area	.69		
There exists in the facility written records of the local community and area	.72		

4.4.2 Key infrastructure indicators

Just like with key heritage indicators of sustainable tourism, all the infrastructure indicators that scored a mean of 3.00 and above in the descriptive analysis phase were subjected to factor analysis. Similarly, Principle axis factoring (PAF) was employed as the main factor extraction method. All the factors were also rotated using Varimax rotation method for the 5-point likert scale survey questionnaires.

Following this process, four factors were computed. The factors include; physical facility design factor, facility accessibility factor, healthcare concern factor, and water recycling and treatment.

These factors explained 68.78% of the total variance indicating that they were significant in explaining infrastructure indicators of sustainable tourism. Factor 1 accounted for 25.90% of the total variance while factor 2, 3 and 4 accounted for 18.37 %, 13.30% and 11.21% of the total variance respectively.

In Table 4.4.2 it can be seen that two items loaded on factor 1(The facility had rooms accessible to persons with disabilities, and, the facility has restrooms accessible via wheel chair), while two items loaded on factor 2 (The facility was accessible via both public and private means of transport, and; the guest was able to access the facility within the anticipated time). Factor 3 on the other hand, had one item that loaded on it (The facility has employed medical personnel who work within the facility), while a further two items loaded on factor 3 (The facility recycles more than 50% of its grey water, and; the water supplied by the facility is treated).

It is also evident from Table 4.4.2 that certain factors were considered to be more important than others. Physical facilities design factor, (factor 1) for example, was considered to be the most significant in this case. The accessibility of a lodge facility to all people including persons with

disabilities is a critical element of consideration that anyone who cares about sustainability must address. The findings of this study therefore agree with Miller (2001), who, while emphasizing on the importance of access-for-all, pointed out that, the extent to which a disabled guest is able to enjoy an equal service to that enjoyed by a non-disabled guest, is an essential part of sustainable tourism. He further notes that, tourist facilities need to overcome physical factors which make it impossible or unreasonably difficult for disabled people to use a service. This he says can be done by providing the service in a reasonable alternative method. By installing physical facilities that allow use by all the people without discrimination, for example rooms and restrooms that are accessible via wheelchairs, lodge facilities prove to have confirmed their realization of the importance of customer satisfaction and the access-for-all principle which are key requirements in achieving sustainable tourism.

Apart from physical facility's design that accounted for the greatest percentage variance (25.90%), other factors cannot be ignored as they too play an important role in achieving sustainable tourism through infrastructure as seen in Table 4.4.2. For example, a lodge facility's accessibility, which involves, the time taken to access the facility as well as the availability of alternative means of transport to and from the facility, forms a factor of evaluation by the guests on their level of satisfaction which, as seen earlier is a key point of concern in sustainable tourism. This could be the reason behind facility accessibility factor (factor 2) coming second with a percentage variance of 18.37% after the physical facilities design factor. Minimizing negative impacts on the environment is also another goal of sustainable tourism. Having carefully organized visitor transportation networks can help achieve the goal of minimizing negative impacts of tourism (Ceballos, 1996; Gunn & Var, 2002).

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The geographical location of the lodge facilities in Maasai Mara does not allow both guests and employees of the facilities to access medical attention from elsewhere on an emergency situation. Though healthcare concern factor accounted for a lower variance (13.30%) than the previous two factors, it is important to note that, for guest satisfaction and the feeling of security for the employees of lodge facilities, the lodge facilities had contracted medical personnel to work from within the facilities. The findings of this study concur with McIntyre (1993) who notes that human resource protection is one of the key issues that sustainable tourism must consider.

Though it accounted for the least percentage variance (11.21%), water recycling and treatment factor is an important element that cannot be ignored in the achievement of sustainable tourism. The low percentage variance could be attributed to the inability of the guests to locate the water treatment and recycling facilities since in most cases such facilities would always be located in the backyard and guests would not have free access to such areas. These results agree with the views of several authors for example; according to Stabler (1997), the natural environment is an important attraction as well as a valuable tourism resource. Fennel (1999) on the other hand asserts that, both the social and the natural environment have a right to be conserved. Bramwel & Lane (1993) too, identify waste reduction, re-use and recycling, as key factors considered in certification criteria.

Table 4.4.2: Infrastructure indicators factors

MEASURED VARIABLES	Factors			
	1	2	3	4
The facility recycles more than 50% of the grey water				.50
The water supplied in the facility is treated				.46
The facility is accessible via both public and private means of transport		.77		
The guest was able to access the facility within the anticipated time		.82		
The facility has rooms accessible to persons with disabilities	.82			
The facility has restrooms accessible via wheel chair	.78			
The facility has employed medical personnel who work within the facility			.53	

4.4.3 Key Enterprise indicators

In order to identify the key infrastructure indicators, all the infrastructure indicators that scored a mean of 3.00 and above in the descriptive analysis phase were subjected to factor analysis. Similarly, Principle axis factoring (PAF) was employed as the main factor extraction method. All the factors were also rotated using Varimax rotation method for the 5-point likert scale survey questionnaires.

Following this procedure, three factors were computed namely: energy management factor, waste management factor, and, labor source factor. These factors explained 57.14% of the total variance indicating that they were significant in explaining enterprise indicators. Factor 1 accounted for 23.06% of the total variance, while factor 2 and factor 3 accounted for 18.17% and 15.90% of the total variance respectively.

Three items loaded on factor 1(50% of the energy used in the facility is drawn from renewable sources; the facility has put measures to control the use of energy, and; 50% of the energy used in the facility is generated by the facilities themselves), while only one item loaded on factor 2

(Employees in the facilities were both locals and foreigners). Just like in factor 2, only one item loaded on factor 3 (Organic and inorganic waste generated from the facilities is separated).

It is also evident that certain factors were considered to be more important than others. Energy management factor was considered to be the most important factor in this case, as can be noted from the high percentage variance (23.06%) that it explains. Energy forms one of the biggest expenditure items in the tourism and hospitality industry. This is because energy is used in almost every aspect of the operation of a hospitality enterprise including in cooking, lighting, controlling of extreme temperatures, preserving food and drinks for later use, among other uses. It is upon the realization of the need to control the use of energy, that lodge facilities could have established energy control measures. In addition, the need to appeal to the environmentally sensitive market and to practice sustainable tourism could form part of the reason why lodge facilities had turned to renewable energy sources as seen in the results earlier (see Table 4.3.3). The findings of this study concur with Kamal and Vinnie (2007), who are keen to note that, preventing pollution; product life-cycle extension and energy conservation are some of the environmental benefits that can be drawn from tourism. Lodge facilities could also have realized the rise in demand for hospitality facilities that practice environmental protection by practicing measures such as; saving water, saving energy and reducing waste (Kamal & Vinnie, 2007).

Even though energy management has been seen to be a key factor of consideration in sustainable tourism, other factors cannot be ignored. For example it is also important to put into consideration the role that waste management plays in achieving sustainable tourism. Waste while disposed to the environment in forms that would not decompose easily would take away the opportunity to leap the expected benefit from the same environment at a future date. This for

example, would be through the decline in the aesthetic appeal that could result from improper waste disposal. Being an important attraction to the tourist, the physical environment needs to be well looked after. One such good ways of looking after the environment is through proper disposal of waste in forms that would easily decompose as well as reducing the amount of the waste that is disposed at a particular time through recycling. The findings of this study also agree with Sirikaya (2002), who outlines the hospitality industry as consisting of core attributes including its functional performance and non-essential attributes that can deliver secondary benefits such as environmental performance. Environmental performance may relate to the tourism product itself or an aspect of it like water use, waste disposal, or use of alternative sources of energy which gives an opportunity for product differentiation (Kamal & Vinnie, 2007).

Though it accounted for the least percentage of the total variance (15.90%), labor source factor is equally important. As noted by United Nation (2001), creating employment is one of the core economic and social aims of sustainable tourism. However, Stallworth (1997) is keen to note that sustainable tourism planning and management must focus on the most effective deployment of local human capital and other related resources. As such, sustainable tourism should provide employment to both locals and foreigners who are competent to handle opportunities that are available without any discrimination or preference. The desire to practice sustainability and to deliver the required visitor satisfaction level could be seen as the reason for the employment of people from the local community as well as foreigners who bear different knowledge capacities in their different areas of employment as seen in Table 4.4.3. The low variance explained by this factor could be attributed to the possible inability of guests to identify employees as being local

or foreigner just from their physical appearance. Factor loadings for the various variables are shown in Table 4.4.3

Table 4.4.3: Enterprise indicators factors

MEASURED VARIABLES	Factors		
	1	2	3
50% of energy used in the facility is drawn from renewable sources	.51		
The facility has put clear measures to control energy use	.69		
50% of energy used in the facility is generated by the facilities themselves	.47		
Organic and inorganic waste from the facilities is separated			.55
The facility employs both locals and foreigners		.77	

4.4.4 Key Community indicators

This section provides factor analysis results for community indicators of sustainable tourism. In order to identify the key community indicators, all the community indicators that scored a mean score of 3.00 and above in the descriptive analysis phase were subjected to factor analysis. Principal axis factoring was utilized as the main extraction method while Varimax was utilized as the rotation mode for the 5-point likert scale questionnaire items.

Following this procedure, two factors were computed namely: gender respect factor, and; community values factor. These factors explained 56.28% of the total variance indicating that they were significant in explaining community indicators. Factor 1 accounted for 29.40% of the total variance while factor 2 accounted for 26.90% of the total variance. One item loaded on factor 1 (the guest was fully aware of the values of the surrounding community). Similarly, one item loaded on factor 2 (the facility has employed both men and women). The factor loadings for the various variables that loaded onto each of the factors are presented in Table 4.4.4.

Gender respect factor was considered to be the most important factor of the two factors, as it accounted for the greatest variance (29.40%) of the total variance. True practice of sustainability, should allow access to opportunities to all people without any discrimination based on gender or otherwise. As such the findings of this study agree with Cooper (1980) who asserts that economic sustainability of tourism can be promoted through fair distribution of economic benefits that result from tourism among all the members of the community where the tourism occurs. The high percentage variance explained by this factor can be attributed to the realization by lodge facilities of the need to hire both male and female employees. Williams & Shaw (1988) are also keen to add that skilled worker compensation is one of the ways of distributing economic benefits of tourism to the community members. Either gender has its intrinsic capabilities that are unique to it. Therefore, not either of them can be left out while seeking effectiveness and efficiency in the operation of the lodge facilities.

Respecting the values of the community is also an important aspect of sustainable tourism. It is upon this, that, factor 2 (community values) should also be put into consideration. The values of a community are communicated to the visitors by either having the guests learn them by themselves, or educating the guests. The guests can either be educated by the community members or the employees of the lodge facilities if they posses the knowledge of the values. As noted by Fennel (1999), sustainable tourism can reduce adverse impacts on the environment by implementing education and training programmes to the stakeholders of the industry. Fennel, further adds that, education and training are essential in interpreting information about a site or a community and it increases visitor awareness as well as helping to modify their travel behavior.

Table 4.4.4: Community indicators factors

MEASURED VARIABLES	Factors	
	1	2
Guest is fully aware of the values of the surrounding community		.50
Employees of the facility are both men and women	.52	

4.4.5 Key visitor indicators

This section provides factor analysis results for visitor indicators of sustainable tourism. In order to identify the key visitor indicators, the visitor indicators that scored a mean score of 3.00 and above were subjected to factor analysis. Principal axis factoring (PAF) was utilized as the factor extraction method while the factors were rotated using Varimax rotation method for the 5-poin likert scale questionnaires utilized in this study.

Following this procedure, two factors were computed. The factors are: guest satisfaction and value for money factor, and; community hospitality and quality of service factor. The two factors explained 61.31% of the total variance indicating that they were significant in explaining visitor indicators of sustainable tourism. Factor 1 accounted for 46.30% of the total variance and factor 2 accounted for 15.01% of the total variance. Three items loaded on factor 1 (guest was provided with exactly what they went for in the lodge facility; guests got value for their money; guest was satisfied with the level of service in the facility).

Similarly, three items loaded onto factor 2 (members of the surrounding community are hospitable; lodge facility management is good, and; the level of service in the facility is very high).

In addition it is evident that; guest satisfaction and value for money factor was the most important factor in this case, having explained the greatest percentage variance (46.30%) from the total variance. The reason why guests visit a destination is to consume the services offered there. At very few instances would guests seek to consume something when they have not established the general expectation of what it is, or even its general features. The findings of this study concur with Butler (1993) and McIntyre (1993) when they note that, satisfying guests is a critical element of sustainable tourism. Butler (1999), Hunter (1997) and Wahab and Pigram, (1997), have all enlisted visitor satisfaction among other attributes such as; maintaining the destination attractiveness and use of proper tools, as being part of visitor management which they further say is the core aim of sustainable tourism. Sustainable tourism looks at meeting consumer expectation for environmental products as well as the importance of satisfying their needs so that the product is purchased and the environment benefit achieved (Kamal & Vinnie, 2007).

Besides customer satisfaction and value for money, community hospitality and level of service should also be taken into consideration. The low variance (15.01%) explained by this factor (community hospitality and level of service factor) could be attributed to the low likelihood of the lodge facility guests to interact with the community members while at the facility due to the geographical set-up of the area. It is however important to note that guests would less likely visit a destination if the community around the facility is hostile, thus this factor cannot be ignored. The findings of this study agree with Inskeep (1999) who notes that tourism can improve a community and make its locality a better place to live in. The attitude of the residents of an area about tourism can be positive if the community members perceive tourism as a factor that

improves the recreational facilities that they enjoy or increases opportunities for recreational opportunities (Gursoy, 2002). In addition it should be noted that, with proper planning of tourism, the current appeal of a community destination can be maintained as well as help achieve community goals and objectives (Gunn, 1994, McIntyre, 1993; WTO, 1994; Hall, 2000; Inskeep 1991). Factor loadings for the various variables that loaded on each of the two factors are presented in Table 4.4.5.

Table 4.4.5: Visitor indicators factors

MEASURED VARIABLES	Factors	
	1	2
Surrounding community members are hospitable		.42
Lodge facility management is good		.58
Level of service in the facility was very high		.52
Guests were provided with exactly what they went for in the facility	.61	
Guest got value for their money	.68	
Guest was satisfied with the level of service	.91	

4.4.6 Key Administration indicators

This section provides factor analysis results for administration indicators of sustainable tourism. In order to identify the key administration indicators, all the administration factors that scored a mean of 3.00 and above were subjected to factor analysis. Principal axis factoring (PAF) was utilized as the factor extraction method. Varimax rotation method was used to rotate the factors for the 5-point likert scale questionnaires that were used for this study.

Following this procedure, one factor was computed namely: sustainability policy factor. The factor accounted for 39.30 % of the total variance. Two items that loaded on this factor; (Facility has a clear policy on environmental and sustainability issues well displayed, and, Employees of

the facility are well trained on environmental issues). The factor accounted for 39.30% of the total variance indicating that it was significant in explaining administration indicators for sustainable tourism. However, the low percentage shows that there are other factors that explain administration indicators that were not covered in this study. Inskeep (1991), Gunn (1994) and Hall (2000), are keen to note that, educating staff on environmental issues can help reduce the negative impacts of tourism while at the same time optimize the positive benefits. Education has also been noted to foster the appreciation of the human and natural culture among tourism stakeholders as well as instill community pride (Bramwel & Lane, 1993). McIntyre (1993) also notes that, long-term planning, management and policies are important components of sustainable tourism. Factor loadings for the various variables that loaded on the factor are presented in Table 4.4.6.

Table 4.4.6: Administration indicators factors

MEASURED VARIABLES	Factors
	1
Facility has a clear policy on environmental and sustainability issues well displayed	.40
Employees of the facility are well trained on environmental issues	.43

4.5: Sustainable tourism indicator model for lodge facilities within Maasai Mara National Reserve

In order to address specific objective number three of the study namely: To test the applicability of the DIT-ACHIEV model of sustainable tourism as an effective sustainable tourism indicators model for lodge facilities within Maasai Mara National Reserve, multiple linear regression analysis was conducted for all the variables that loaded on each of the factors. This was done for all the factors that were generated in each of the six study constructs. This section therefore presents regression analysis results for key heritage indicators, key infrastructure indicators, key enterprise indicators, key community indicators, key visitor indicators as well as key administration indicators. The aim of this was to identify the relationships among the variables that loaded on each of the factors generated in each of the six study constructs.

4.5.1: Heritage factor one: Area History recognition

As seen earlier in Table 4.4.1, the 4 items that loaded onto this factor relate to the recognition of historic attributes of the local area. This factor was hence labeled "area history recognition". The R square of the four variables: The facility provides historic information about the local community; The facility preserves important artifacts from the area; Tourism in the area contributes towards the maintenance, preservation and restoration of the culture of the community living around the area and; There exists in the facility written records about the local community and area, is .99.

The F value (2417.61) and the t values registered were highly significant ($p < .001$). The beta values obtained for the predictor variables indicated that the variable; The facility conserves important artifacts from the area, had the greatest contribution towards factor 1 ($\beta = .44$, $t = 29.28$),

while; Tourism in the area contributes to the maintenance, preservation and restoration of the culture of the community living around the area, had the least contribution (β=.29, t= 17.79).

Artifacts include items related to the culture, history or heritage of an area. A collection of such items would easily be visible to guests as they are normally placed in strategic places in a facility as part of attraction to guests. This could therefore be used to explain the high beta values of the item; the facility conserves important artifacts from the area (β=.44, t= 29.28, p <.001).

On the other hand; the contribution of tourism to the maintenance, preservation and restoration of the culture of the community living around the area, could possibly not be ascertained by a guest on an instance, but could possibly be known to the management of the facilities. However the significant t value recorded suggests that the item is also critical in the achievement of sustainable tourism through heritage. Beta values for the various items that loaded onto this factor are as presented in Table 4.5.1

Table 4.5.1: Regression Coefficients for items predicting Area History recognition factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-6.20	.06		-96.43	.000
The facility provides historic information about the local community	.36	.02	.27	20.65	.000
The facility preserves important artifacts from the area	.58	.02	.42	29.28	.000
Tourism in the area contributes towards the maintenance, preservation and restoration of the culture of the community living around the area	.30	.02	.29	17.79	.000
There exists in the facility written records about the local community and area	.36	.02	.30	22.41	.000

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It can be seen in Table 4.5.1 that all the variables were significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Area history recognition = -6.20 + (.36) local community history provision + (.58) Preservation of important artifacts from the locality + (.30) Contribution of tourism to the preservation, maintenance and restoration of local culture + (.36) existence of written records about the local community in the facility.*

4.5.2: Heritage Factor two: Water resource quality

The two items that loaded onto factor 2 as seen in Table 4.4.1, relate to the quality of the drinking water. Thus the factor was labeled "water quality". The R square of the variables; the quality of the drinking water supplied in the facility is good, and; there are no heavy metal impurities in the drinking water supplied to the guest, was .96.

The F value (1636.60) and the t values obtained were highly significant ($p < .001$). The beta values obtained for the predictor variables indicated that; The quality of the drinking water supplied in the facility was good, had the greatest contribution towards factor 2 ($\beta = .84$, $t = 44.73$), while; There are no heavy metal impurities in the drinking water supplied to the guest, had the lowest contribution ($\beta = .28$, $t = 15.06$).

Water clarity, its taste and smell are some of the attributes that can help one perceive water to be of good quality. The high beta values recorded for the item; the quality of the drinking water supplied in the facility was good ($\beta = .84$, $t = 44.73$, $p < .001$), suggest that the guest found the water to be clear, of the right smell and taste. On the other hand, guests could have not been in a capacity to detect the presence of heavy metal impurities in water just from the use of smell, sight and taste senses. This could be the reason for the low beta values that were registered for

the item; there were no heavy metal impurities in the drinking water supplied to the guest. However, the t value registered for the item was significant and thus it cannot be ignored in the achievement of sustainable tourism. The beta values for each of the items in this factor are as shown in Table 4.5.2.

Table 4.5.2: Regression coefficients for items predicting Water Quality factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-17.26	.30		-57.08	.000
The quality of the drinking water supplied in the facility was good	2.91	.07	.84	44.73	.000
There are no heavy metal impurities in the drinking water supplied to the guest	.67	.05	.28	15.06	.000

In Table 4.5.2 it can be seen that all the variables are significant in contributing towards the model. The regression equation for the model is as follows; *Water resource quality = -17.26 + (2.96) Quality of drinking water + (.67) absence of heavy metal impurities in the drinking water.*

4.5.3: Heritage Factor three: Local culture conservation

This factor was labeled "local culture conservation" because it was related to the efforts made to maintain, restore and conserve the culture of the local community as seen from the variable that loaded onto it in Table 4.4.1. The R square of the variable; the facility has designated frameworks under which historic structures and monuments from the area are recognized was .94.

The F value (2222.20) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .97$, $t = 47.14$). The R square registered for this item suggests that the variable explains 94% of the total variance.

The design of the facility itself, the use of furniture, linen, cutlery, among other items that are designed according to the local community's culture and history, are some of the ways that a facility can recognize important cultural and historic attributes of a community. Another way to recognize the history of an area is to have pieces of literature highlighting important historic occurrences about the area displayed in strategic places within the lodge facility. There could be some of the reasons that explain the high beta values for this item as it can be seen in Table 4.5.3. The high beta values registered for the item suggest that the item is important in achieving sustainable tourism.

Table 4.5.3: Regression coefficients for items predicting Local Culture Conservation factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-5.53	.12		-46.13	.000
The facility has designated frameworks under which historic structures and monuments from the area are recognized	1.70	.04	.97	47.14	.000

As it can be seen in 4.5.3, the variable was significant in predicting the factor. The regression equation for the model is as follows; *Local culture conservation = -5.53 + (1.70) Established designated frameworks under which historic structures and monuments are recognized*

4.5.4: Infrastructure Factor one: Physical facilities design

The two items that loaded on this factor are related to the design of the physical facilities and amenities in the lodge facilities (see Table 4.4.2) hence it was labeled "physical facilities design". The R square of the 2 variables; the facility has rooms accessible to persons with disabilities, and; the facility has restrooms accessible via wheel chair, is .75.

The F value (194.82) and the t value registered were highly significant ($p < .001$). The beta values obtained for the predictor variables indicated that; there were restrooms accessible via wheel

chair, has the greatest contribution towards factor 1 (β=.64, t= 10.50), while; the rooms in the facility were accessible to persons with disabilities, had the least contribution (β=.29, t= 4.66).

The possibility of guests to evaluate the accessibility or otherwise of a restroom via wheel chair while within the room itself, could be the reason why this item has high beta values (β=.64, t= 10.50, p <.001), as opposed to the difficulty in deciding from how far or near a room should provide for access to people with disabilities, thus the low beta values (β=.29, t= 4.66, p <.001) - see Table 4.5.4. However the t values registered for the item show that it is significant and cannot be ignored in the quest to achieve sustainable tourism.

Table 4.5.4: Regression Coefficients for items predicting Physical Facilities Design factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-7.29	.39		-18.72	.000
The facility has rooms accessible to persons with disabilities	.51	.11	.29	4.66	.000
The facility has restrooms accessible via wheel chair	1.31	.11	.64	10.50	.000

As it can be seen from Table 4.5.4 all the variables were significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Physical facility design = -7.29 + (.51) Possession of rooms accessible to persons with disability + (1.31) possession of restrooms accessible to persons with disabilities.*

4.5.5: Infrastructure Factor two: Facility accessibility

The two items that loaded onto this factor were related to the means and the ease of accessing the facility by the guests, thus, the factor was labeled "facility accessibility". The R square of the two variables: The facility was accessible via both public and private means of transport, and; the guest was able to access the facility within the anticipated time, is. 99.

The F value (4410.50) and the t values registered were highly significant ($p < .001$). The beta values obtained for the predictor variables indicated that: The guest was able to access the facility within the anticipated time, has the greatest contribution towards factor 2 ($\beta = .69$, $t = 51.64$), while; the facility was accessible via both public and private means of transport, had the least contribution ($\beta = .41$, $t = 30.35$) – See Table 4.4.4.

The R square of the two items (.99) mean that they explain 99% of the variance. Before leaving for a lodge facility, guests will most likely have a set itinerary showing the various activities within the trip alongside the pre-identified means of transport. This could be the reason why the item; the guest was able to access the facility within the anticipated time, had higher beta values ($\beta = .69$, $t = 51.64$, $p < .001$) than those of the item; the facility was accessible via both public and private means of transport ($\beta = .41$, $t = 30.35$, $p < .001$).

The reason why the latter item has low beta values could also be attributed to the inability of some of the guests to judge the farthest or otherwise a public or private means of transport should pick or drop the guest on their trip to or from the facility. The t value registered for the item, suggest that it is significant in achieving sustainable tourism through infrastructure.

Table 4.5.5: Regression Coefficients for items predicting Facility accessibility factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-4.66	.05		-89.78	.000
The guest was able to access the facility within the anticipated time	.89	.02	.69	51.64	.000
The facility was accessible via both public and private means of transport	.36	.01	.41	30.35	.000

As it can be observed from Table 4.5.5 all the variables are significant in contributing to the model. The regression equation for the model is thus as follows; *Facility accessibility = -4.66 + (.89) Accessibility within the anticipated time + (.36) Accessibility by both private and public means of transport*

4.5.6: Infrastructure factor three: Healthcare concern

The item that loaded onto this factor (see Table 4.4.2) was related to the health welfare of the guests and the facility's staff members hence the factor was labeled "healthcare concern". The R square of the variable: the facility has employed medical personnel who work within the facility, is .45.

The F value (104.80) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .67$, $t = 10.24$). The R square registered for the predictor variable (.45) indicates that the variable explains only 45% of the variance. This means that there are other variables that relate to healthcare concern that were not covered in this study. Some of these items could be related to the safety of the guest and employees as affected by the physical facility's design, amenities like emergency exits, fire safety preparedness and clear warning and caution instructions in all relevant areas. However, the high beta values ($\beta = .67$, $t = 10.24$, $p < .001$) registered for this item suggest that it cannot be ignored in the desire to achieve

sustainable tourism through infrastructure. The beta values for the item are as presented in Table 4.5.6.

Table 4.5.6: Regression Coefficients for items predicting Healthcare Concern factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-4.12	.41		-9.96	.000
The facility has employed medical personnel who work in the facility	1.02	.10	.67	10.24	.000

According to Table 4.5.6, the variable was significant in contributing to the model. The regression equation for the model is thus as follows; *Healthcare concern = -4.12 + (1.02) Presence of medical personnel hired to work within the facility.*

4.5.7: Infrastructure factor four: Water recycling and treatment

As it was seen in Table 4.4.2, the two items that loaded onto this factor were related to the availability of water treatment mechanisms and the practice of water recycling in the facility, hence the factor was labeled "water recycling and treatment".

The R square of the variables: The facility recycles more than 50% of its grey water, and; the water supplied in the facility is treated is .91. The F value (617.07) and the t values registered were highly significant ($p < .001$). The beta values obtained for the predictor variables indicated that: the facility recycles more than 50% of its grey water variable, had the greatest contribution towards factor 4 ($\beta = .65$, $t = 23.79$), while; the water supplied in the facility was treated variable, had the least contribution ($\beta = .56$, $t = 20.28$) - see Table 4.5.7.

The R square (.91) registered for the predictor variables suggest that the variables explain 91% of the total variance. The possibility of the initial water used in the facility being of good quality and thus not requiring treatment, could be the reason why the lodge facilities recycled water only

after use (grey water) as opposed to treating it for initial use. This could be the explanation of the higher beta values of the item; the facility recycles more than 50% of its grey water (β=.65, t= 23.79, p <.001), than those of the item; the water supplied in the facility is treated (β=.56, t= 20.28, p <.001). The latter item however is evidently significant in attaining sustainable tourism through infrastructure as seen from the t values registered as seen in Table 4.5.7.

Table 4.5.7: Regression Coefficients for items predicting Water recycling and treatment factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-11.89	.40		-29.52	.000
The water supplied in the facility is treated	1.78	.09	.56	20.28	.000
The facility recycles more than 50% of its grey water	.99	.04	.65	23.79	.000

It is clear from Table 4.5.7 that all the variables are significant in contributing to the model. The regression equation for the mode can therefore be written as follows; *Water recycling and treatment = -11.89 + 1.78() Water treatment + (.99) Water recycling*

4.5.8: Enterprise Factor one: Energy management

As seen in Table 4.4.3, the 3 items that loaded onto this factor were related to the source and use of energy by the lodge facilities; hence it was labeled "energy management". The R square of the variables: 50% of the energy used in the facility was drawn from renewable sources; the facility has put clear measures to control energy use, and; 50% of the energy used in the facility is generated by the facility itself, is .91. The F value (353.36) and the t values registered were highly significant (p <.001).

The beta values obtained indicated that: the facility has put clear measures to control energy use, had the greatest contribution towards factor 1 (β=.72, t= 23.22), while; 50% of the energy used in

the facility is generated by the facility itself, had the least contribution (β=.23, t= 7.33) – See Table 4.5.8.

The R square (.91) registered for the predictor variables indicate that the variables explain 91% of the variance. Instructions to switch off room lights when not required, use of electronic smart cards that automatically switch on and off room lights upon entry or exit to a room, use of energy efficient bulbs, use of transparent roofing materials and windows, are some of the possible means that lodge facilities could use to control the energy use. These items are easy to spot and therefore it could be the reason behind the high beta values for the item; facility has put clear measures to control energy use (β=.72, t= 23.22, p <.001).

Energy use management is a key element in sustainable tourism and thus this item is of utmost importance in achieving sustainable tourism. On the other hand, the point of separation between the energy generated in the facility and that sourced from outside the facility, might not have been easy to identify for the guest, which could be the reason behind the lower beta values registered for the item; 50% of the energy used in the facility is generated by the facility itself (β=.23, t= 7.33, p <.001). It is however important to note that the t values registered for this item, suggest that it is significant in the attainment of sustainable tourism through enterprise and thus it cannot be left out. The beta values for each of the predictor variables are as shown in Table 4.5.8.

Table 4.5.8: Regression Coefficients for items predicting Energy management factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-8.79	.30		-29.37	.000
50% of the energy used in the facility is drawn from renewable sources	.28	.03	.33	10.60	.000
The facility has put clear measures to control energy use	1.55	.07	.72	23.22	.000
50% of energy used in the facility is generated by the facility itself	.20	.03	.23	7.33	.000

As it can be seen from Table 4.5.8 all the variables were significant in contributing to the model. The regression equation for the model can be written as follows; *Energy management = -8.79 + (.28) Energy from renewable sources + (1.55) Measures to control energy use + (.20) In-house generated energy.*

4.5.9: Enterprise factor two: Waste management

In Table 4.4.3 it was seen that the item that loaded onto this factor was related to the treatment given to waste from the facilities before it is disposed off completely, hence the factor was labeled "waste management". The R square of the variable: Organic and inorganic waste from the facility is separated, is .61. The F value (176.20) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .78$, $t = 13.27$) – see Table 4.5.9.

The R square registered for the predictor variable means that it explains 61% of the total variance. This means that other variables related to waste management were not covered in this study. Such items could include, enactment environmentally sensitive procurement policies, provision of clear instructions to guests on where to dump waste, restrictions on the use of either inorganic or organic waste to the guests, among other variables. It is however evident from the beta values and the t values ($\beta = .78$, $t = 13.27$, $p < .001$) registered for this item, that it is highly crucial in the achievement of sustainable tourism through enterprise.

Table 4.5.9: Regression Coefficients for items predicting Waste management factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-11.86	.90		-13.21	.000
Organic and inorganic waste from the facility is separated	2.52	.19	.78	13.27	.000

As it can be seen Table 4.5.9, the variable is significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Waste management = -11.86 + (2.52) Organic and inorganic waste separation.*

4.6.1: Enterprise factor three: Labor source

As seen in Table 4.4.3, the item that loaded onto this factor was related to the origin of the employees that worked in the facilities, hence the factor was labeled "labor source". The R square of the variable: Employees of the facility are both locals and foreigners, is .94.

The F value (1840.95) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .97$, $t = 42.91$) – See Table 4.6.1. The R variable (.94) registered for the variable suggests that it explains 94% of the total variance. The high beta values ($\beta = .97$, $t = 42.91$, $p < .001$) registered for the item also suggest that it is crucial in the achievement of sustainable tourism through enterprise.

Table 4.6.1: Regression Coefficients for items predicting Labor source factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-7.79	.18		-42.38	.000
Employees of the facility are both locals and foreigners	2.25	.05	.97	42.91	.000

As it can be seen from Table 4.6.1, the variable is significant in contributing to the model. The model's regression equation can therefore be written as follows; *Labor source = -7.79 + (2.25) Employment of both locals and foreigners.*

4.6.2: Community factor one: Gender respect

As it was seen in Table 4.4.4, the item that loaded onto this factor was related to the awarding of jobs by the lodge facilities to both male and female members of the surrounding community; hence the factor was labeled "gender respect". The R square of the variable: employees of the facility are both male and female, is .66. The F value (263.54) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .81$, $t = 16.23$). The R square (.66) registered for the predictor variable suggests that it explains 66% of the variance. Other variables not covered in this study could be the reason behind the remaining 34%. Such factors could include; the positions of employment held by either gender, the wages paid to either gender, the quality of jobs held by either gender, among other variables. The beta values and the t values ($\beta = .81$, $t = 16.23$, $p < .001$) registered for this item however suggest that it should be factored in the practice of sustainable tourism through community (See Table 4.6.2).

Table 4.6.2: Regression Coefficients for items predicting Gender respect factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-48.47	2.99		-16.22	.000
Employees of the facility are both male and female	9.74	.60	.81	16.23	.000

As it can be seen in Table 4.6.2, the variable was significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Gender respect = -48.47 + (9.74) Employment of both male and female employees.*

4.6.3: Community factor two: Community values

The item that loaded onto this factor (see Table 4.4.4) was related to the knowledge of the values of the surrounding community by the lodge facility guests; hence the factor was labeled "community values". The R square of the variable: guest is fully aware of the values of the

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surrounding community, is .90. The F value (1198.86) and the t values registered were highly significant ($p < .001$). Beta values for this item were ($\beta = .95$, $t = 34.63$) –See Table 4.6.3.

The R square (.90) registered for the variable suggests that it explains 90% of the variance. The values of a certain community could act as an attraction to visitors in a particular region. It could also contribute to the feeling of the sense of security to guests thus encouraging them to visit the region. The high beta and t values ($\beta = .95$, $t = 34.63$, $p < .001$) registered for this item suggest that it should not be left out in the practice of sustainable tourism through community.

Table 4.6.3: Regression Coefficients for items predicting Community values factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-12.46	.36		-34.29	.000
Guest is fully aware of the values of the surrounding community	2.94	.09	.95	34.63	.000

It is clear from Table 4.6.3 that the variable was significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Community values = -12.46 + (2.94) Guest's awareness of the cultural values of the surrounding community*

4.6.4: Visitor factor one: Guest satisfaction and value for money

The three items that loaded onto this factor (see Table 4.4.5) were related to the evaluation of the guest on the, level of service, value for their money and if their expectations were met, hence the label, "guest satisfaction and value for money". The R square of the variables: guest was provided with exactly what they went for in the facility; guest got value for their money, and; guest was satisfied with the level of service in the facility is, .89 .

The F value (362.38) and the t values registered were highly significant ($p < .001$). The beta values obtained indicated that; guest were satisfied with the level of service in the facility, had

the greatest contribution towards factor 1 (β= 1.14, t= 23.22), while; that guests were provided with exactly what they went for in the facility, had the least contribution towards this factor (β= -.07, t= -5.29) – See Table 4.6.4. The R square (.89) registered for the predictor variables means that they explain 89% of the variance. The way the hospitality product is packaged and delivered to a guest for consumption is very important to the guest. This has a direct influence in the judgment given by the guest on the satisfaction or otherwise after the consumption of the product.

The high beta values (β= 1.14, t= 23.22, p <.001) registered for the item; guest were satisfied with the level of service in the facility, suggests that it's a key point of consideration in the achievement of sustainable tourism through visitor.

On the other hand, it is however not possible to meet the expectations of the guest 100%. This could be the reason for the low beta values registered for the item; guest were provided with exactly what they went for in the facility, (β= -.07, t= -5.29, p =.098). This item does not fall within the agreeable significant level and therefore it does not fall in the category of those items that are critical in achieving sustainable tourism. Guest satisfaction is a function of the extent to which their expectations are met or not and as such, it can be concluded that most of their expectations have been met.

Table 4.6.4: Regression Coefficients for items predicting Guest satisfaction and value for money factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-6.97	.28		-24.86	.000
Guest was provided with exactly what they went for in the facility	-.14	.08	-.07	-1.67	.098
Guest got value for their money	-.42	.08	-.23	-5.29	.000
Guest was satisfied with the level of service in the facility	2.12	.09	1.14	23.22	.000

From Table 4.6.4 it can be seen that 2 out of the three variables that contributed to this model were significant. The regression equation for the model can therefore be written as follows; *Guest satisfaction and value for money = -6.97 + (-.42) Value for money + (2.12) Guest's satisfaction with the level of service.*

4.6.5: Visitor factor two: Community hospitality and quality of service

The three items that loaded onto this factor (see Table 4.4.5) were related to the hospitality of the local community members to the guests, the quality of service provided in the facility and hospitality of the facility's management, all as perceived by the guest. Thus this factor was labeled "Community hospitality and quality of service". The R square of the variables: surrounding community members were hospitable; facility management was good, and; level of service in the facility was very high is, .79.

The F value (169.26) and the t values registered were highly significant ($p < .001$). The beta values obtained indicated that; the level of service in the facility was very high; had the greatest contribution towards factor 1 ($\beta = 1.14$, $t = 23.22$), while; local community members are hospitable, had the least contribution towards this factor ($\beta = .32$, $t = 7.58$) – See Table 4.6.5. The

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R square (.79) registered for the predictor variables means that they explain 79% of the variance. Other variables not covered in this study could be the reason behind the unexplained 21% variance.

The level of service includes; the packaging of the hospitality product, the speed at which it is delivered to the guest when requested and the way it is delivered to the guest. All these are key factors that facilitate in making a judgment if satisfied or not. Guest satisfaction is one of the core objectives of sustainable tourism. The high beta and t values (β= 1.14, t= 23.22, p <.001) registered for the item; level of service in the facility was very high, suggests that it is very important in achieving sustainable tourism through visitor and can therefore not be ignored.

On the other hand, it is also important to appreciate the impact of a hospitable or otherwise community to the level of visitation to their locality by people who are not members of that community. Where the community members are hostile, guests would less likely visit the region. In spite of the low beta values, the t value (β= .32, t= 7.58, p <.001) registered for the item; local community members are hospitable, suggests that it should not be ignored in the practice of sustainable tourism through visitor.

Table 4.6.5: Regression Coefficients for items predicting Community hospitality and quality of service factor

Model	B	Std. Error	β	t	Sig.
(Constant)	-13.60	.61		-22.20	.000
The local community members were very hospitable	.79	.10	.32	7.58	.000
The lodge facility's management was very good	1.32	.12	.48	11.09	.000
The level of service in the facility was very high	1.03	.11	1.14	23.22	.000

As it can be seen from Table 4.5.6 all the variables were significant in contributing to the model. The regression equation for the model can therefore be written as follows; *Community hospitality*

and quality of service = -13.60 + (.79) Hospitable local community members + (1.32) Good facility management.+ (1.03) High level of service.

4.6.6: Administration factor one: Sustainability policy

As it was seen in Table 4.4.6, the two items that loaded onto this factor were related to the availability of a clear policy on sustainability within the facility and the possession of sustainability knowledge by the facility's employees, hence the label, "sustainability policy". The R square of the variables: Facility has a clear policy on environmental and sustainability issues well displayed, and; Employees of the facility are well trained on environmental issues is, .99.

The F value (8297.20) and the t values registered were highly significant ($p < .001$). The beta values obtained indicated that; employees of the facility were well trained on environmental issues, had the greatest contribution towards the factor ($\beta = .68$, $t = 86.72$), while; there was a clear policy on environmental and sustainability well displayed in the facility, had the least contribution towards this factor ($\beta = -.62$, $t = -79.03$) – See Table 4.6.6. The R square (.99) registered for the predictor variables suggest that they explain 99% of the total variance.

The performance of staff members on practicing energy management, water management and waste management could have acted as important pointers on the training of staff on environmental and sustainability issues. This could be the reason behind the high beta and t values ($\beta = .68$, $t = 86.72$, $p < .001$) registered for the item; employees of the facility were well trained on environmental issues.

A sustainability policy could possibly only be displayed at the entrance and reception area as opposed to inside each guest room. This could be the reason behind the lower beta values ($\beta =$ -

.62, t= -79.03, p <.001) registered for the item; there was a clear policy on environmental and sustainability well displayed in the facility. It is however important to note that the t values registered for the item are highly significant and therefore the item is critical in the achievement of sustainable tourism.

Table 4.6.6: Regression Coefficients for items predicting Sustainability policy factor

Model	B	Std. Error	β	t	Sig.
(Constant)	1.63	.13		12.79	.000
Employees of the facility are well trained on environmental issues	1.90	.02	.68	86.72	.000
Facility has a clear policy on environmental and sustainability issues well displayed	-1.69	.02	-.62	-79.03	.000

As it can be seen in Table 4.6.6 the variables were significant in contributing to the model. The model's equation can therefore be written as follows; *Sustainability policy = 1.63 + (1.90) Employee training on sustainability issues + (-1.69) Enactment of clear policy on environmental and sustainability issues.*

4.6.7: Sustainable tourism indicator model

The several models generated from the regression analysis were integrated into one model to be able to describe sustainable tourism. The generated model (figure 3) is more similar to the conceptual model (DIT-ACHIEV of sustainable tourism) used by the researcher. However several aspects differentiate the two models. Some of the differentiating aspects include; the sustainable tourism dimensions initially labelled as a, b, c, d and e, in the DIT-ACHIEV model which have been replaced with the following key factors in the generated model: Area history recognition (HA); water resource quality (HB); local culture conservation (HC); physical facility

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design (IA); facility accessibility (IB); healthcare concern (IC); water treatment and recycling(ID); energy management (EA); labour source (EB); waste management (EC); gender respect (CA); community values (CB); guest satisfaction and value for money (VA); community hospitality and quality of service (VB); and; sustainability policy (AA). In addition, the 33 indicators in the original DIT-ACHIEV model have also been replaced by the 28 key indicators generated from regression analysis. The 28 indicators include; provision of historic information (HA1); preservation of important artefacts from an area (HA2); contribution of tourism in the maintenance, preservation and restoration of the culture of a host community (HA3); keeping historic records of the host community and area (HA4); quality of drinking water (HB1); purity of drinking water (HB2); frameworks to recognize historic structures and monuments in an area (HC1); rooms accessible to persons with disabilities (IA1); restrooms accessible via wheelchair (IA2); facility accessibility time (IB1); facility accessibility means (IB2); in-house medical services (IC1); water treatment (ID1); water recycling (ID2); use of renewable energy (EA1); energy control measures (EA2); in-house energy generation (EA3); waste separation(EB1); employment of locals and foreigners (EC1); employment of male and female employees(CA1); guests awareness of the cultural values of the locality (CB1); value for money (VA1); guest satisfaction (VA2); hospitality of the local community (VB1); good facility management (VB2); level of service (VB3); employee training on sustainability and environmental issues (AA1); end; enactment of a clear environmental and sustainability policy (AA2).

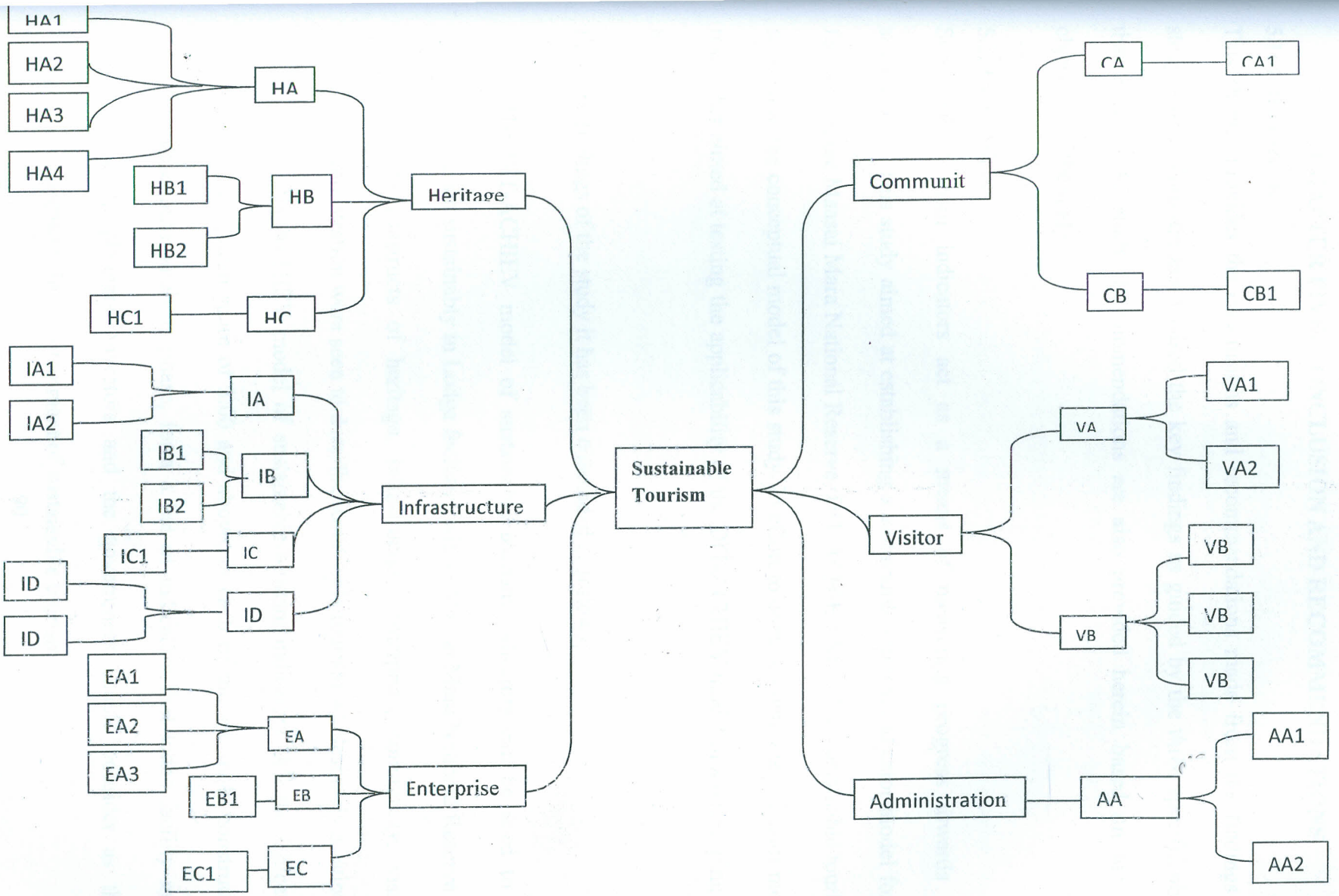

Figure 3: Model of sustainable tourism indicators, modified by the researcher (2013)

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1: Introduction

This chapter provides the conclusions and recommendations made from the findings of this study. Conclusions are made based the key findings as guided by the three specific objectives that directed the study. Recommendations are also provided herein based on the specific objectives of the study.

5.2: Conclusions

Sustainable tourism indicators act as a means of measuring progress towards tourism sustainability. This study aimed at establishing a sustainable tourism indicator model for Lodge facilities in the Maasai Mara National Reserve. DIT-ACHIEV Model of sustainable tourism was selected as the conceptual model of this study. In effort to come up with the indicator model, the researcher aimed at testing the applicability of the DIT-ACHIEV model in a developing country set-up.

From the findings of the study it has been concluded as follows;

i) The DIT-ACHIEV model of sustainable tourism indicators can be used to manage tourism sustainably in Lodge facilities within Maasai Mara National Reserve. The six study constructs of heritage, infrastructure, enterprise, community, visitor and administration were seen to describe sustainable tourism wholesomely as stipulated in the DIT-ACHIEV model of sustainable tourism indicators. All the indicators that scored a mean score of 3.00 and above, in each of the six study constructs at the descriptive analysis phase, form a list of indicators that lodge facility managers, tourism planners, investors and the government should consider as the basic requirements in the attainment of sustainable tourism.

ii) From the list of indicators drawn from the descriptive analysis phase, this study reveals four levels of sustainable tourism indicators based on factor analysis results. The four levels of indicators represent the indicators that loaded in each factors of each of the six study constructs. First level indicators are all those indicators that accounted for the greatest percentage of variance in the respective study constructs. Similarly, second, third and fourth level indicators represent the indicators that accounted for the second greatest variance, third greatest variance and the least variance in each of six study constructs respectively. First level indicators include; Area history recognition; Physical facility's design; Energy management; Gender respect; Guest satisfaction and value for money; and, Sustainability policy. These factors accounted for 20.48%, 25.90%, 23.06%, 29.40%, 46.30% and 39.30% of the total variances in their respective study constructs respectively. Second level indicators include; Water resource quality; Facility accessibility; Waste management; Community Values; and, Community hospitality and quality of service. The second level indicators accounted for the following percentage variances in their respective study constructs respectively; 16.82%, 18.37%, 18.17%, 26.90%, and 15.01%. Third level indicators are as follows; Local culture conservation; Healthcare concern; and, Labor source. The third level indicators accounted for the following percentage variances in their respective study constructs respectively; 13.81%, 11.21%, and 15.90%.

iii) In each of the previously identified four levels of indicators, some indicators appeared more important than others in each of their respective study constructs as revealed by regression analysis. Indicators considered to be the most important are as follows; Conservation of important artifacts from an area (β= .44, t= 29.28, p <.001);

Construction of restrooms accessible to persons with disabilities in a facility (β= .64, t= 10.50, p <.001); Establishment of clear policies to control energy use (β= .72, t= 23.22 , p <.001); Employment of both male and female employees (β= .81, t= 16.21, p <.001); Satisfaction of guests with the level of service (β= 1.14, t= 23.22, p <.001); Training of employees on environmental and sustainability issues (β= .68, t= 86.72, p <.001); Quality of drinking water (β= .84, t= 44.73, p <.001); Facility accessibility time (β= .69, t= 51.64, p <.001); Waste Separation (β= .78, t= 13.27, p <.001); Guests awareness of the host communities values (β= .95, t= 34.63, p <.001); Provision of high level of service (β= 1.14, t= 23.22, p <.001); Designating structures to recognize historic structures and monuments (β= .97, t= 47.14, p <.001); Employment of medical personnel to work within a lodge facility (β= .67, t= 10.24, p <.001); Employment of both local and foreigners (β= .97, t= 42.91, p <.001); and, Water recycling (β= .65, t= 23.79, p <.001) in no order of preference. However it is important to note that all the other variables that loaded on each of the factors in their respective study constructs are important since their registered t values were all significant as seen in the results. As such, the DIT-ACHIEV model of sustainable tourism has been found to be highly applicable in the sustainable management of lodge facilities in Maasai Mara National Reserve, though with few amendments. Each variable that loaded on each of the factors in the respective study constructs should be given special consideration.

5.3: Recommendations

Following the results of this study, the researcher recommends as follows;

i) Lodge facility managers, investors, tourism planners and the government should consider all the sustainable tourism indicators that scored a mean of 3.00 and above in each of the six study constructs of heritage, infrastructure, enterprise, community, visitor and administration while planning for any tourism venture in Maasai Mara National Reserve in order to achieve sustainable tourism.

ii) In addition, the lodge facility managers, investors, tourism planners and the government should pay more attention in each of the indicators identified at each of the four indicator levels in order to achieve sustainable tourism. However, the researcher recommends that they also consider all the other variables that loaded on each of the respective factors in the four indicator levels since they contributed significant percentage variances in their respective study constructs.

iii) Finally the researcher recommends that DIT-ACHIEV model of sustainable tourism be adopted in the management of lodge facilities in Maasai Mara National Reserve. However, the researcher recommends several amendments of the DIT-ACHIEV model as proved necessary by this study's' findings. The following are some of the recommended amendments: the 26 sustainable tourism dimensions in the DIT-ACHIEV model should be replaced by the 15 factors resulting from factor analysis: the 33 indicators in the DIT-ACHIEV model should as well be replaced with the 28 indicators resulting from regression analysis. However, the lodge facility managers, investors, tourism planners and the government should pay special attention to the 15

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key indicators listed in conclusion (bullet iii) before considering the other 17 indicators.

The results of this study have implications to the Lodge facilities management as well as to the government of Kenya through the ministry of East Africa Affairs, Commerce and Tourism. To the Lodge facilities, the findings give an assessment of the conformance to sustainable tourism from the customer's point of view. It is worth noting that the customer's general satisfaction is encompassed within the provision of what is desired. In this case, the desire is to experience sustainable tourism. As such, it is important for lodge facilities to closely monitor the state of each of the listed indicators frequently since lack of conformity might mean lost business for them.

Tourism being a key economic pillar in Kenya, its survival and benefits need to be closely guarded. Therefore, to Kenya's government, the indicators listed can be useful if adopted and replicated in other key tourism destinations in the country. If adopted, the indicators can help point out opportunities and threats to the survival of tourism in such destinations as well as help secure the benefits of the industry in the long-term.

This study however recommends the investigation of the applicability DIT-ACHIEV model of sustainable tourism, not just from the guest's perspective but from other tourism stakeholders. It is also recommended that the model generated in this study be tested for its applicability in its current form.

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