

Chapter 8: The Role of Information and Communications Technologies in Green Tourism Promotion in Zimbabwe: Gaps and Policy Direction

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Abstract

Despite its tremendous economic positive benefit to Zimbabwe, the tourism sector can have negative socio, cultural, political and environmental impacts as it involves numerous stakeholders, usually with conflicting interests. There is general agreement in literature that information and communications technologies (ICTs) can be used to address these negative impacts. This chapter focuses on describing the role of ICTs in promoting green tourism, ensuring that tourism takes full account of current and future social, environmental and economic impacts while addressing the needs of various stakeholders. The chapter uses the value chain system to highlight the activities undertaken by destination managers to deliver products/services in the tourism sector. Basing on the value chain, the chapter identifies and discusses opportunities for applying ICTs to promote green tourism. ICTs used for fostering decision-making are also highlighted. A policy overview and recommendations then follow and lastly a chapter summary.

INTRODUCTION

The tourism sector plays a pivotal role in reducing poverty, driving growth, creating employment and fostering development (Kotler *et al.*, 2017; Christian *et al.*, 2011; Mihalic *et al.*, 2012). Despite their positive role in contributing to social and economic development, tourism projects are also associated with deterioration of the socio-cultural values of the locals and the environment, some of which may be irreversible (Ruggieri, 2018). Tourism has the potential of disrupting wildlife and causing degradation of the environment as it exerts pressure on the fragile ecosystem and competes for scarce resources such as water and land. Tourism can also lead to dislocation of traditional societies as it puts pressure on host communities. Policy-makers have concentrated on the economic impact of tourism, ignoring or giving little attention to its socio, cultural and environmental impact (Sinclair, 1998). Due to the dominant role

of the economic impact of tourism in policy-making, many nations embarked on indiscriminate and unplanned growth of tourism infrastructure. This resulted in negative effects from an environmental and social perspective, such as massive land development and pollution from air transport. These affect the environment, for example, besides the pollution caused by the air transport system, tourism transport has also distributed COVID-19 globally within a very short period of time. This has destroyed the lives of many. This situation has called for sustainability/greening of the tourism sector. The overall aim for this being to make tourism more economically, socially and environmentally responsive, ensuring that future generations' needs are not compromised, and they have enough to meet their needs (Barnett and Parnell, 2016). There is general agreement in literature that ICTs are supportive of the Sustainable Development Goals (Sachs *et al.*, 2019; Ekholm and Rockstrom, 2019) and thus can promote green tourism. According to Scheel and Vazquez (2011) and Hjalager (2010), innovation and technology are considered the main forces to ensure sustainability.

This chapter is presented as follows: the next section describes green tourism, followed by a section that describes the tourism value chain. Then follows a section presenting an array of ICT-based tools and applications that can be used by destination managers for sustainable tourism development using the value chain approach. Destination refers to the sites where tourism impacts occur (Wall and Mathieson, 2006). This section is followed by a description of how ICTs can be used for decision-making, policy overview on green tourism in Zimbabwe follows and lastly a chapter summary.

1. GREEN TOURISM

According to Furqan *et al.* (2015), green tourism refers to the travel to a destination where the fauna, flora and cultural heritage are primarily attractive. In this chapter, the term “sustainable” and “green” are used interchangeably. It includes environmentally sustainable travel to destinations that minimise climate impact with the overall goal of preserving and respecting natural resources (Graci and Dodds, 2008). According to Barnett & Parnell (2016), sustainability is made up of three aspects, namely physical environment, society and the economy. Thus, for tourism to be sustainable,

initiatives must be socially acceptable, economically viable and environmentally compatible. These three aspects should receive equal attention from every tourism development strategy, as they are equally important if desired results are to be achieved. If any one of these aspects is weak, instability occurs in society. According to Font and Tribe (2001), green tourism signals that tourism operations do not harm the environment. Tourism products are green when they are beneficial to the consumer and the producer without harming the environment. Dodds and Joppe (2001) break the green tourism concept into four components:

1. Environmental responsibility: which aims at conserving, protecting and enhancing the physical environment and nature to ensure the enduring health of the life-sustaining eco-system.
2. Local economic vitality: which aims at supporting local businesses, economies and communities to ensure sustainability and economic viability.
3. Cultural diversity: which aims at appreciating and respecting cultural diversity and culture to ensure the sustained health of host or local cultures.
4. Experiential richness: which aims at providing stirring and substantial experiences through personal, active and involvement with and participation in people, places, nature and cultures.

Green tourism calls for maintaining a balance between the environment and tourism development through appropriate management and planning of tourism resources to reduce the negative impact of tourism (Batta, 2009). According to the UNEP and the World Tourism Organisation (WTO) (2005), there are 12 aims of tourism sustainability. Barnett and Parnell (2016)'s three components of sustainability are coalesced with these 12 aims of tourism sustainability to come up with the three pillars of sustainable tourism as shown on Figure 1.

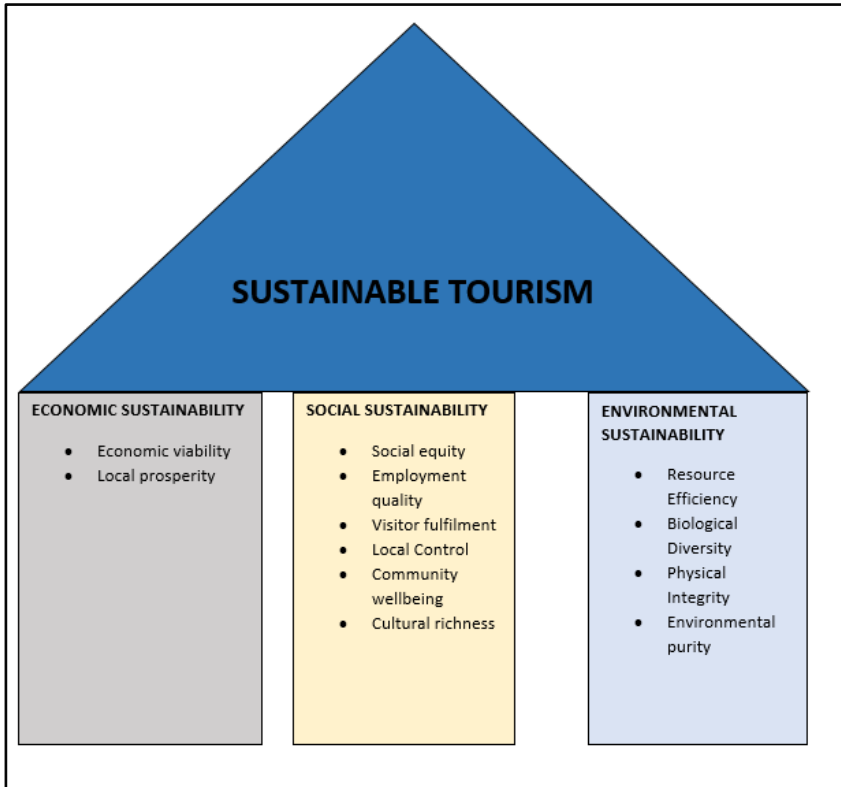


Figure 1: *The Three Pillars of Sustainable Tourism*

According to Figure 1, achieving tourism sustainability in Zimbabwe means striking a balance among all the three pillars, the economic, social and environmental pillars. The aim of focusing on the economic sustainability pillar is to ensure that the destination achieves the following two objectives:

1. Economic viability, ensuring viability and competitiveness of the Zimbabwean tourism enterprise; and
2. Local prosperity, ensuring the maximisation of tourism contribution to Zimbabwe's economic prosperity;

Achieving social sustainability aims at achieving the following in Zimbabwe:

3. Social equity, focusing on distributing fairly the economic and social benefits from tourism. ‘

4. Employment equity, focusing on strengthening the quality and number of local jobs created and supported by tourism;
5. Visitor fulfilment, focusing on providing a satisfactory, safe and fulfilling experience to visitors;
6. Local control, focusing on engaging Zimbabwe's local community in making decisions and planning management of tourism in their area;
7. Community wellbeing, focusing on strengthening and maintaining the quality of life in local community; and
8. Cultural richness, focusing on enhancing and respecting local heritage.

Environmental sustainability pillar aims at achieving the following:

9. Resource efficiency, focusing on minimising the use of scarce resources;
10. Biological diversity, focusing on supporting the conservation of natural areas'
11. Physical integrity, focusing on maintaining the quality of landscape., and
12. Environmental purity, focusing on minimising the pollution by visitors.

As noted by various authors, ICTs may be used to green the tourism industry (Sachs *et al.*, 2019; Ekholm and Rockstrom, 2019; Scheel and Vazquez, 2011; Hjalager, 2010). The tourism industry includes organisations in the industry such as resorts, hotels, tour operators, travel agencies, airlines, water and ground transportation. ICTs may be used in each of these throughout their value chain to promote green/sustainable tourism.

2. TOURISM VALUE CHAIN

The value chain details the activities that take place within organisations. According to Sharma and Christie (2010), Porter's original value chain needs to be modified when applied to the tourism sector since tourism is a service sector and the original Porter value chain is for manufacturing sectors. Rahmiati *et al.* (2019) proposed three stage value chain activities. The pre-trip experience, the trip experience and the post trip experience as shown in Figure 2.

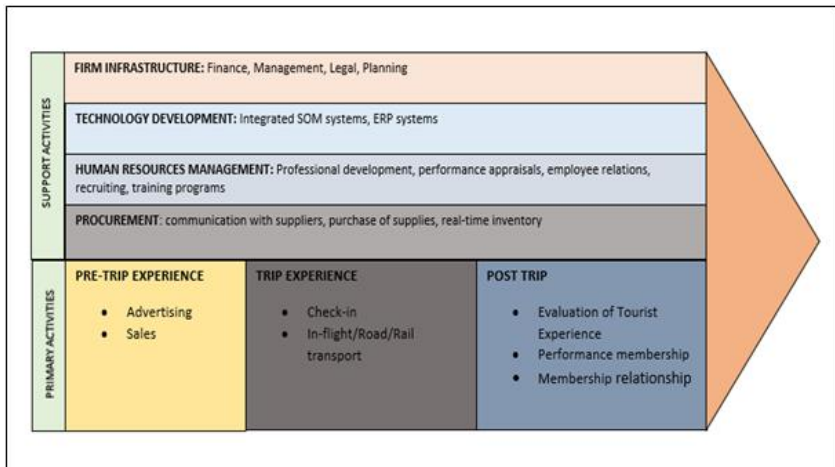


Figure 2: The Tourism Value Chain Activities Model

Figure 2 shows that companies in the tourism industry have three primary activities: the pre-trip experience, trip experience and the post trip. These three activities are supported by activities such as firm infrastructure, technology development, human resources management and procurement. ICTs may be used at each of the stages of the value chain by destination managers to achieve this and promote green tourism.

Tourism experience consists of activities, provided by several different players such as hotels, carriers, tours and restaurants. For effectiveness within the industry, there is need for these different players to collaborate, coordinate and integrate in customer service delivery (Yahyak, 2017; Navakiran, 2010). ICTs may be used to facilitate the integration of these different players for industry effectiveness.

3. ROLE OF ICTs IN PROMOTING GREEN TOURISM – VALUE CHAIN APPROACH

According to Ruggieri and Calo (2018), ICTs may be used by destination managers as practical and innovative approach in greening the tourism industry. They may be used for green tourism by engaging in dialogue with community as well nurturing better partnerships with stakeholders. The value chain is used to describe the role of ICTs in promoting green tourism at each of the three stages of the value chain.

PRIMARY ACTIVITIES

STAGE 1: PRE-TRIP

This is an information search stage where tourists search for information regarding their proposed destination (Nikolova, 2008). Tourists will need accurate and detailed information related to tourism destinations, such as the products, accommodation and all other things that the tourists may require before departure (Yahyak, 2017; Yilmaz and Bititci, 2006). Travellers cannot pre-test the product or get back their money if the trip fails to meet their expectations. They, therefore, need quality information to help them plan and make decisions. ICTs may be used by each of the tourism players to provide tourists with the rich information as they search for destination information at the pre-trip stage. The following technologies may be used to promote green tourism:

E-COMMERCE

E-commerce allows tourism business to reach the global audience, for example, the handicrafts industries can deliver information about their product to various audience across the globe (Farkhondehzadeh *et al.*, 2013). Hotels, lodges and travel agencies maintain websites that advertise their unique features and product and service offerings. In addition to providing information through one-way advertising, the websites may also be used for two-way communication with potential tourists through technologies, such as blogs and forums. The same website being used for providing information to potential visitors and allowing two-way communication with them may be used to facilitate transactions and the distribution of some tourism services. According to Ogbu (2011), the website can be used for selling products online without the tourist having to travel to the destination. This includes flight booking, hotel reservations, thereby removing the pressure on the environment and saving on time. Thus, ICTs may open opportunities for local businesses, economies and communities through the creation of digital marketplaces. ICTs are also changing the business culture through automating transactions and increasing efficiency. All this promotes green tourism as the physical environment is protected and conserved. Tourists can consume the products and services whilst in their home countries and at the same time the local communities are supported to ensure sustainability and economic viability (Dodds and Joppe, 2001).

WEBCASTS

Companies in the tourist industry, may benefit from webcasts, which is a media presentation distributed over the internet to delivering a single content to many simultaneous viewers/listeners, using streaming media technology. It is just broadcasting done over the internet (Guemide *et al.*, 2019). Live videos about different tourist sites and locations, traditions and customs (such as weddings, marriages and festive celebrations) tourist potentials (such as national parks and the different practices that can be practised there) can be uploaded on the internet. The webcast thus introduces the culture of the nation and help in protecting and maintaining the country's heritage (*ibid.*) and promoting cultural richness.

ELECTRONIC BROCHURES

Electronic brochures provide comprehensive information via the email than would otherwise be found on the web page (*ibid.*). This promotes green tourism as information is provided electronically as opposed to printing of papers, protecting the environment in the process as paper printing involves the destruction of trees.

VIRTUAL E-TOURISM AGENCIES

Destinations may have a dynamic, interactive web tourism portal which may host various sites that for both the private and public sectors, linking various actors in the tourism sector, such as travel agencies, hotels and airlines, restaurants and camps. The website may also display information relating to all the successful trips that have been organised by the destination. ICTs can be used to create platforms that collate ratings, reservations or review data to identify business trends, monitor tourists and business and to predict the behaviour of tourists (Leal *et al.* 2020). According to Sachs *et al.* (2019), ICTs support new virtual tours.

STAGE 2: TRIP EXPERIENCE

This is the stage where the tourists actually consume the tourism products. The stage is associated with inbound and outbound transportation, accommodation and excursions. Excursions include entertainment, natural tourism, shopping and festivals (Rahmiati, 2019). The following technologies may be used to promote green tourism at this stage:

PERSONALISED, INTERACTIVE, REAL-TIME TOURS (PIRTs)

According to Fennell (2021), ICTs can be used for personalised, interactive, real-time tours (PIRTs). These PIRTs use webcams, cameras and drones to enable tourists to experience events or environments in the comfort of their homes. Under normal circumstances, traditional eco-tours are economically beneficial for the destination nation. Under the COVID-19 pandemic conditions where travelling is banned, ICTs may be used to grow the tourism sector in a sustainable way. PIRTs are more economical as tourism income still trickles in even with national borders closed, there is no environmental pressure exerted on the destination while social-culture is preserved at the same time. Thus, in pandemics such as the COVID-19, ICTs like PIRTs promote green tourism by fostering both economic and environmental sustainability. Despite their benefits, PIRTs are unlikely to replace ecotours (Fennell, 2021).

INTELLIGENT TRANSPORT SYSTEM (ITS)

The system provides for real time information and traffic management (Diagle and Zimmerman, 2004). This leads to savings in terms of energy through the use of the shortest and the safest routes assisting in navigation and reducing amount of carbon in the air hence the environmentally responsible (Dodds and Joppe, 2001). The satisfaction level of the tourist is improved, and increases chances of repeat visits.

LOCATION-BASED SERVICES (LBS)

Location-based services (LBS) are used for promoting green tourism. They provide information to tourists for geographic location visits in real time (Liburd, 2005; Berger *et al.*, 2003). LBS market and inform tourists about the sites and attractions to visit, educate tourists on travelling to areas that are sensitive, how best they can respect and maintain the destination environment and the appropriate behaviour to exhibit at the destination. This, according to Liburd (2005), helps tourists make sustainable choices about which of the products to consume during their stay. Thus, LBS help promote green tourism as it aims at preserving, appreciating and respecting the culture of the destination while at the same time pushing for economic vitality (Dodds and Joppe, 2001).

FOOD WASTE MANAGEMENT

ICTs CAN BE USED TO ANALYSE FOOD WASTE FRACTIONS.

MENU OPTIMISATION

Apps may be used to optimise menus with regards to dietary aspects, leftovers, costs or greenhouse gas content. The following technologies can be used by tourism companies for example restaurants: smart kitchen furniture, tablets for point of service platforms, ICTs for reservations, finance, marketing staff management, education, wait list management, deliveries, food waste management, restaurant website. Energy management, inventory management and ordering systems, smart payment systems, guest reward and loyalty programmes (CB Insight, 2017).

STAGE 3: POST TRIP EXPERIENCE

This stage assesses the experience of the tourist. Service providers use this stage to assess the satisfaction level of tourists to improve their products and services.

REPUTATION MANAGEMENT SYSTEMS

Restaurants can manage and control their reputation through platforms such as TripAdvisor, Google and recommendation application. These platforms help to achieve social sustainability by realising visitor fulfilment aim of social sustainability.

4. ICTs FOR DECISION-MAKING IN GREEN TOURISM

According to Gössling (2021), decision-makers in tourism can use ICTs in making various decisions, such as in-demand forecasting using emerging pattern mining, artificial neural networks and supportive vector machines. The following technologies facilitate decision-making in tourism across the three levels of decision-making (operational, tactical and strategic):

Machine learning (ML)

1. Machine learning can contribute positively to environmental issues in tourism through the creation of mathematical models to predict or make decisions without human interventions (Grant *et al.*, 2020; Froemelt *et al.*, 2020). ML has the potential to provide valuable contribution to tackle environmental and ecological challenges and, therefore, support conservational management programmes (de Souza *et al.*, 2016), hence promoting green tourism.

DESTINATION MANAGEMENT SYSTEM

An important ICT tool for greening the tourism sector is the Destination Management System (DMS). The DMS is used by destination managers for marketing (Horan and Frew, 2007), information management, resource management, tourist education, distribution and for sustainable consumption. The use of ICTs in marketing can increase tourism arrivals while decreasing tourism expenditure per capita. The use of customer relationship management (CRM) promotes the appropriate and right timed marketing campaigns that are effective, reducing the cost of marketing. This contributes positively to the economic arm of sustainability.

ENVIRONMENT MANAGEMENT INFORMATION SYSTEM

According to El-Gayar and Fritz (2006), environment management information systems (EMISs) are used for resource and information management, resulting in cost management. The EMIS provides destination managers with useful information for decision-making. Using EMIS, destination managers are more aware of the impact of tourism on the destination and as a result, make decisions on how to correct or mitigate the actions. Thus, based on the information from the EMIS, destination managers can measure and monitor the environmental quality of the destination to identify areas for zoning.

GLOBAL POSITIONING SYSTEM

The Global Positioning System (GPS) may be used in tourism for tracking and analysis of tourist movement (Isaacson and Shoval, 2006) and tourist location identification. This is critical information that can be used by destination managers for making sound decisions related to developing tourism plans to ensure that the tourists are spread at different sites and attractions to better manage the environmental impact through load balancing.

GEOGRAPHICAL INFORMATION SYSTEM

The Geographical Information System (GIS) is used in tourism to map and profile tourists at destinations (Lau and McKercher, 2007). The data from GIS is used by destination managers in crafting visitor management techniques, transport planning and route identification (Lew and McKercher, 2005). GIS can be used for data integration and mapping with the overall aim

of providing destination managers with a vivid picture of the conditions at the destination for sound decision-making. With information from GIS, both locals and tourists are provided with the quickest and safest routes to the destination. This coordination and management of information provides for economic, environmental and socio-cultural benefits to the destination.

COMMUNITY INFORMATICS

Technologies, such as Community Informatics may be used for preserving the local resources and heritage. These are used for community engagement, interpretation and community cohesion, heritage preservation (Gretzel and Fessenmaier, 2009) and they engage with the socio-cultural aspects of sustainable tourism (Dodds and Joppe, 2001). Community Informatics allows the community greater involvement in decisions relating to tourism development in their area and hence increased buy-in (Cole, 2006). One of the pillars of green tourism is appreciating, respecting and promoting socio-cultural diversity (*ibid.*). To support this, Chiabai (2013) encourages stakeholder participation. Community Informatics improves awareness of sustainability in an online environment among the host community. The community can also suggest the message to communicate to the tourists.

BIG DATA

ICTs have the potential of addressing all of the highlighted policy areas needing refocusing and re-orientation. Big social networks data generated by tourists and the locals, if properly mined, can provide good insights that can:

1. Assist destination managers in planning for and enhancing tourism sustainability;
2. Be used strategically in the formulation of responsive and evidence-based policies for sustainable tourism,
3. Be used for monitoring the tourism sites with the aim of providing early warning of impending dangers, allowing for prompt decision-making, hence quick response to potential dangers; and
4. Enhance decision-making in tourism on issues such as waste management, crime, health, transportation and safety (Spaliviero *et al.*, 2020; Wang and Moriarty, 2018).

COMPUTER SIMULATION

According to Ruggieri (2018) Computer Simulation (CS) can be used to predict trends through simulating scenarios, such as climate change and then illustrate the environmental changes that will take place from tourist usage (Lawson, 2006). It will provide destination managers with accurate images of what anticipated tourism developments would look like under changing conditions. This information will be critical for promoting sound decision-making that are more favourable to the long-term impact on the environment by destination managers, hence promoting the greening of the destination.

Tourism monitoring is used to evaluate tourism impact on a destination. Several indices have been elaborated, such as social responsibility, carrying capacity and integration of local people and tourists. The carrying capacity of a tourist destination, which is described as the maximum number of tourists that may visit a destination simultaneously, without causing damage of the economic, physical and social environment (UNEP and WTO, 2005), has been found to be the most relevant indicator. ICTs can be used to monitor the carrying capacity of a nation through the use of technologies, such as WiFi or video technologies and GPS. These technologies count the tourists at destination access points, e.g., harbours or airports, entrance for specific sites at destinations such as archaeological sites, city centres, theme or natural parks, museums, etc. The technologies could also be positioned in specific sites to evaluate the level of crowds. Data collected from these technologies can then be used to formulate green strategies and policies and thus support decision-making.

At the strategic level, ICTs can revolutionise the entire value chain and then facilitate the creation of strategic relationship of tourism organisations and their stakeholders. The internet is a perfect tool to achieve this interaction. Organisations can take advantage of intranets and extranets to communicate with many stakeholders and thus support the development of close relationships with trusted partners. Traditionally, policy is informed by researches through traditional surveys that are slow, labour-intensive and costly. With big data, policy insights can be delivered more frequently, accurately and cost effectively. Technologies such as cellphones, satellite imagery, video feeds, vehicle sensors, remote sensing, machine learning and social media, can be used by policy-makers in making tourism sustainable

5. POLICY OVERVIEW ON GREEN TOURISM IN ZIMBABWE

There are various stakeholders in tourism, each with unique interests and some of them even conflicting among the stakeholders. For example:

Table 1: *Tourism stakeholder interest and concerns*

Stakeholder	Interest	Concerns
Tourism enterprises	Long term profitability, corporate image	Impact on the environment, relationship with staff and communities around them
Local community	Increased prosperity	No to damage or exploitation to their quality of life
Environmentalists	Valuable source of income for conservation	The harmful impact of tourism on the environment
Tourists	The best experience in attractive and safe environments	Increasing awareness on the impact of their travelling.

Table 1 shows that tourism enterprises are interested in achieving long-term profitability and maintaining and improving the corporate image. However, fears are on the enterprise's impact on the environment, the way the enterprise relates with its employees and with communities around them. As much as local communities are interested in increased prosperity from tourism, they are also concerned with the danger and exploitation that tourism can inflict on the quality of their life. Environmentalists are also interested in the income generated from tourism. However, they are also concerned with the harmful impact of tourism on the environment.

It is the role of the government to recognise different motivations and positions of these diverse stakeholders and formulate and implement policies that help in achieving a common goal of sustainability in tourism. The tourism industry is also fragmented, with many different actors. It is, therefore, difficult for these small individual actors to make a positive difference. The government should play a coordinating role in ensuring sustainability in tourism. It must create an environment that encourages all tourism stakeholders to respond to issues of sustainability. The government achieves this through the establishment and implementation of a set of policies for the development and management of tourism that places sustainability at its core.

As shown in the Three Pillars of Sustainable Tourism in Figure 1, any nation seeking to achieve sustainable tourism seeks to address 12 goals (UNEP and WTO, 2005). The aims can be used to identify policy areas to facilitate the formulation of specific policies. Policy areas should be those where tourism has an impact and, hence tourism stakeholders should consider. Government should, therefore, foster the creation of an enabling environment that

encourages stakeholders to go the sustainable route through the development and implementation of policies that favour sustainability.

Table 2: *ICTs for supporting policy areas that encourage sustainable tourism*

Pillar of sustainability	Sustainable Tourism Aim	Examples of Policy Area	ICTs for promoting the policy area
Economic Sustainability	Economic viability	Delivering visitor satisfaction, maintaining sound trading practices Delivering business support	CRM systems ERP systems for internal efficiency
	Local prosperity	Support locally owned businesses	Offering virtual trainings AI, machine learning, IoT, data analytics to predict trends and build their capacity.
		Strengthening links between businesses	SCM systems to strengthen the local supply chain
Social sustainability	Social equity	Tourism income to support social programmes	ICTs to link CSR of enterprises to government incentives.
	Employment quality	Encouraging companies to provide training and staff development programmes	Virtual trainings can be provided
	Visitor fulfilment	Maintaining duty of care to visitors	ITS
	Local control	Engagement and empowerment of local communities	Community informatics
	Community wellbeing	Reducing congestion	PIRTs, GPS
Environmental sustainability	Cultural richness	Conservation of historic and cultural sites	Community informatics
	Resource efficiency	Minimising water and energy consumption	Use of IoT technologies to detect water leakages
	Biological diversity	Raising awareness on biodiversity	Electronic brochures
	Physical integrity	Minimising the physical impact of tourism activities	PIRTs, ICTs for monitoring the carrying capacity of a site.
	Environmental purity	Minimise the pollution of land, water and air pollution	Waste management systems, ITS

Literature above has shown that ICTs play a pivotal role in promoting green tourism and have also potential in promoting sustainability through policy implementation. The following section analyses the tourism policies documents created over the years with the aim of investigating if the tourism policy documents address the peculiarities of environmental, social and economic challenges obtaining in Zimbabwe and the extent to which ICTs have been identified as catalysts in the process. Gaps will be highlighted and policy direction proposed.

TOURISM POLICIES IN ZIMBABWE

Zimbabwe has been described by RETOSA (2004) as Africa's paradise due to unique tourism products that it is endowed with. According to the Zimbabwe Tourism Authority (ZTA) (2004), the country's tourism can become the most important pillar for economic development if well managed. The Zimbabwean tourism industry is regulated through the Tourism Act [Chapter 14:20] of 1996 and indirectly through various other Acts such as safety and health, liquor licensing, tax, environmental protection, aviation and transport, labour laws and land-use, among others. For a long time, the country has been operating without a clear guiding policy framework. A policy refers to the plan of action that a group of people agrees to with the power to carry it out and enforce it (Devon and Boyd, 2000). In Zimbabwe, the crafting of the tourism policy started in 2010, and was adopted by Cabinet in 2012. According to Abel *et al.* (2013), the tourism policy's objectives were to attract investment on existing and new tourism products, to create an enabling environment for the management and development of the tourism sector, to improve the destination image, promote the development of domestic tourism, to promote the contribution of tourism to Zimbabwe's economic growth, to promote sustainable tourism development and, lastly, to promote international and regional engagements. The policies and regulations have a serious corollary on Zimbabwe's tourism industry as they can result in either positive or negative effects. Increase in the cost of doing business is one of the negative effects denting the destination images.

The World Economic Forum (WEF)'s World Travel and Tourism Competitive Index Report (2013) highlights the rankings of countries according to certain criteria. The Travel and Tourism (T &T) Index is centred on three main variables that motivate the competitiveness of T and T. The three classes of variables are:

1. T and T regulatory framework sub-index;
2. T and T business environment and infrastructure sub-index' and
3. T and T cultural, natural resources and human sub-index'.

The three sub-indices refer to policy issues determined by the government, also factors of the business environment that determine launching of business and the human, natural and cultural elements of a nation's resource endowments (*ibid.*). Zimbabwe ranked 118th out of the 140 countries that participated in the survey (*ibid.*).

Other issues of major concern highlighted in the report included safety and security exhibited by high-crime rates and a lack of trust in the police to provide the protection. The country ranked 120 out of 140 on the security variable. According to the report, areas that needed policy re-orientation included: forging partnerships with the private sector, consultations with local communities in tourism planning processes, tourism infrastructure development for the benefit of tourism and the wider society, entrepreneur development policies and initiatives, policy to ensure tourism activities benefit the society as a whole (Dieke, 2000). Table 2 shows that ICTs can support these and other policy areas and thus promote sustainable tourism.

Despite the ICTs role play in ensuring that policy is adhered to, ICTs are not explicitly stated in the tourism policy of Zimbabwe. There is also lack of ICT use enabling environment and the infrastructure is not supportive of heavy ICT use in tourism, for example, highly priced and poor mobile networks, internet challenges, power outage in some areas, unavailability of real time booking systems (Tsokota *et al.*, 2017). There is also the problem with electronic customer relationship management (e-CRM). Most tourism websites contain outdated information, so they do not respond to customers promptly while some do not even have options for two-way communication with potential customers (*ibid.*). Despite the benefits of ICTs, organisations in the tourism sector in Zimbabwe are still fragmented, as there is a lack of information sharing along the supply chain and thus integration is poor. Departmental collaboration within the same organisation is also poor. This negatively affects decision-making (*ibid.*). There is also a lack of a clear and apparent strategy for effective integration and usage of ICTs to enhance the tourism sector in Zimbabwe (Ruhode, 2016). There is poor regulation and policy for ICT adoption and implementation in the tourism sector.

RECOMMENDATIONS

Tourism can contribute to sustainable development in Zimbabwe and literature has shown that ICTs can play a pivotal role in promoting sustainability in tourism. As such, policies should embrace and promote the principle of sustainability. For example, policies should strengthen and encourage the following:

1. Customer focus – this will ensure organisations collaborate and there is system integration and information sharing to please the tourists
2. ICT governance: – to strategically align business and ICT to ensure return on ICT investments.

6. CHAPTER SUMMARY

ICTs play a pivotal role in greening the tourism sector. Several technologies may be used to green the sector. The technologies have been identified at each of the stages of the value chain and the technologies that can be used for decision-making have been identified as well. However, Zimbabwe's tourism sector is still lagging behind in terms of uptake of technology. Policies also have an influence on the level of uptake of ICTs in the sector. A policy gap has been identified and recommendations given.